Asigra Cloud Backup v14.1

DS-Client User Guide

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Asigra

Recovery is Everything™

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79 Brisbane Road, Toronto, Ontario, Canada M3J 2K3

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Contents

1 About this guide

This guide describes how to use the DS-Client software to back up and restore data.

NOTE: For instructions on how to install the DS-Client software, see the *Client Software Installation Guide*.

1.1 Intended audience

This guide is intended for users of the DS-User application who want to back up and restore data using DS-Client.

1.2 Formatting conventions

The following formatting conventions are used in this guide:

Bold

Bold font identifies components, window and dialog box titles, and item names.

Italic

Italic font identifies references to related documentation.

`Monospace Font`

Monospace font identifies text that you should type or that the computer displays.

NOTE: Notes emphasize information that is useful but not essential, such as tips or alternative methods for performing a task.

IMPORTANT: Important notes emphasize information that is essential to the completion of a task and draw special attention to actions that could adversely affect the operation of the application or result in a loss of data.

2 Getting started

This section provides an overview of DS-Client and the DS-User interface.

2.1 About DS-Client

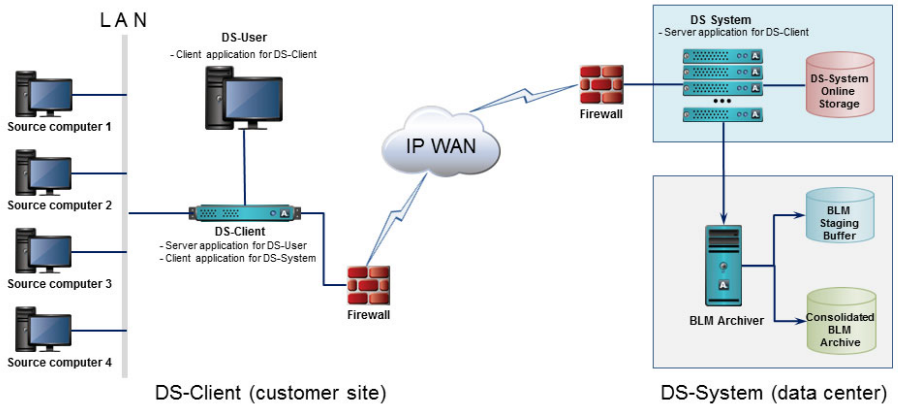
Asigra Cloud Backup™ is a service that gives you state-of-the-art data protection at an affordable price. Data from your server(s) is backed up using DS-Client, and sent through an IP WAN connection to an off-site data vault.

Ease of use comes from the agentless architecture: you need to install DS-Client on only one LAN computer (thereby eliminating the need to install software on every target backup/restore computer). As long as the computer is on the same network as the target backup/restore computers, you will be able to browse data, back it up, and restore it as required.

Asigra Cloud Backup™ offers users the advantage of automatic and unattended backups for data environments ranging from single-user standalone PCs to enterprise-wide Local/Wide Area Networks.

During backups, DS-Client extracts, compresses, and encrypts the items you specify for backup. Only new or modified data is backed up, thereby accelerating the backup transmission time. The backup data is sent via the Cloud (Internet, Intranet) to the secure, off-site data center that hosts the DS-System vault.

Restore is performed on demand via the same DS-Client once the DS-Client's security measures have been cleared.



File name	Application description
dsuser.jar	This is the user interface to the DS-Client service/daemon program. DS-User allows you to configure the DS-Client, create backup sets, perform backups or restores, monitor DS-Client activities, and perform other tasks on the DS-Client.
dsclient.exe (Windows)	This is the Windows service program.
dsstatus.exe (Windows)	The DS-Client Service Manager program allows you to stop or start the DS-Client service (without having to use the Windows Control Panel > Services Microsoft Management Console).
DSConfig.exe (Windows)	The Grid DS-Client Configuration Tool (DSConfig.exe) allows you to manage and configure the nodes in a Grid DS-Client.
unixdsclient (Linux or Mac)	This is the daemon program.
dsclient.sh (Linux or Mac)	This is the startup / shutdown script for the DS-Client daemon.
dsclient databases	The DS-Client databases contain most of the DS-Client configuration settings and can be backed up during daily or weekly admin processes to ensure quick recovery of the DS-Client computer in case of a disaster. For the Windows DS-Client, a sub-folder called **db** contains database patches that were applied during the DS-Client software installation / upgrade. For the Linux or Mac DS-Client, the DS-Client databases can reside on PostgreSQL database instances.
dsclient DB scripts (Linux or Mac)	In the DS-Client installation directory, there are *.sql files, which are the database patches that were applied during installation or upgrade of the DS-Client software.

Table 1 Major software components installed with the DS-Client

2.1.1 Security considerations

To secure customer information that is transferred to the DS-System, the DS-Client encrypts every file it sends to the DS-System with encryption keys provided by the customer. The files are stored and remain encrypted on DS-System storage at all times. The decryption process occurs during the restore operation on the DS-Client itself. This ensures that any information transferred and stored outside the customer location is always encrypted.

To ensure integrity of the data that the DS-Client backs up and restores on a customer network, a digital signature is created and attached to every file that DS-Client transfers to the DS-System. A digital signature represents 128-bit code that identifies data within the file. Even a one-bit change to a file will produce a different digital signature. Digital signatures are used for restores, validation, and to verify signatures of unchanged files on demand backups.

2.2 Connecting to a DS-Client

A DS-Client performs logon validation (for DS-User sessions) with the local or domain user account database (if applicable).

- For Windows DS-Clients, by default, only administrators or backup operators are allowed access to DS-Client.
- For Linux and Mac DS-Clients, root users are allowed access to the DS-Client by default.

An administrator can configure different user and group roles to access a DS-Client. A DS-Client allows multiple simultaneous connections with the same or different authentication credentials. See Section 3.1.7, “Configuring the user and group settings”, on page 29.

NOTE: DS-Client uses the DS-User credentials as default credentials for network resources when creating new backup sets.

You can connect to a specific DS-Client on your network by selecting it from a list. Each DS-Client in the list is color coded as follows:

Color	RGB values	Description
BLUE	(0, 0, 255)	The DS-Client runs on the local machine on which the DS-User is installed. (Supersedes other colors. Only DS-Client can appear blue.)
BLACK	(0, 0, 0)	FullFeatured DS-Client (Windows / Linux / Mac)
GREEN	(0, 153, 0)	Uninitialized DS-Client.
LIGHT BLUE	(40, 120, 220)	DS-Mobile Client (Windows)
AQUA	(20, 170, 170)	DS-Notebook Client (Mac)
RED	(255, 0, 0)	DS-Client Service is not running.

Table 2 DS-Client color coding information

To connect to a DS-Client:

1. Start the DS-User application.
2. Select a DS-Client from the list on the left side of the main window. To switch between computer names and IP addresses, right-click the list. The **Connect to DS-Client Service** dialog box appears.

   F1 Help: Connect to DS-Client Service

   NOTE: If the DS-Client you require is not displayed, you have to add it to the initialization list. For more information, see Section 3.2.1, “Configuring the DS-Client connection settings”, on page 61.

3. In the **Protocol** box, select one of the following protocols:

- **Encrypted**: All the data between the DS-User and the DS-Client will be encrypted with a random encryption key at every connection.
- **Standard**: This option is only offered for backwards compatibility with old service/daemon versions that do not have this feature.

4. Under **Credentials**, type your credentials, and then click **Connect**.

NOTE: If the DS-Client is unregistered, you must perform the initial configuration. See Section 2.3, “Performing the initial DS-Client configuration”, on page 16.

2.3 Performing the initial DS-Client configuration

To begin working with DS-Client, you must perform an initial configuration where you set the encryption keys and point to the DS-System where backup data is sent.

- On first connection to DS-Client, the **Initial DS-Client Configuration** dialog box appears.

  F1 Help: Initial DS-Client Configuration / Modify DS-Client Configuration

To perform the initial DS-Client configuration:

1. Under **Customer Registration Info**, do the following:

   a) In the **Customer Name** box, type a descriptive name for the client.

   b) In the **Account #** box, type the account number assigned to you by your service provider.

   c) In the **DS-Client #** box, type the unique client number assigned to you by your service provider.

   NOTE: If you already registered the DS-Client with a service provider, you should have received a Customer Registration Information (CRI) file containing the required information. Click **Browse** and select the file.

2. Under **DS-System Info**, do the following:

   a) In the **Address** box, type the IP address or DNS name of the DS-System to which your client will be connecting. Separate multiple IP address with a semi-colon.

   b) To add an IP address, click **Add**.

   c) To remove an IP address, select the IP address, and then click **Remove**.

3. Under **Private Key**, do the following:

a) In the **Type** box, select the type of encryption that you want to use. Stronger encryption requires longer keys.

b) In the **Key** box, type the unique private encryption key that is to be used for all data that comes from your client.

c) In the **Confirm** box, retype the private encryption key. You cannot change this key once it is set.

4. Under **Account Key**, do the following:

   a) In the **Type** box, elect the type of encryption that you want to use. Stronger encryption requires longer keys.

   b) In the **Key** box, type the unique account encryption key assigned by your service provider. Common backup data from all your clients will be encrypted with this same account key.

   c) In the **Confirm** box, retype the account encryption key. You cannot change this key once it is set.

NOTE: Encryption keys are case sensitive and the character length depends on the type and level of encryption selected. DES requires 8 characters, AES-128 requires 16 characters, AES-192 requires 24 characters, and AES-256 requires 32 characters. If you type a shorter string, an auto-complete feature repeats the string until all the required characters are filled. For example, “123” becomes “1231231231231231”.

IMPORTANT: The account encryption key must be the same type and string for all the DS-Clients under the same customer account on the DS-System.

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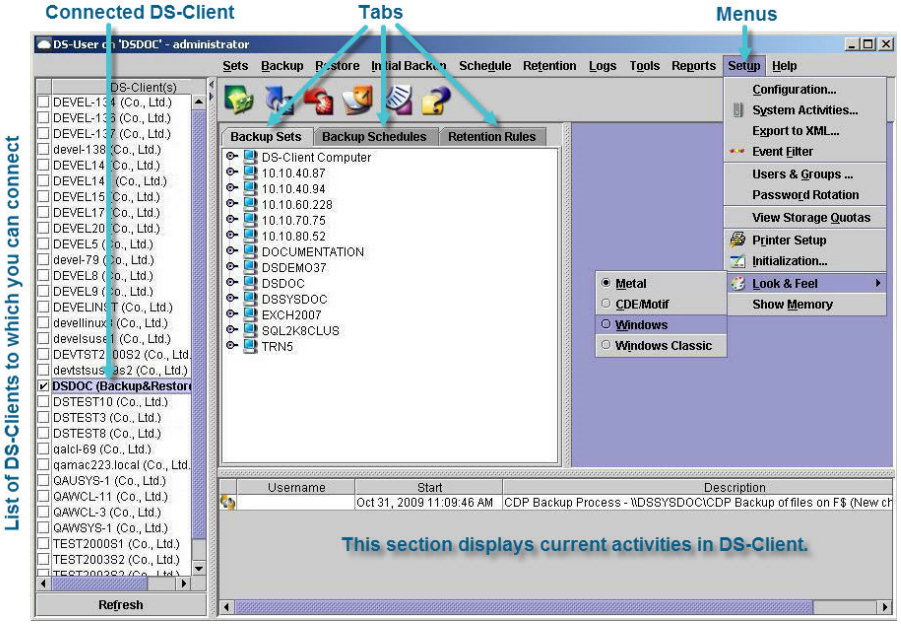
5. To forward the encryption keys to the DS-System the first time the client connects to the DS-System, select the **Allow encryption key forwarding to DS-System** check box. This allows your service provider to create a valid CRI file with the encrypted keys so they can recreate a working version of the client.
6. Under **User Info**, type the requested information about your organization.
7. Click **Save**.

The DS-System verifies the encryption keys on every connection to ensure the integrity of both the private and account keys.

2.4 Working in the DS-User main window

You can access all the functions from the menu bar in the DS-User window:



- **DS-Client Connection List**: Displays a list of the available DS-Clients you have on the LAN. You can connect to one or multiple DS-Clients; however, you can view only one at a time (by selecting it from this list).
- **Title Bar**: Displays the name of the DS-Client computer that you are using.
- **Menu Bar Items**: All function related to backup and restore are available here.
- **Backup Set tab**: Displays a tree view of all backup sets defined on the selected DS-Client. You can browse to select the required backup set and right-click to display the options menu.
- **Backup Schedules tab**: Displays a tree view of all schedules defined on the selected DS-Client. You can browse the tree to select the required schedule and right-click to display the options menu. You can re-assign different schedules to backup sets using the "drag-and-drop" functionality.
- **Retention Rules tab**: Displays a tree view of all the retention rules defined on DS-Client. You can browse the tree to select the required Retention Rule and right-click to open the options menu. You can re-assign different retention rules to backup sets using the "drag-and-drop" functionality.
- **Status Bar**: This section displays basic instructions about the selected/active option.
- **Monitor**: Displays current activities running on DS-Client (backup, restore, admin, etc.).
- **Toolbar Icons**: Quick access to the most commonly used features.

Icon	Function
	Create new backup sets with the New Backup Set Wizard.
	Perform an on-demand backup.
	Restore files with the Restore Now Wizard.
	Opens the Schedule Calendar.
	Opens the Activity Log.
	Help

Table 3 DS-User toolbar icons

2.5 Starting or stopping the DS-Client service or daemon

You can start or stop the DS-Client service or daemon.

To start or stop a DS-Client service or daemon:

1. On the **Start** menu (Windows) or **Applications** menu (Linux), click **DS-Client Service Manager**. The **DS-Client Service Manager window** appears, indicating whether the DS-Client is running or stopped.
2. Click **Start** or **Stop** to toggle the service on or off.

2.6 Disconnecting from a DS-Client

You can disconnect from a DS-Client at any time. This does not close the DS-User application, and it does not affect other DS-Client connections.

To disconnect from a DS-Client:

- In the **DS-Client** list, clear the check box beside the DS-Client that you want to disconnect from.

2.7 Exiting the DS-User application

You can exit the DS-User application at any time. This closes all connections to DS-Clients.

To exit DS-User:

- On the **Sets** menu, click **Exit**.

3 Configuring the DS-Client

This section provides detailed information on how to set up and configure DS-Client and DS-User.

3.1 Configuring the DS-Client settings

Most default configuration settings are defined during the initial configuration. However, you might need to edit some default configurations and settings.

3.1.1 Configuring the setup information

You can update some of the settings that you configured during the initial DS-Client configuration, re-register the DS-Client with the DS-System, enable the forwarding of encryption keys to the DS-System, forward encryption keys to the DS-System, and request deletion of forwarded encryption keys.

To configure the setup information:

1. On the **Setup** menu, click **Configuration**. The **DS-Client Configuration** dialog box appears.
2. Click the **Setup** tab.

   F1 Help: DS-Client Configuration Setup Tab
3. To modify an existing DS-Client configuration, click **Modify**. For more information, see Section 2.3, “Performing the initial DS-Client configuration”, on page 16.
4. To register the DS-Client with the DS-System, click **Register Now**.

   a) Contact your service provider and ask the DS-System administrator to permit DS-Client registration.

   b) In the confirmation dialog box, click **Yes**. A confirmation message indicates if registration is successful.

NOTE: You only need to register again if you change the hardware or operating system of the DS-Client, of if the DS-Client hardware registration is reset on the DS-System side.

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5. To forward the encryption keys to the DS-System, select the **Enable Encryption keys forwarding to DS-System** check box. This allows your service provider to create a valid CRI file with the encrypted keys so they can recreate a working version of the client.

NOTE: If your service provider enforces mandatory safeguarding, DS-Client will not be able to connect to DS-System until you enable this feature.

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6. To forward or delete the encryption keys, click **Forward Now** or **Request Deletion**.
7. Click **OK**.

3.1.2 Configuring the default settings

You can configure the default settings that will apply to all new backup sets. You can still change the settings individually for each backup set if required.

To configure the default settings:

1. On the **Setup** menu, click **Configuration**. The **DS-Client Configuration** dialog box appears.
2. Click the **Defaults** tab.

   F1 Help: DS-Client Configuration Defaults Tab
3. Under **Generations setup**, select the default number of generations for new backup sets.

NOTE: (Optional) You can select a default Retention Rule for new backup sets (see Chapter 5, “Working with retention rules”).

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4. Under **Backup options**, select the default options for new backup sets.
5. Under **Open files**, select the options to define how a backup set should handle an open file during backup.

NOTE: If the file is opened in another application, it will not be backed up (unless the backup is using VSS). The activity log will display an error. To back up an open file, enable the VSS option for that particular backup set.

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6. Under **Backup schedule**, select the default schedule for new backup sets.
7. To configure a default notification setting for new backup sets, do the following:

   c) Under **Notification**, click **Add/Modify.**

d) Select the notification type, recipient, and the event that will trigger a notification, and then click **OK**.

NOTE: The **Edit Notification** dialog box appears if there is an existing default notification setting.

F1 Help: Add Notification

NOTE: The email and pager fields are unavailable if DS-Client has not been configured for email notifications. For more information, see Section 3.1.3, “Configuring the notification settings”, on page 23.

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8. Under **Data Compression**, select the default compression type for new backup sets.
9. Click **OK**.

3.1.3 Configuring the notification settings

You can configure the DS-Client to send email and pager notifications.

For MAPI only: This requires Microsoft Outlook on the DS-Client computer. DS-Client notifications (specified in backup set properties) are email reports or pager alerts that can be sent to the administrator at the end of a backup session or on a regular basis during admin processes. If the **DS-Client messaging profile** section is empty, the email options will be hidden when creating new backup sets or reviewing backup set properties.

NOTE: Before configuring DS-Client to send notifications, you must create a mail profile. For more information, see your email server’s documentation.

To configure the notification settings:

1. On the **Setup** menu, click **Configuration**. The **DS-Client Configuration** dialog box appears.
2. Click the **Notification** tab.

   F1 Help: DS-Client Configuration Notification Tab
3. Under **Outgoing E-mail Settings**, select **SMTP**.
4. Under **SMTP server settings**, click **[...]**, and then do the following:

   a) In the **SNMP Server** box, type the DNS name or IP address of the SMTP server that DS-Client will use.

   b) In the **Port** box, specify the port number.

c) Type the required authentication information.

d) Click **OK**.

F1 Help: SMTP settings

NOTE: DS-Client will use its existing network connection when sending SMTP notifications.

5. In the **From (E-Mail Address)** box, type the email address that you want to be displayed in the From field of the email message.
6. In the **From (Display Name)** box, type the name that you want to appear in the From field of the email message.
   - **MAPI**: In the DS-Client messaging profile section that appears, select the MAPI profile to use.
7. Under **E-Mail notification subject**, type the required information. You can type any text in combination with optional 'placeholder variables'.

   F1 Help: DS-Client Configuration Notification Tab
8. Under **Administrator setup**, type the required information.
9. Under **Daily / Weekly Admin setup**, select the required settings.
10. Click **OK**.

NOTE: (MAPI only) After you change the profile, you must stop and restart the DS-Client Service for the new setting to take effect.

3.1.4 Configuring the SNMP settings

You can configure DS-Client to send SNMP traps for the following backup results:

- Successful
- Completed with warnings
- Completed with errors
- Incomplete

An SNMP trap will be sent once, immediately after each backup activity finishes.

In addition, DS-Client can be configured to send a special trap as a heartbeat signal that determines if the monitored service is running normally.

NOTE: To receive traps sent by DS-Client, you must load the MIB (Management Information Base) file called **asigra.mib** file with your SNMP software. This file describes how the objects are organized and can be found in the DS-Client installation directory. The **IANA** Private Enterprise Number is **15538**. For more information, see http://www.iana.org/assignments/enterprise-numbers.

To configure the SNMP settings:

1. On the **Setup** menu, click **Configuration**. The **DS-Client Configuration** dialog box appears.
2. Click the **SNMP** tab.

   F1 Help: DS-Client Configuration SNMP Tab
3. In the **Community** box, specify a community name, and then click **Add to list**.
4. Under **Destination host list**, select the required host, and then click **Add**. The **Add host name or IP address** dialog box appears.

   F1 Help: Add / Modify address
5. Type a host name or IP address from your network, and then click **OK**.
6. Continue to add the required destination host / IP addresses available in the community.
7. To send traps as heartbeats, select the **Send traps as heartbeats every** check box and specify the frequency at which the traps should be sent.
8. Click **OK**.

3.1.5 Configuring the parameter settings

You can configure administrative processes and options for your DS-Client.

To configure the parameter settings:

1. On the **Setup** menu, click **Configuration**. The **DS-Client Configuration** dialog box appears.
2. Click the **Parameters** tab.

   F1 Help: DS-Client Configuration Parameters Tab
3. Under **Admin Process,** specify when and how often the daily and weekly administrative tasks are performed.

4. Under **Database options**, specify the frequency of DS-Client database backups, how to handle the database dump file (if applicable), and how long to keep logs.

   IMPORTANT: We recommend that you regularly back up the database.

5. Under **Backup/Restore options**, specify the number of times DS-Client attempts to reconnect and the interval between each reconnection attempt if the DS-Client loses connection with the DS-System during a backup or restore activity. These parameters apply to scheduled and on-demand backups.

   NOTE: By default, DS-Client is configured to skip running a pre-scan on scheduled backup sets (this makes the process faster). Disabling the **Skip pre-scan for scheduled backups** option will force a pre-scan for all scheduled backup sets, in which case the Process Window will display an estimated completion time for each backup.

6. In the **DS-Client Buffer** box, specify the local disk location that DS-Client will use to save buffer dumps for backup sets configured with the **Use Buffer** option. Windows DS-Client will also save its own database dumps from daily and weekly admin activities here.

   IMPORTANT: The DS-Client's database server must have rights to dump to this location. This is an important consideration if you are using a remote database. For more information, see Section 6.1.2.5, "Using the DS-Client buffer", on page 122.

7. In the **Local Storage Path** box, specify a path to enable the following features that send data to a local storage location (instead of, or in addition to backup to the DS-System).

   - **Self-Contained backup sets –** If you enter a path, you will be able to select this type of backup set in the New Backup Set Wizard. (See Section 6.1.1.2, "Self-contained backup sets", on page 113.)
   - **Local Only backup sets –** Your service provider must enable the Local-Only Capacity tool and assign a maximum storage amount for the DS-Client. (See Section 6.1.1.3, "Local-only backup sets", on page 114.)
   - **Local Storage backup sets –** Your service provider must enable the Local Storage tool for the DS-Client. (See Section 12.4, "Local Storage Tool", on page 444.)

- **Instant Recovery backup sets –** Your service provider must enable the Local Storage tool and the Local-Only tool, and assign a maximum Local-Only Capacity for the DS-Client. If you enter a path, you will be able to select this type of backup set in the New Backup Set Wizard. (See Section 6.1.1.4, “Instant Recovery backup sets”, on page 116.)

IMPORTANT: Backup sets that use any local storage location require an extra table in the DS-Client database to manage the data stored on the DS-Client side. Ensure enough space is allocated for the DS-Client database when using any feature that requires a local storage path.

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8. (Linux DS-Client only) Under **Instant Recovery Storage Options**, specify the location where the instant recovery backup set data will be saved.

NOTE: You must configure a ZFS storage volume located on a remote FreeBSD device that is accessible by the DS-Client. The DS-Client must be able to mount the ZFS storage volume via NFS.

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a) In the **ZFS mount path** box, specify the path on the remote machine where the ZFS storage volume is mounted.

b) In the **IP/DNS** box, type the IP address or DNS name of the ZFS storage volume. Do not use the local loopback (127.0.0.1).

c) In the **User name** box, type the user name that DS-Client will use to access the ZFS storage volume.

d) In the **Password** box, type the password for the user credentials.

e) Beside the **ZFS volume name** box, click the [...] button to choose the ZFS storage volume. This is the location where all the instant recovery backup set data will be stored.

NOTE: You must update the `/etc/rc.conf` file on the remote FreeBSD device with the following line: `mountd_flags="-rS"`

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9. Click **OK**.

3.1.6 Configuring the DS-System connection settings

You can configure the settings used by DS-Client to connect with the DS-System. The initial settings are made during the first connection to DS-Client. Your service provider will supply you with the addresses you must use.

NOTE: There can only be one primary connection. All other entries in the DS-System connection setup list are alternate methods to connect in case the primary connection fails. DS-Client will return to the primary connection based on the **RetryPrimary** parameter in the DS-Client Advanced Configurations.

To configure the DS-System connection settings:

1. On the **Setup** menu, click **Configuration**. The **DS-Client Configuration** dialog box appears.
2. Click the **Connections** tab.

   F1 Help: DS-Client Configuration Connections Tab
3. To configure a DS-System connection, do the following:

   a) Do one of the following:

   - To add a new connection, click **Add**.
   - To modify an existing connection, select the connection, and then click **Modify**.

   F1 Help: Add / Modify DS-System connection entry

   b) Under **DS-System connection entry**, click **Add** or **Modify** to add or modify an IP range. Repeat for as many addresses as required.

   F1 Help: Add / Modify address

   c) Under **Pre/Post**, specify the commands and options to configure each DS-System connection entry to perform pre and post commands. This is helpful in some network situations, like dealing with firewalls.

   d) Click **OK**.

   e) To test the connection, click **Test**.
4. To configure DS-Client to use a proxy server to access the Internet when connecting to the DS-NOC or a cloud site, do the following:

   a) Under **Internet Connection Setup**, click **Proxy Server**. The **Proxy Server Settings** dialog box appears.

   F1 Help: Proxy Server Settings

   b) Under **Proxy Server Settings**, select one of the following options:

- **No proxy** – DS-Client connects directly to the DS-NOC or cloud site. The protocol (HTTP or HTTPS) will be automatically selected based on the DS-NOC address provided by DS-System. IMAP is used for email server backups.
- **Auto-detect proxy settings for this network** – DS-Client automatically detects the proxy server.
- **Manual proxy configuration** – You must manually type the proxy server address. Separate proxy servers can be configured for the HTTP, HTTPS, and IMAP protocols, or a single proxy server can be used for all protocols. The standard port used for HTTP connections is 80, for HTTPS connections is 443, and for IMAP connections is 143.
- **Automatic proxy configuration URL** – You must manually type a URL to a PAC (Proxy Auto Configure) file accessible to the DS-Client. The DS-Client obtains the proxy server address and port number to use from this file. Type the full URL starting with "`http://`". This is useful if you have multiple DS-Clients and want to change the proxy server address without reconfiguring each DS-Client.

NOTE: With the exception of the **No proxy** option, if DS-Client fails to find the correct proxy server, it will try to connect to DS-NOC or the cloud site directly. For DS-NOC connections, the protocol (HTTP/HTTPS) will be automatically selected based on the address provided by DS-System. For cloud site connections, the protocol (HTTP/HTTPS/IMAP) will be selected automatically as required.

c) If the proxy server requires authentication, select the **Server requires authentication** check box, and then type the user name and password.

d) Click **OK**.

5. Click **OK**.

3.1.7 Configuring the user and group settings

You can configure the DS-Client user and group settings. Each user that you configure in DS-Client must share an identical name with the equivalent user account created on the DS-Client machine. You do not need to create user groups in DS-Client because groups in DS-Client are automatically generated based on existing user groups on the DS-Client machine. Each time a user attempts to log on to the DS-Client, the account will be checked against the roles. When more than one role applies, the role with the greater rights will apply.

NOTE: Standalone PC users should connect to their DS-Client as local Administrators (or a user with administrator privileges).

The following table describes the DS-Client roles can be assigned to users and groups. Each type of user has rights to perform particular tasks.

NOTE: The right to perform a task is different from the permission to access a particular backup set. For users with the Regular User Role, even if you have the right to perform a task, you must also have permission to the backup set in question. By default, only the creator / owner and administrators have permissions to a backup set. For more information on individual backup set permissions, see Section 7.13, “Changing the permissions of a backup set”, on page 325.

DS-Client Role	Description
Regular User	Regular users have the following rights on DS-Client: • Create File System backup sets • Create special backup sets • View the list of backup sets (to which they have permission) • Modify backup sets (Items, Options, Advanced Options, Set Info, Schedule, Share, Retention, Connection, etc.) • Backup a set on demand • Restore backup sets • Restore from a Disc/Tape • Request BLM and Restore from a BLM Restorable Image • Remove backup sets • Selective Delete of backed up files from Online storage • Enforce Retention on a backup set • Suspend/Activate backup sets • Synchronize backup sets • Clone backup sets • Migrate backup sets • View and print reports (except for Backup Groups, Load Summary and Storage Summary) • View Quotas • View the Activity Log • View the Event Log (from Activity Log or Current Activity Monitor only) • Convert Local-Only backup sets to online backup sets • View the DS-Client Info (Help Menu)

Table 1 DS-Client roles

DS-Client Role	Description
Backup Operator	For Windows DS-Clients, the local Windows Backup Operators group is assigned to this role by default. Backup Operators have all the rights of Regular Users in addition to the following: • View the list of all backup sets • Perform a Demand Backup on all backup sets • Specify Notification options • Synchronize all backup sets • Create Initial backup sets • Perform a BLM Request for all backup sets • Create and modify Backup Schedules • View the Backup Groups Report • View the Load Summary • View the Storage Summary • Recover orphaned backup sets • Use the System Status utility • Send messages to connected users • Disconnect users from the DS-Client • Initiate Daily or Weekly Admin. Process runs on demand • Disable/Enable Scheduled Activities • Disable/Enable Demand Activities • View the Audit Trail • View the Event Log • View the DS-Client Configuration • Clean Local-Only Trash • View DS-NOC Settings & set DS-NOC Proxy Server Settings

Table 1 DS-Client roles

DS-Client Role	Description
Administrator	For Linux/Mac DS-Clients, this role includes the local root user (you cannot remove this user from the Administrator role). For Windows DS-Clients, the local Windows Administrators group is assigned to this role by default (you cannot remove this group from the Administrator role). Administrators have all the functions and rights of Backup Operators as well as the following: • Full access to all DS-User tools and features. • Ability to view information on all activities recorded in DS-Client logs. • Full access (backup, restore, delete, migrate, permissions, etc.) to all backup sets • Request a Disc/Tape • Set and change user and group access rights to backup sets: • Set Maximum Online Amount for Users and/or Groups • View Users belonging to a Group and/or Groups to which a User belongs • Change backup set owner • Re-register the DS-Client with the DS-System (coordinated with your service provider) • Repair the DS-Client Database (disaster recovery) • Shut Down the DS-Client computer • Change DS-Client default configurations • Add / remove permissions for a backup set to other users and groups • Perform Validation • Migrate the backup share/path of your backup set to a different share/path • LAN Discovery • LAN Unprotected Resource Discovery • DS-Client and Encryption Setup • Notification Setup • Connections (to DS-System) • Roles • Bandwidth Throttle • System Activities Administration • Export to XML • Event Filter

Table 1 DS-Client roles

To configure the user and group settings:

1. On the **Setup** menu, click **Configuration**. The **DS-Client Configuration** dialog box appears.
2. Click the **Roles** tab.

   F1 Help: DS-Client Configuration Roles Tab
3. To configure a new user or group, do the following:

   a) Do one of the following:

   - To add a new user or group, click **Add**.
   - To modify an existing user or group, select the user or group, and then click **Modify**.

   F1 Help: New / Edit User / Group Role

b) In the **User Name** or **Group Name** box, type a name for the user or group.

c) In the **From** box, select the computer or domain from where DS-Client will verify the credentials of the user or group.

d) In the **DS-Client Role** box, select the role for the user or group.

e) Click **OK**.

4. Click **OK**.

NOTE: After you have configured a user, the user is not displayed in the Users & Groups dialog box until the user has logged on to DS-Client at least once. A user group is not displayed in the Users & Groups dialog box until at least one user in the group has logged on to DS-Client at least once.

3.1.8 Configuring the advanced settings

By default, DS-Client is optimized for maximum performance under most conditions. For users who have expert knowledge in managing their backup data, advanced configurations are available for further performance improvement.

IMPORTANT: The default settings are sufficient to run any DS-Client. If you change any of these parameters, the DS-Client's performance will be changed significantly. Do not attempt to change these settings unless you have a specific requirement and have confirmed this with your service provider.

NOTE: When a Grid DS-Client is used, some parameters can be applied to an individual leaf node or applied globally to all the leaf nodes of the Grid DS-Client. All Windows DS-Client parameters listed in the tables below are applied globally unless otherwise specified in the description.

To configure the advanced settings:

1. On the **Setup** menu, click **Configuration**. The **DS-Client Configuration** dialog box appears.
2. Click the **Advanced** tab.

   F1 Help: DS-Client Configuration Advanced Tab
3. You can select a category and then a parameter from the drop down lists and modify the parameter's value in the **Value** box.

A brief explanation of the currently selected parameter (or the default parameter) is displayed in the **Description** box. The parameters that are available depend on if the DS-Client is running on Windows or Linux/Mac.

IMPORTANT: Depending on the parameter modified, you might need to restart the DS-Client service for the changes to take effect.

4. To save the modifications you have made to a parameter, click **Apply**.
5. To save the most recent changes and close the dialog box, click **OK**.

To view a description of the advanced parameters and their settings, see the following sections:

Section 3.1.8.1, “Admin parameters (Windows)”, on page 34

Section 3.1.8.2, “Admin parameters (Linux or Mac)”, on page 35

Section 3.1.8.3, “API connectivity parameters (Linux or Mac)”, on page 35

Section 3.1.8.4, “Communication parameters (Windows)”, on page 36

Section 3.1.8.5, “Installation parameters (Windows)”, on page 38

Section 3.1.8.6, “Miscellaneous parameters (Windows)”, on page 38

Section 3.1.8.7, “Miscellaneous parameters (Linux or Mac)”, on page 49

Section 3.1.8.8, “Notification parameters (Windows)”, on page 52

Section 3.1.8.9, “Notification parameters (Linux or Mac)”, on page 54

Section 3.1.8.10, “Performance parameters (Windows)”, on page 55

Section 3.1.8.11, “Performance parameters (Linux or Mac)”, on page 59

Section 3.1.8.12, “Local Setting parameters (Windows)”, on page 61

3.1.8.1 Admin parameters (Windows)

Parameter	Description
AdminNoSyncInterval	Interval (in weeks) that the Weekly Admin to not synchronize backup sets that have only internal inconsistencies. • Default: 0 • Range: 0-12
AdminSkipSync	Skips the synchronization of backup sets during the Weekly Admin if no database inconsistencies are detected. • Yes = On (Default) • No = Off

Parameter	Description
AdminSyncOrder	Order in which the backup sets will be synchronized during the Weekly Admin process. • Smaller sets first • Bigger sets first (Default) • No specific order enforced
AdminThreads	Maximum number of synchronization threads during the Weekly Admin process. • Default: 1 • Range: 1 to 8
DSCDBDumpPath	Dump path for the DS-Client database during administrative activities (Daily Admin / Weekly Admin). This path can be local or a UNC path. UNC is recommended for Grid DS-Clients.

3.1.8.2 Admin parameters (Linux or Mac)

Parameter	Description
AutoSync Order	Order in which backup sets will be synchronized during the Weekly Admin based on the estimated synchronization time: • small backup sets first • synchronize according to backup set ID • big backup sets first - DEFAULT (Default)
Max AutoSync Number	Maximum number of synchronization activities that can run simultaneously during a scheduled Weekly Admin process. • Default: 1 • Range: 1-8
Skip WeeklyAdmin Sync	Skips the synchronization of backup sets during the scheduled Weekly Admin if no database inconsistencies are detected: • Yes = On (Default) • No = Off
System Port	TCP/IP port the DS-Client uses to connect to DS-System. You can configure multiple ports by separating entires with a space, comma, semi-colon or pipe (|). • Default: 4401 • Range: 1-65535 Note: You should not change this setting unless instructed to by your service provider.

3.1.8.3 API connectivity parameters (Linux or Mac)

Parameter	Description
API Listen IP	IP address the DS-Client uses to listen for API connections. Use `0.0.0.0` to listen on all interfaces.
API Key File	SSL certificate/key file to use for the API server. This should be in PEM format. • Default: /opt/CloudBackup/DS-Client/etc/api.pem

Parameter	Description
API Key Password	Password for the SSL certificate/key file. Enter a valid password for the SSL certificate/key file specified in the **API Key File** parameter.
API Log File	File where the API server writes log messages and events. You can use any valid file name.
API Log Level	Level of logging to write to the API server log file. • warning (Default) • debug • info • error • fatal
API Port	Port on which DS-Client listens for API connections. • Default: 4411

3.1.8.4 Communication parameters (Windows)

Parameter	Description
CommunicationMethodDSS	Low-level communication method between DS-Client and DS-System. • 2 = Network packets are encrypted on top of existing data encryption. This is slowest. (Default) • 1 = Same as method 0 with a different implementation for trouble-shooting purposes only. • 0 = Network packets are not encrypted. This is fastest.
CommunicationMethodMLR	Low-level communication method between DS-Client and DS-MLR / DS-Recovery Tools. • 2 = Network packets are encrypted on top of existing data encryption. This is slowest. (Default) • 1 = Same as method 0 with a different implementation for trouble-shooting purposes only. • 0 = Network packets are not encrypted. This is fastest.
DSSystemAlternatePort	Alternate port with which to connect to DS-System if DS-Client fails to connect to DS-System on the default port (4401). • Default: 0 Note: A value of 0 means there is no alternate port.
HessianAPIListenIP	IP address the DS-Client uses to listen for Hessian API connections. Use `0.0.0.0` to listen on all interfaces. **Note:** This parameter requires the DS-Client to restart before taking effect.
HessianAPIListenPort	Port on which DS-Client listens for Hessian API connections. • Default: 4411 **Note:** This parameter requires the DS-Client to restart before taking effect.

Parameter	Description
HessianAPILogFile	File where the Hessian API server writes log messages and events. You can use any valid file name. **Note:** This parameter requires the DS-Client to restart before taking effect.
HessianApiLogLevel	Level of logging to write to the Hessian API server log file. • warning (Default) • debug • info • error • fatal **Note:** This parameter requires the DS-Client to restart before taking effect.
HessianApiSSLFile	SSL certificate/key file to use for the Hessian API server. This should be in PEM format. • Default: C:\Program Files\CloudBackup\DS-Client\api.pem **Note:** This parameter requires the DS-Client to restart before taking effect.
HessianApiSSLPassword	Password for the SSL certificate/key file. Enter a valid password for the SSL certificate/key file specified in the **HessianApiSSLFile** parameter. **Note:** This parameter requires the DS-Client to restart before taking effect.
LaptopCheckInterval	Interval at which DS-Client checks the network connection for schedules configured with the **DS-Client on portable computer (verify network connection)** option.
MaxQueuedMessages	Maximum number of queued messages during communication with DS-System. • Default: 128 • Range: 1-2048
MinApiMsgTimeout	The minimum (in minutes) timeout period for API messages. Increase this parameter if you encounter a large amount of "`Timeout on receive message`" errors. • Default: 10 • Range: 10-14400
RetryPrimary	How often (in hours) to retry the primary DS-System connection after switching to a secondary connection. A value of -1 means "never retry", and a value of 0 means "retry immediately". • Default: 24 • Range: -1 to 240
TcpSocketBuffer	Internal socket buffer size (in Bytes). This value is used if it is bigger than the default. • Default: 34752 **Note:** For Grid DS-Clients, this parameter can be applied globally or to individual leaf nodes.

Parameter	Description
VSSKeepAliveTimeout	Timeout period (in seconds) for DS-Client to receive a response for a VSS (Volume Shadow Copy) operation. The VSS operation fails after the timeout period. • Default: 300 • Range: 60 to 3600

3.1.8.5 Installation parameters (Windows)

Parameter	Description
DS-UserAutoUpgrade	Which DS-User auto-upgrade packages the DS-Client downloads from DS-System (if they are available). • Disabled: DS-User auto-upgrade packages are not automatically downloaded from the DS-System. • Cross-PlatformDS-UserAutoUpgrade: DS-Client downloads all DS-User auto-upgrade packages that exist on the DS-System to the DS-Client directory during Daily Admin or Weekly Admin. • CompatibleDS-User AutoUpgrade: DS-Client downloads only the DS-User upgrade packages that are compatible with the operating system of the DS-Client.
SystemFiles	A list of file names that Windows DS-Client skips from backup. It is an alphanumeric text string of file names, each separated by **\;** (a backslash followed by a semi-colon). The end of the string is indicated by a second **\;** as in the following example of the default list: `system.da0\;user.da0\;pagefile.sys\;win386.swp\;backout.tts\;btrieve.trn\;net$obj.sys\;net$val.sys\;net$prop.sys\;\;` **Note**: Each Windows computer can have additional files configured to be skipped in the local registry key "`HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\BackupRestore\FilesNotToBackup`". DS-Client will skip these files when encountered during backup of regular shares or drives, but not for System State or Services Database items.

3.1.8.6 Miscellaneous parameters (Windows)

Parameter	Description
AllowAutoConfig	Allows DS-Client to apply auto-configuration from the file `config-update.xml`. • Yes = On (Default) • No = Off

Parameter	Description
AllowAutoUpgrade	Allows auto-upgrade of DS-Client from DS-System when the versions do not match. • Yes = On (Default) • No = Off
AllowLocal	If set to **Yes**, it allows execution of local commands during Pre/Post activities. You must be an administrator and have this option enabled to enable the Pre/Post activities. If this parameter is changed, it takes effect next time the DS-User connects to DS-Client Service. • No = Off (Default) • Yes = On
AllowScheduledBackupCheckSignature	Configures scheduled backups to use the **Verify signature for unchanged files** feature. By default, this option is turned off. If this parameter is set to **Yes**, scheduled backups will verify the signatures of unchanged files on the backup source. **Note:** Turning this option on can have significant implications on the performance of the DS-Client. • No = Off (Default) • Yes = On
BrowseCheckSQLInstances	Detects Microsoft SQL Server instances when browsing domains and workgroups. • No = Off (Default) • Yes = On
DBQueryDefaultTimeout	Sets the default database query timeout (in seconds). A value of 0 means unlimited timeout. • Default: 500 • Range: 0 to 65535
DBQueryTimeout	Sets the longest database query timeout period (in hours). This only applies to time consuming database queries known by the DS-Client. If the database query takes longer than this value, it is aborted by the DS-Client. A value of 0 means unlimited timeout. • Default: 18 • Range: 0 to 19

Parameter	Description
DebugMessage	Sets the detail level of error messages reported in the DS-Client event log. • 0 = Standard level of error-message reporting. (Default) • 1 = Additional detailed log information is reported, such as database errors that are appended with the SQL statement. • 2 (or any higher number) = Same behavior as "1", with additional debug information in a DS-Client debug log file (`dsclient.exe.dbg.log` located in the DS-Client installation directory). This option is meant for debug situations only. **Note:** For Grid DS-Clients, this parameter can be applied globally or to individual leaf nodes.
DefaultLocalTrashKeepDays	Default period (in days) to keep data in the Local-Only trash. This applies to all of the DS-Client's Local-Only paths. • Default: 7 • Range: 1-999
ExchangeOnlineBackupBatchSize	Maximum number of items that a batch should contain during backup of Cloud (Microsoft Office 365) Exchange and Microsoft Exchange Server EWS backup sets. • Default: 32 • Range: 1-40 When set to 1, DS-Client downloads data from the source one item at a time. When set to 2 or greater, batch downloading is enabled, and DS-Client downloads data one batch at a time from the source as soon as one of the following occurs: • DS-Client has filled up a batch to the number of items specified by this parameter. • DS-Client is timed out of the duration specified in the parameter **ExchangeOnlineBackupBatchTimeout** when DS-Client is unable to fill up a batch fully. This can happen when there are not enough items remaining to back up on the source.
ExchangeOnlineBackupBatchTimeout	Wait time (in seconds) before DS-Client must download a batch from a Cloud source during the backup of Exchange data for Cloud (Microsoft Office 365) and Microsoft Exchange Server EWS backup sets. • Default: 60 • Range: 0-3600

Parameter	Description
ExchangeOnlineBackupExtendedMetadata	Backup from the Cloud (Microsoft Office 365) Exchange backup sets will include the extended metadata (“To”, “From”, “Cc”, “Bcc”) to be able to search the item list on restore, delete, etc. If this is on, it will slow down the browse listing and the backup process. • No = Off (Default) • Yes = On
ExchangeOnlineEnableLogs	Activates logging for the Exchange Online plug-in (Microsoft Office 365 backup sets). The default path is: `<DS-Client Installation Path>\asigra_pluginlog` • No = Off (Default) • Yes = On
ExchangeOnlineExcludeGroupMailboxes	DS-Client verifies each mailbox on listing to prevent display of Exchange Online group mailboxes. Group mailboxes are invalid backup items that will cause errors during backup if included in a Backup from the Cloud (Microsoft Office 365) Exchange backup set. If on, the listing can be considerably slower because DS-Client must verify each mailbox before displaying the filtered result. • No = Off (Default) • Yes = On
ExchangeOnlineFilterListingBySet	When on, this improves the performance of incremental backups for Cloud (Microsoft Office 365) and Microsoft Exchange Server EWS backup sets by using the last successful backup date and time as the backup filter instead of the last modified date and time of an individual item. To back up items that have been created or modified before the last successful backup (for example, after you have performed a selective delete), turn this parameter off. • No = Off (Default) • Yes = On
ExchangeOnlineListingPageSize	Number of items per listing page for Cloud (Microsoft Office 365) and Microsoft Exchange Server EWS backup sets. • Default: 1000 • Range: 100-1000

Parameter	Description
ExchangeOnlineOutlookConnectionTimeout	Timeout (in seconds) for the DS-Client's connection attempt to Microsoft Outlook. This applies during a restore activity that archives Microsoft Exchange data to a PST file on the DS-Client local disk. It applies only to Backup from the Cloud (Microsoft Office 365) and Microsoft Exchange Server EWS backup sets. • Default: 120 • Range: 1-600
ForceBackupCheckSignature	Forces all applicable backup sets to check signature for unchanged files. The check will be performed once during the next backup of each backup set. This setting applies only once. This means, as soon as you select **Yes** and apply, it will immediately take effect and the value is changed to **No** again. • No = Off (Default) • Yes = On
GAppsBackupExtendedMetadata	Backup G Suite extended metadata for item list filtering. If yes, this can increase backup time significantly. • No = Off (Default) • Yes = On
GAppsBackupReadTimeout	Minimum timeout (in seconds) for backup read requests. • Default: 1 • Range: 0-4
GAppsMaxJavaPluginThreads	Maximum number of threads for the G Suite plug-in. • Default: 64 • Range: 0-2,147,483,647
GAppsPartialDownload	Downloads large G Suite drive files in smaller 1MB blocks to reduce memory usage on DS-Client. If **ON**, the trade-off is 2-3 times slower performance than if this parameter off. • No = Off (Default) • Yes = On
GAppsRequestRetry	If one G Suite item fails to be backed up or restored, how many times to retry. • Default: 7 • Range: 0-9
GAppsRestoreCompleteTimeout	Minimum timeout for restore of any single G Suite item. (Increases automatically for files over 100MB.) • Default: 300 (seconds) • Range: 0-3600

Parameter	Description
InstantRecoverySyncCheckingInterval	After performing an instant recovery, DS-Client waits this amount of time (in minutes) before performing an internal synchronization of data in the backup set's instant recovery folder. This is also the delay time before retrying if the Instant Recovery Synchronization process fails or is interrupted. • Default: 30 • Range: 1-1440
InstantRecoverySyncRetryTimes	Number of times the Windows DS-Client attempts an Instant Recovery Synchronization based on the InstantRecoverySyncCheckingInterval parameter. • Default: 10 • Range: 0-1000
LocalDriveAllowed	This parameter value will configure the Local Drive Filter Flag for backup. This controls the drives available for backup in the New Backup Set Wizard (applicable only to File system & Permissions only backup sets). The decimal value is converted to binary to determine if a drive is allowed (1 means allowed, 0 means disabled). For example, to allow selection of only drives 'C' and 'E', use the value '20'. `... . . . . 2 0` [decimal value] `... . 1 0 1 0 0` [binary] `... F E D C B A` [drive letter map] The binary representation of "20" matches bit0 for 'A:' disabled, bit1 for 'B:' disabled, bit2 on - 'C:' allowed, etc. • Default: -1 A value of -1 allows all the available local drives. **Note:** For Grid DS-Client, this parameter has no effect.
LogArchivePath	Path where detailed logs of DS-Client activities are stored as text files. Each backup set has its own numbered sub-folder. • Default: `<DS-Client installation folder>\asigra_archivlog` Any path where the DS-Client can write data is valid. **Note:** For Grid DS-Clients, enter a UNC path that is accessible from all nodes of the Grid. Doing so ensures that all detailed logs are located in a common and accessible location.

Parameter	Description
MaxErrors	Sets the default "`Stop on errors`" value that appears when you create a new backup set (in the New Backup Set Wizard's Options Tab). • Default: 0 (no limit) • Range: 0 to 9999
MaxNonFullDumps	For all backup sets that define a database backup policy in the Set Properties > Options tab. For more information on Database Backup Policy options, see the Knowledge Base article in Section 15.4, "Backup / restore of Microsoft SQL Server (all versions)", on page 511. Default maximum number of times a full dump of the database can be skipped in favor of a differential or incremental dump. Once this number is reached, the next backup forces a full dump of the database. • Default: 120 • Range: 2 to 1000
Multi-Tenant	Enables the Multi-Tenant feature. • No = Off (Default) • Yes = On
Office365RequestRetry	Maximum number of retries when backing up or restoring Exchange or SharePoint data in a Cloud (Microsoft Office 365) backup set. • Default: 9 • Range: 0-20
Office365RequestTimeout	API request timeout duration (in seconds) for Backup from the Cloud (Microsoft Office 365) backup sets. • Default: 600 • Range: 0-3,600
PluginLogKeepDays	How many days to keep the Java plug-in log files for "Backup from the Cloud" backup sets (Salesforce.com, G Suite, and Microsoft Office 365). • Default: 7 • Range: 1-9999
ReadOnlyUpgradeInterval	Interval (in minutes) at which DS-Client checks for an upgrade package from DS-System if it is running in "Read-Only" (Stand By) mode (no backup or restore allowed). • Default: 5 • Range: 1-60
RemoteExecutionTimeout	Timeout period (in minutes) for Remote Command Execution during Pre/Post activities. • Default: 60 • Range: 1 to 1440

Parameter	Description
RestoreTargetProvision	Path where the DS-Client can access the integration DLL file for automatic restore target provisioning. • Default: None **Note:** This parameter requires the DS-Client to restart before taking effect.
ScheduleMiss	Number of hours after the start time of a missed schedule, that DS-Client continues to attempt to trigger it. For example, if set to 6 and a schedule from 12:00 PM to 20:00 PM is missed, the schedule will still be triggered as long as it is within 6 hours after the scheduled start time and before the scheduled end time. • Default: 6 • Range: 1 to 16
SecurityDll	Path to a third-party security DLL to secure the communication. • Default: None **Note:** For Grid DS-Clients, this parameter can be applied globally or to individual leaf nodes.
SharePointOnlineBackupBatchSize	Maximum number of items that a batch should contain during backup of SharePoint data for Cloud (Microsoft Office 365) backup sets. • Default: 1 • Range: 1 to 10 When set to 1, DS-Client downloads data from the source one item at a time. When set to 2 or greater, DS-Client downloads data one batch at a time from the source as soon as one of the following occurs: • DS-Client has filled up a batch to the number of items specified by this parameter. • DS-Client is timed out of the duration specified in the parameter **SharePointOnlineBackupBatchTimeout** when DS-Client is unable to fill up a batch fully. This can occur when the remaining number of items to be backed up on the source does not exceed the number specified in this parameter.
SharePointOnlineBackupBatchTimeout	Timeout (in minutes) when downloading by batch from a cloud source during backup of SharePoint data for Cloud (Microsoft Office 365) backup sets. • Default: 720 • Range: 1 to 1440

Parameter	Description
SharePointOnlineLargeFileRestoreThreshold	Configures the chunk size in MB for SharePoint Online uploads for Backup from the Cloud (Microsoft Office 365) backup sets. Files smaller than this value are uploaded whole. • Default: 8 • Range: 1-2000
ShowPOSIX	Displays the **Backup as POSIX** check box in the New Backup Set Wizard (for File System & Permissions Only backup sets). You can only select this option when creating a backup set. It cannot be configured from backup set properties. • No = Off (Default) • Yes = On
SQLKeepDumpFile	Keeps Microsoft SQL Server backup set database dumps in the dump location after backup. This only applies to the 'classic' Microsoft SQL Server backup set (not the VSS-aware version). • No = Off (Default) — Dump is deleted after backup has finished. • Yes = On — Dump is kept in the dump location. It will be overwritten during the next backup of that set. Note the storage implications, since this affects all Microsoft SQL Server backup sets created on the DS-Client.
StopOnRetrieveLSNFailed	For Microsoft SQL Server (VSS-aware) backup sets. Stops a differential backup if it failed to retrieve the LSN (Log Sequence Number) information of the previous full backup. • Yes = On (Default) • No = Off
VMReplicationOpenListingTimeOut	Timeout (in seconds) for listing the vCenter Server destination folders when you create a VM replication set. • Default: 300 • Range: 0-3600
VMRExternalIP	Allows you to specify an external IP address to use to communicate with replication services on machines that are outside of the network domain. • Default: None — Uses the internal IP address to communicate with replication services on machines on the same network domain.

Parameter	Description
VMRServiceStart	Start the VM Replication Service when DS-Client starts. • Yes = On (Default) — You can create new VM replication sets and run replication as long as DS-Client has sufficient VM Replication Capacity. • No = Off — The category DS-Client replication sets is hidden in the New Backup Set Wizard, and existing replication sets are inaccessible.
VMRSourcePort	This parameter allows you to specify the port used by a DS-Client for VM replication processes. Ensure that this value matches the network configuration for the DS-Client. This parameter is equivalent to the source DS-Client port number in DS-Operator. Changes made to this value through either DS-User or DS-Operator are synchronized and will be shown in both interfaces. • Default: 8090 **Note:** This parameter requires the DS-Client to restart before taking effect.
VMwareVADPBackupValidateSignature	Forces all VMware VADP backup sets that have Changed Block Tracking (CBT) enabled to validate the disk signature of a protected virtual machine after a specified number of backups. The interval count starts from the first backup after the setting is enabled. If a disk signature mismatch is detected, a master generation is sent to the DS-System for the affected virtual disk (vmdk). Verification consumes more system resources and increases the backup time, especially if the signature verification fails and requires backup of a new master. • -1 = Disables disk signature validation for all affected backup sets. • 0 (Default) = Uses the disk signature validation setting configured for each backup set. • 1 = Validates the disk signature after every backup for all affected backup sets. • 2 to 100 = Validates the disk signature after the specified number of backups for all affected backup sets. **Note:** The disk signature validation setting will be reset to 0 each time the setting is applied to all affected backup sets.

Parameter	Description
VMwareVADPTransportMode	This applies to VMware VADP backup sets. It does not apply to VM replication sets (VMware). Transport mode that DS-Client requests from the VMware libraries when initializing a connection for data transfer to or from a data center. • Empty (Default) — The library automatically chooses the transport mode based on the VMware priorities among the available transport modes. • **nbd** — Network Block Device Transport Mode. • **nbdssl** — Network Block Device SSL Transport Mode. • **san** — SAN Transport Mode. • **hotadd** — HotAdd Transport Mode. For more information about the transport modes, see Section 6.18.4, “Using VMware transport libraries”, on page 270.
VSSContinueIfSnapshotCreatedWithWriterErrors	Continues a VSS-aware backup even if there are VSS writer errors, as long as the snapshot is successful. This only occurs after attempting all configured retries (VSSSnapshotRetries). • Yes = On (Default) • No = Off
VSSSnapshotRetries	DS-Client retries this number of times to create an ‘error-free’ snapshot during a VSS-aware backup. • Default: 3 • Range: 0-999, (0 means backup will fail if snapshot encounters VSS writer errors)
VSSSnapshotRetryInterval	The retry interval (in minutes) for VSS snapshot retries (VSSSnapshotRetries). • Default: 5 • Range: 1-99
VSSWaitSnapshotTimeout	Timeout (in seconds) to wait for VSS snapshot creation. A longer period can prevent backup failures if different backup sets need to perform VSS backups of a common volume at nearly the same time. (Only one VSS snapshot can be performed on a volume at a time. Since snapshots are fairly fast, a timeout of 5-15 minutes should ensure two different backups of the same volume can be successfully completed, even if they overlap.) • Default: 60 • Range: 1-3600

Parameter	Description
WaitConfirmation	Time (in seconds) that DS-Client waits for confirmation from DS-System if stopping a backup. • Default: 60 • Range: 0 to 3600

3.1.8.7 Miscellaneous parameters (Linux or Mac)

Parameter	Description
AllowAutoConfig	Allows DS-Client to apply auto-configuration from the file `config-update.xml`. • Yes = On (Default) • No = Off
Auto Upgrade	Allows auto-upgrade of DS-Client from DS-System when the versions do not match. • Yes = On (Default) • No = Off
Config Keep Days	Number of days to retain old copies of the DS-Client configuration file. • Default: 30 • Range: 1-99
DB2 Client Library Directory	[Linux DS-Clients only] Specify the DB2 client library directory on the DS-Client machine. Ensure that the dynamic library <`libdb2.so.1`> resides in this directory. **Note:** This parameter requires the DS-Client to restart before taking effect.
DefaultLocalTrashKeepDays	Period (in days) to keep data in the Local-Only trash. This applies to all Local-Only paths defined for the DS-Client. • Default: 7 • Range: 1-999
DS-UserAutoUpgrade	Determines which DS-User auto-upgrade packages the DS-Client will download from DS-System if they are available. • Default: **Compatible-Platform DS-User Auto-Upgrade**: DS-Client will only download the DS-User upgrade packages which are compatible with the operating system of the DS-Client. • **Disabled**: DS-User auto-upgrade packages will not be automatically downloaded from the DS-System. • **Cross-Platform DS-User Auto-Upgrade**: DS-Client will download all DS-User auto-upgrade packages that exist on the DS-System to the DS-Client directory during Daily Admin or Weekly Admin.
LogArchivePath	Path where detailed logs of DS-Client activities are stored as text files. Each backup set has its own numbered sub-folder. • Default: `<DS-Client installation folder>/asigra_archivelog` Any path where the DS-Client can write data is valid.

Parameter	Description
Multi-Tenant	Enables the Multi-Tenant feature. • No = Off (Default) • Yes = On
ReadOnlyUpgradeInterval	Interval (in minutes) at which DS-Client checks for an upgrade package from DS-System if it is running in "Read-Only" (Stand By) mode (no backup or restore allowed). • Default: 5 • Range: 1-32000
ScheduleMiss	This is the number of hours after the schedule start time that a missed schedule will still be triggered by the DS-Client. For example, if the value of this parameter is set to 6 and a schedule from 12:00 PM to 20:00 PM is missed, the schedule will still be triggered as long as it is within 6 hours after the scheduled start time and before the scheduled end time. • Default: 6 • Range: 1 to 16
Skip Compress	Skips compression on the following types of compressed files: lzop, zip, standard linux compression, gzip, bzip2, scocompress, bzip, jpeg, jfif, png, and gif. • Yes = On (Default) • No = Off **Note:** This parameter requires the DS-Client to restart before taking effect.
VMware Log Filter	[Linux DS-Clients only] This string specifies a filter in Perl regular expression format. A regex search operation is performed and only matching lines are printed to the `dsclient.out` log file. This filter does not apply to the `vmlibexe.out` file. • Default: . (dot, meaning log all) Each regex is a search 'for' that string, with all occurrences printed to the log file.
VMware Log Level	[Linux DS-Clients only, for debug purposes.] Varies the amount and type of logging information inside the following log files: • `dsclient.out` — Contains the VMware related log messages generated from the DS-Client. • `vmlibexec.out` — Contains the log messages DS-Client receives from the VMware libraries. From the lowest to the highest level of logging: • **none** (Default) = No logging • **error** = Log errors • **debug** = Debug logging • **warning** = Log warnings • **info** = Log information messages • **trace** = Trace (log everything)

Parameter	Description
VMware Path Escape	[Linux DS-Clients only] Determines how DS-Client handles VMware data paths. Since HTTP is used, URL paths can require 'path escaping' for special characters (meaning the use of '%26' instead of '&' in a URL path). • **auto** (Default) — DS-Client tries to determine what path format is required. • **no** — Never use 'escape characters' in paths. • **yes** — Always use 'escape characters' in paths. **Note:** This parameter requires the DS-Client to restart before taking effect.
VMware SOAP Debug	[Linux DS-Clients only, for debug purposes.] Writes trace logs of any SOAP requests to the `/tmp` folder on the DS-Client. • No = Off (Default) • Yes = On **Note:** This parameter requires the DS-Client to restart before taking effect.
VMware VADP TransportMode	This applies to VMware VADP backup sets. It does not apply to VM replication sets (VMware). Transport mode that DS-Client requests from the VMware libraries when initializing a connection for data transfer to or from a data center. • Empty (Default) — The library automatically chooses the transport mode based on the VMware priorities among the available transport modes. • **nbd** — Network Block Device Transport Mode. • **nbdssl** — Network Block Device SSL Transport Mode. • **san** — SAN Transport Mode. • **hotadd** — HotAdd Transport Mode. For more information about the transport modes, see Section 6.18.4, "Using VMware transport libraries", on page 270.

Parameter	Description
VMware VADP Verify Disk Signature	Forces all VMware VADP backup sets that have Changed Block Tracking (CBT) enabled to validate the disk signature of a protected virtual machine after a specified number of backups. The interval count starts from the first backup after the setting is enabled. If a disk signature mismatch is detected, a master generation is sent to the DS-System for the affected virtual disk (vmdk). Verification consumes more system resources and increases the backup time, especially if the signature verification fails and requires backup of a new master. • -1 = Disables disk signature validation for all affected backup sets. • 0 (Default) = Uses the disk signature validation setting configured for each backup set. • 1 = Validates the disk signature after every backup for all affected backup sets. • 2 to 100 = Validates the disk signature after the specified number of backups for all affected backup sets. **Note:** The disk signature validation setting will be reset to 0 each time the setting is applied to all affected backup sets.
VMware VixDiskLib Configfile Path	[Linux DS-Clients only] Path to the VMware Virtual Disk Library configuration file for VMware-VIX backup set type only. Configuring this parameter is necessary only if you want to define your own configuration file and specify different settings. Refer to the VMware documentation for the specific parameters and file format. • Default: blank — The default VMware Virtual Disk Library settings will be used. Any valid file name is a valid value. **Note:** This parameter requires the DS-Client to restart before taking effect.

3.1.8.8 Notification parameters (Windows)

Parameter	Description
DBEmergencyLevel	Note: This only applies if the DS-Client database is local. It is ignored if the database is remote. Emergency warning level for the available space on the disks where the DS-Client database resides. • Default: 500 (5%) • Range: 0-10000
DBReserveSpace	Note: This only applies if the DS-Client database is local. It is ignored if the database is remote. Configures the minimum amount of free space (in MB) reserved in the DS-Client database. Low space checking will not count this reserved space as free space. • Default: 100 • Range: 10 to 500

Parameter	Description
DBStopServiceLevel	Note: This only applies if the DS-Client database is local. It is ignored if the database is remote. Stop service level for the available space on the disks where the DS-Client database resides. • Default: 100 (1%) • Range: 0-10000
DBWarningLevel	Note: This only applies if the DS-Client database is local. It is ignored if the database is remote. Warning level for the available space on the disks where the DS-Client database resides. • Default: 1000 (10%) • Range: 0-10000
EmergencyFrequency	Configures the interval (in hours) at which regular **Low Local Storage Emergency Warning Notifications** will be issued by DS-Client. • Default: 1 • Range: 1 to 6
MemEmergencyFreq	Configures the interval (in hours) at which regular **Low Memory Emergency Warning Notifications** will be issued by DS-Client. • Default: 1 • Range: 1 to 6
MemEmergencyLevel	Configures the **Free Memory Emergency Level**. If the DS-Client free memory falls to a level equal to or below this level, DS-Client will start issuing **Low Memory Emergency Warning Notifications**. • Default: 20 (20%) • Range: 5 to 100
MemWarningFreq	Configures the interval (in hours) at which regular **Low Memory Warning Notifications** will be issued by DS-Client. • Default: 4 • Range: 1 to 24
MemWarningLevel	Configures the **Free Memory Warning Level**. If the DS-Client free memory falls to equal or below this level, DS-Client will start issuing **Low Memory Warning Notifications**. • Default: 30 (30%) • Range: 10 to 100
OLEmergencyLevel	Configures the **Emergency Warning Level** for DS-Client Local Storage root. If the DS-Client Local Storage free space falls to equal or below this level DS-Client will start issuing **Emergency Warning Notifications**. • Default: 30 (0.3%) • Range: 1 to 10,000
OLWarningLevel	Configures the **Warning Level** for DS-Client Local Storage root. If the DS-Client Local Storage free space falls equal or below this level DS-Client will start issuing warning notifications. • Default: 300 (3%) • Range: 1 to 10,000

Parameter	Description
WarningFrequency	Configures the interval (in hours) at which regular **Low Local Storage Warning Notifications** will be issued by DS-Client. • Default: 4 • Range: 1 to 24

3.1.8.9 Notification parameters (Linux or Mac)

Parameter	Description
Database Emergency Level	Emergency warning level for the available space on the disks where the DS-Client database resides. • Default: 500 (5%) • Range: 0-10000
Database Stop Level	Stop service level for the available space on the disks where the DS-Client database resides. • Default: 100 (1%) • Range: 0-10000
Database Warning Level	Warning level for the available space on the disks where the DS-Client database resides. • Default: 1000 (10%) • Range: 0-10000
Local Storage Emergency Level	Available space emergency warning level for local storage root. • Default: 30 (0.3%) • Range: 1-10000
Local Storage Warning Level	Available space warning level for local storage root. • Default: 300 (3%) • Range: 1-10000
Memory Emergency Level	Free memory emergency warning level. • Default: 20 (%) • Range: 5-100
Memory Warning Level	Free memory warning level. • Default: 30 (%) • Range: 10-100
PM Emergency Frequency	Emergency warning notification interval (in hours) when space is low (DS-Client database / Local Storage / Use Buffer / Memory). • Default: 1 • Range: 1-10
PM Warning Frequency	Warning notification interval (in hours) when space is low (DS-Client database / Local Storage / Use Buffer / Memory). • Default: 4 • Range: 4-10
Use Buffer Emergency Level	Available space emergency warning level for Use Buffer root. • Default: 30 (0.3%) • Range: 1-10000

Parameter	Description
Use Buffer Warning Level	Available space warning level for Use Buffer root. • Default: 300 (3%) • Range: 1-10000

3.1.8.10 Performance parameters (Windows)

Parameter	Description
BigMasterSize	During backup, DS-Client maintains additional meta-data for files larger than this size (in MB), until the new generation backs up to DS-System successfully. This overhead is balanced by the benefit of reducing the chance of re-sending the next generation as a master in case the backup experiences unexpected failures. • Default: 100 • Range: 1 to 102400
CacheSQLiteFile	Caches the SQLite database file to improve speed. • No = Off (Default) • Yes = On
DBBulkOptions	Configures one of the following database bulk insert options: • **Bulk inserts from files and memory allowed** (Default, recommended) • **Bulk inserts disabled** • **Bulk inserts from files allowed** • **Bulk inserts from memory allowed** The selection takes effect immediately.
DBConnections	How many database connections to create when the DS-Client service starts. • Default: 3 • Range: 1 to 16 **Notes:** • This parameter requires the DS-Client to restart before taking effect. • For Grid DS-Clients, this parameter can be applied globally or to individual leaf nodes.
DBSerializableRepeats	Number of times DS-Client will retry a PostgreSQL serializable transaction if it fails. • Default: 10 • Range: 0 to 20
DefaultCompression	Configures ZLIB compression level: • Default: 6 • Range: 0-9 0 = no compression (faster) 9 = maximum compression (slower)

Parameter	Description
DeltaThreads	Number of delta threads per backup thread. • Default: 1 • Range: 0 to 16 0 = Delta backup is singled threaded. 1 = A single thread does compression / encryption, but it is separated from I/O thread. > 1 = Delta process is multi-threaded. **Note:** For Grid DS-Clients, this parameter can be applied globally or to individual leaf nodes.
DeltaThreadsFS	Number of delta threads for file system backups. If you only back up big files, increasing this can improve speed. For backup of small files, the default is usually sufficient. • Default: 1 • Range: 0 to 16 **Note:** For Grid DS-Clients, this parameter can be applied globally or to individual leaf nodes.
DSClientPerformCopyFromSnapshot	For Microsoft SQL Server (VSS-aware) backup sets with Nimble Storage integration. How the data copy from the snapshot is triggered. • Yes (Default) — The copying of the data is triggered remotely by DS-Client. • No — The copying of the data is triggered locally by the VSS requester.
EncryptedLocalData	Encrypt the data saved in the Local Storage for Local Storage backup sets and Local-Only backup sets using the DS-Client's Private Key. • No = Off (Default) • Yes = On
ExchangeOnlineRestoreBatchSize	Configure buffering when DS-Client restores Exchange data for Cloud (Microsoft Office 365) or Microsoft Exchange Server EWS backup sets to a Cloud destination. • Default: 100 • Range: 1 to 1000 To specify the maximum number of items that can be cached to buffer, enter a value between 1 and 1000. When this parameter is set to 1, DS-Client will upload data one item at a time to the Cloud destination. When this parameter is set to 2 or greater, buffering is enabled. DS-Client will cache the data to buffer up to the number of items specified in this parameter and then upload the data to the Cloud destination.
FileReadBufferSize	The internal buffer size (in KB) allocated for reading a file during the backup process. • Default: 64 • Range: 16 to 65,536

Parameter	Description
MasterGenerations	Generates a full master file on DS-System after this number of generations. Used with the **SendFullMaster** parameter. • Default: 10 • Range: 1 to 25
MaxCacheCopySessions	Maximum concurrent activities supported by DS-Client. Increase if hardware can support additional processing. • Default: 12 • Range: 1 to 99 **Note:** For Grid DS-Clients, this parameter can be applied globally or to individual leaf nodes.
MaxDeltaSize	Maximum file size (in GB) for delta algorithm to apply. The bigger the size, the more memory that is needed for delta processing. • Default: 1048576 • Range: 1 to 1048576
MaxPendingIOPerFile	Maximum pending I/O requests for backup or restore of a single file. Increasing this value can improve backup / restore speed if the target storage has very good parallelism (ability to perform simultaneous I/O requests). This option is for high performance environments where you can test the disk I/O. • Default: 2 • Range: 1 to 16 **Important**: Increasing this value too much can cause performance to slow.
MaxRestoreReadThreads	Maximum number of read threads on DS-System side for a restore process. • Default: 1 • Range: 1-16 **Note:** For Grid DS-Clients, this parameter can be applied globally or to individual leaf nodes.
MaxRestoreThreads	Maximum number of threads for a restore process. • Default: 4 • Range: 1 to 16 **Note:** For Grid DS-Clients, this parameter can be applied globally or to individual leaf nodes.
MaxSessionCheck	Determines when the **MaxSessions** parameter applies. • **Scheduled Activities Only** (Default) = The number of scheduled activities that are concurrently running cannot exceed the limit configured in **MaxSessions**. Users can perform on-demand activities beyond the limit. • **Scheduled and On-Demand Activities** = The number of scheduled and on-demand activities that are concurrently running cannot exceed the limit configured in **MaxSessions**.

Parameter	Description
MaxSessions	Maximum concurrent activities supported by DS-Client. Increase only if your hardware can support additional processing. For Grid DS-Clients, this parameter also refers to the Task Limit (On the Grid menu, point to Grid Status, and then click the List tab for each node). • Default: 12 • Range: 1 to 99 **Note:** For Grid DS-Clients, this parameter can be applied globally or to individual leaf nodes.
MaxThreads	Maximum number of threads for each backup activity. Increase only if your hardware can support additional processing. • Default: 4 • Range: 1 to 16 **Note:** For Grid DS-Clients, this parameter can be applied globally or to individual leaf nodes.
MaxThreadsMLR	Maximum number of threads for each DS-MLR backup activity. Increase only if your hardware can support additional processing. • Default: 4 • Range: 1 to 16 **Note:** For Grid DS-Clients, this parameter can be applied globally or to individual leaf nodes.
MinDeltaGen	The minimum number of online generations required to process files as deltas. • Default: 3 • Range: 2 or 3
MinDeltaSize	Minimum file size (in KB) for delta algorithm to apply. • Default: 64 • Range: 32 to 1048576
RestoreCacheBufferSize	Internal buffer size (in MB) for caching restore data. Increasing this value can improve the restore performance. • Default: 2 • Range: 1 to 1024
SalesforceExtractThreads	For Backup from the Cloud (Salesforce.com) backup sets only. Number of threads to use when extracting data from Salesforce.com. • Default: 4 • Range: 1-16
SalesforceRestoreSysTables	For Backup from the Cloud (Salesforce.com) backup sets only. Attempt to recover Salesforce system tables when performing restore. • No = Off (Default) • Yes = On

Parameter	Description
SalesforceUseBulkApi	For Backup from the Cloud (Salesforce.com) backup sets only. Use the Salesforce “BULK API” protocol to retrieve data. If off, records are read row-by-row, which can significantly increase the number of API calls used. • Yes = On (Default) • No = Off
SendFullMaster	Backups always send a full master (instead of an incremental delta). • No = Off (Default) • Yes = On
SkipCompressionOnCompressedFiles	Skips compression on the following types of compressed files: pk, zip, gif, png, Microsoft Cabinet Files, gzip, win, jpeg & jfif. • Yes = On (Default) • No = Off
SortMethod	Sort algorithm used to sort internal list. • Merge Sort (Default) • Quick Sort
SQLQueriesUseIndexHints	Applicable for SQL Server databases only. Use index hints in SQL queries to the DS-Client database. • No = Off (Default) • Yes = On
StatisticalCpuUsage	Limits the DS-Client's consumption of the computer's CPU during statistical backups to this percentage. • Default: 70 • Range: 0 to 100

3.1.8.11 Performance parameters (Linux or Mac)

Parameter	Description
Compression Level	Configures ZLIB compression level: • Default: 6 • Range: 0-9 0 = no compression (faster) 9 = maximum compression (slower)
EncryptedLocalData	Encrypt the data saved in the Local Storage for Local Storage backup sets and Local-Only backup sets using the DS-Client’s Private Key. • No = Off (Default) • Yes = On
Max DeltaSize	Maximum file size (in GB) for delta algorithm to apply. The bigger the size, the more memory that is needed for delta processing. • Default: 1048576 • Range: 1 to 1048576

Parameter	Description
MaxSession Check	Determines when the **MaxSessions** parameter applies. • **Scheduled Activities Only** (Default) = The number of scheduled activities that are concurrently running cannot exceed the limit configured in **MaxSessions**. Users can perform on-demand activities beyond the limit. • **Scheduled and On-Demand Activities** = The number of scheduled and on-demand activities that are concurrently running cannot exceed the limit configured in **MaxSessions**.
MaxSession Number	Maximum concurrent activities supported by DS-Client. Increase only if your hardware can support additional processing. • Default: 12 • Range: 1 to 99
MaxThread Number	Maximum number of threads for each backup activity. Increase only if your hardware can support additional processing. • Default: 2 • Range: 1 to 99 **Note:** This parameter requires the DS-Client to restart before taking effect.
Min DeltaSize	Minimum file size (in KB) for delta algorithm to apply. • Default: 64 • Range: 32 to 1048576
MinDeltaGen	The minimum number of online generations required to process files as deltas. • Default: 3 • Range: 2 or 3 **Note:** This parameter requires the DS-Client to restart before taking effect.
Restore Threads Count	Maximum number of threads for a restore process (VMware and File system backup sets only, not including NAS). • Default: 1 per CPU (core) up to 4 • Range: 1 to 16
RetryPrimary	How often (in hours) to retry the primary DS-System connection after switching to a secondary connection. • Default: 24 • Range: -1 to 24 -1 = never retry 0 = retry immediately
Scan Shares Vacuum Frequency	Interval (in minutes) before the Scan Shares activity will perform a database vacuum on the `dslanfiles` database. This only removes unnecessary data to make the database more compact. It does not affect the information gathered from the scan. • Default: 30 • Range: 1 to 240

3.1.8.12 Local Setting parameters (Windows)

Grid DS-Client Only - Local Setting (Windows DS-Client)	
Parameter	**Description / Values**
DSCBuffer	This parameter only appears when a Grid DS-Client is used and **Local Setting** is selected among the **Type** options. It allows you configure the DS-Client buffer path for an individual leaf node of the Grid DS-Client. Enter a local path on the selected leaf node. The DS-Client service account must have full privileges for the location. The global value for the DS-Client buffer is set in the DS-Client Configuration. For more information, see Section 3.1.5, “Configuring the parameter settings”, on page 25.

3.2 Configuring the initialization settings

The initialization settings can be configured in DS-User without logging on to a DS-Client. The settings apply only to this DS-User installation.

3.2.1 Configuring the DS-Client connection settings

You can specify an IP or DNS address where the DS-User will search for a DS-Client Service. This will speed up your logon process in large network environments. You can also configure DS-User to scan entire subnets.

NOTE: If you do not specify an IP or DNS address, DS-User scans the local computer and the local computer’s subnet.

To configure the DS-Client connection settings:

1. On the **Setup** menu, click **Initialization**. The **DS-User Initialization** dialog box appears.

   F1 Help: DS-User Initialization - Connection

2. In the **LAN search time** box, specify the time (in seconds) that DS-User will spend scanning the LAN for DS-Clients.

3. To configure an additional DS-Client, under **Additional DS-Clients**, do the following:

   a) To add a new connection, click **New**.

   b) To modify an existing connection, select the connection, and then click **Modify**.

F1 Help: Add / Modify DS-Client (DS-User Initialization)

c) To specify the IP address or host name of a single DS-Client, in the **Single DS-Client** box, specify the IP or DNS Address (host name) for DS-Client.

d) To specify the IP address or host name of each node in the grid, select **Grid DS-Client**, and then click **Add** or **Modify**. To acquire all the required IP addresses or host names from a text file if available, click **Load.**

e) In the **Port** box, specify the port number.

f) Select **Use UDP protocol to discover DS-Client** if required.

g) Click **OK**.

NOTE: DS-User scans the LAN for all active DS-Clients, whether or not any entries are in the Additional DS-Clients list. DS-Clients specified in the Additional DS-Clients list that are not detected, will appear in Red. A DS-Client on the local computer appears in Blue.

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4. To configure an additional subnet, under **Additional Subnets**, do the following:

   a) To add a new subnet, click **New**.

   b) To modify an existing subnet, select the subnet, and then click **Modify**.

   F1 Help: Add / Modify Subnet

   c) In the **Address** box, specify the IP address of the subnet.

   d) In the **Port** box, specify the port number of the subnet.

   e) Click **OK**.

5. Under **Logon using security context** (Windows DS-Client only), optionally do the following:

   a) In the **Target Name** box, the default target name is `CloudBakSvc`. This is used only if the DS-User tries to automatically connect to a DS-Client in an Active Directory domain using the security context of the current logged on Windows user.

   IMPORTANT: Your network administrator must create and register the target name with Active Directory using the Microsoft Networking Tool (setspn.exe) to give it the authentication and trust required to log on to the desired DS-Clients. Once registered, the DS-User supplies the target name for DS-Client to verify and allow the authenticated user from the DS-User to connect. Ensure any changes conform to your network security policies.

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b) In the **Auto-connect** box, configure how the DS-User behaves when it is launched. The options are:

- **Last DS-Client**: DS-User will search for the last DS-Client it successfully connected with. If that DS-Client is not available, DS-User will prompt the user to choose the desired DS-Client.
- **Local DS-Client**: DS-User will search for the local DS-Client. If the local DS-Client is not available, DS-User will prompt the user to select the desired DS-Client.
- **Last or Local DS-Client**: DS-User will first search for the last connected DS-Client. If the last connected DS-Client is found, DS-User will attempt to connect using the credentials of the user already logged on from the current Windows logon session (provided that the same user name and password is provided). If however, the last connected DS-Client is not available DS-User will connect to the local DS-Client using the current security context.
- **Local or Last DS-Client**: (Default) DS-User will search for the local DS-Client first and connect using the current security context. If the local DS-Client is not found, DS-User will attempt to connect to the last connected DS-Client using the current security context (provided that the same user network credentials are used, and that the local user exists on the remote DS-Client, and appropriate user permissions are present in the remote DS-Client).
- **Disabled**: Users can select this option to turn off the auto-connect functionality. In this case the Connect to DS-Client Service dialog box appears at startup. Type a valid user name and credentials to connect to the selected DS-Client.

6. Click **OK**.

3.2.2 Configuring the regional settings

You can configure the DS-User language settings and other regional formatting.

To configure the regional settings:

1. On the **Setup** menu, click **Initialization**. The **DS-User Initialization** dialog box appears.
2. Click the **Regional** tab.

   F1 Help: DS-User Initialization - Regional
3. Select or edit the required parameters.
4. Click **OK**.

3.2.3 Configuring the plug-in settings

Some plug-ins are automatically applied, depending on the DS-Client's configuration. Others can be manually enabled / disabled, and configured.

To configure the plug-in settings:

1. On the **Setup** menu, click **Initialization**. The **DS-User Initialization** dialog box appears.
2. Click the **Plugins** tab.

   F1 Help: DS-User Initialization - Plugins
3. Select a plug-in, and then click **Configure**.
4. Configure the available options.
5. Click **OK**.

3.2.4 Configuring the keep-alive settings

The keep-alive settings limit the amount of idle time on DS-User, after which the connection with DS-Client will be terminated.

To configure the keep-alive settings:

1. On the **Setup** menu, click **Initialization**. The **DS-User Initialization** dialog box appears.
2. Click the **Keep Alive** tab.

   F1 Help: DS-User Initialization - Keep Alive
3. Specify the **Keep Alive** settings.
4. Click **OK**.

3.3 Configuring users and groups

The Users & Groups dialog box displays all the users who have connected to DS-Client. You can set a maximum Online limit either for specific users, or for an entire group (e.g. Regular Users). The lowest group limit applies to individual users (Effective Limit).

Backups will fail when the Online limit has been reached (an error message is displayed in the Event Log). If more than one limit applies (e.g. User and Group limits overlap), the lower limit will apply.

1. On the **Setup** menu, click **Users & Groups**. The **Users & Groups** dialog box appears.

   F1 Help: Users & Groups

2. To set a maximum Online amount, highlight the user/group, and then click **Max Online**. The **Maximum Online for '...'** dialog box appears.

   F1 Help: Maximum Online for '...'

3. Clear the check box **No Limit**.
4. In the **Online Storage Limit** box, specify the maximum online amount (in MB).
5. Click **OK**.

3.4 Configuring the LDAP user settings

If your service provider has configured the DS-Client to use LDAP user validation, you must configure and validate those user credentials before DS-System will permit DS-Client activities.

Each DS-Client is required to configure LDAP user validation by supplying their LDAP server user account credentials. If validation is successful, DS-System will save the LDAP user settings. On each subsequent DS-Client connection, the DS-System will verify the LDAP user settings with the LDAP server. If the user account exists and is not disabled, then DS-System permits the DS-Client activity.

The LDAP server is a separate location where DS-System validates that the supplied user account exists. This allows administrators an extra level of validation, as they can disable or delete the account on the LDAP server to prevent further DS-Client activities.

To configure LDAP user validation:

1. On the **Setup** menu, click **LDAP User Validation**. The **LDAP User Validation** dialog box appears and displays the current status.

   F1 Help: LDAP User Validation

2. In the **User name** box, type the LDAP account user name.
3. In the **Password** box, type the password for the LDAP user account.
4. In the **Confirm password** box, re-type the password.
5. In the **Domain** box, type the domain of the LDAP user account.
6. To validate the credentials immediately, click **Validate Now**. DS-Client sends these credentials to DS-System to validate with the LDAP server.
7. To save the credentials, click **Save**. The credentials are saved until the first instance validation is required by DS-System.

If the validation is successful, the status changes to **Validation passed** and the boxes are cleared.

3.5 Configuring the two-factor authentication settings

Two-factor authentication prevents accidental or unauthorized deletion of backup sets and backup data. When this feature is enabled, only authorized users can delete a backup set or backup data or assign a retention rule to an existing backup set while logged on to the DS-Client. Before performing these tasks, an authorized user is required to type an authentication code that the DS-System generates.

If your service provider has already configured the DS-Client to use two-factor authentication, you must configure the two-factor authentication settings for the DS-Client, which include the list of authorized users and their email addresses for receiving authentication codes from the DS-System. You can manually add the users or import a list of users.

NOTE: You must be a DS-Client administrator to configure the two-factor authentication settings for the DS-Client.

To configure the two-factor authentication settings:

1. On the **Setup** menu, click **Two-factor Authentication**. The **Two-factor Authentication Settings** dialog box appears.
2. Do one of the following:
   - To add a user, click **Add**.
   - To modify the details of a user, select the user, and then click **Modify**.
   - To remove a user, select the user, and then click **Remove**.
3. In the **Add User** or **Edit User** dialog box, do the following:
   a) In the **User name** box, type the name of the user that you want to authorize.

      NOTE: For successful authorization, the name must represent a valid existing user account on the DS-Client computer.

   b) In the **Domain** box, select the domain to which the user belongs.
   c) In the **Email address** box, type the email address associated with the user. This is the email address where an authorization code will be sent when the user attempts to delete a backup set or backup data or assign a retention rule to an existing backup set.
   d) Click **OK**.

4. To import a list of users, do the following:

   a) Create a text file that lists each new user on a separate line. For each user, list the user name, the domain, and the email address, separating each item with a comma. Then save the text file. For example:

      ```
      user_example,example.com,user_example@example.com
      ```

   b) Click **Import**.

   c) Browse for and select the text file that contains the list of users, and then click **Open**.

   d) Verify that the user name, domain, and email address of each user that have been imported to the list are correct.

   e) If the details of a user are inaccurate, modify the details of the user.

5. Click **Forward to DS-System**.

6. In the **Two-factor Authentication Validation** dialog box, do the following:

   a) In the **Authentication Code** box, type the authentication code that you have received from the DS-System, and then click **Validate**.

   NOTE: The authentication code is sent to the email address where you usually receive notifications from the DS-System. The code is valid for two hours. To request an authentication code be resent to you, click **Resend**.

   The users listed in the **Two-factor Authentication Settings** dialog box are authorized to delete backup sets and backup data and assign retention rules.

7. To export the list of users to a text file, click **Export** and save the file.

8. When you are finished, click **Close**.

3.6 Configuring the Local DS-VDR Tool

The Local DS-VDR Tool is required if you plan to create the following backup sets:

- **Physical-to-Virtual (VMware vCenter) backup sets**. For more information, see Section 6.16, “Physical-to-Virtual (VMware vCenter) backup sets (Windows or Linux)”, on page 261.
- **VMware VADP backup sets with the Local DS-VDR option enabled**: This kind of backup does not back up data to the DS-System. Instead, it protects VMware virtual machines by exporting the latest virtual machine through the vCenter Server to another host or datastore that contains a standby virtual machine that is always available for failover within the same vCenter Server.

NOTE: If connected to a VMware vCenter Server that is connected to two or more VMware ESXi standalone hosts, the Local DS-VDR Tool is able to clone virtual machines from one standalone host to another even if there is no shared storage available between the two hosts.

For more information, see Section 6.18, “VMware VADP backup sets (Windows or Linux)”, on page 269.

Before creating these backup sets, you must configure the Local DS-VDR Tool for the DS-Client. Before you can configure the Local DS-VDR Tool for the DS-Client, the following requirements must be met:

- The Local DS-VDR Tool must already be installed on a network computer that can connect both to the DS-Client and the target VMware vCenter Server. For more information, see the Client Software Installation Guide.
- The DS-Client must have at least one Local DS-VDR license count available. This is allocated by your service provider from the DS-System. To verify this, on the **Setup** menu, click **View Quotas**. In the **View Quotas** dialog box, see the **DS-Client Local DS-VDR License** section.

NOTE: If the hardware of the machine on which the existing Local DS-VDR Tool for the DS-Client has been modified or if you want the DS-Client to use another installation of the Local DS-VDR Tool, you must reconfigure the Local DS-VDR Tool.

To configure the Local DS-VDR Tool:

1. On the **Local DS-VDR** menu, click **Configure Local DS-VDR Tool**. The **Local DS-VDR Tool Setup** dialog box appears.

   F1 Help: Local DS-VDR Tool Setup

2. In the **Local DS-VDR Tool IP** box, type the IP address of the Local DS-VDR Tool installed for the DS-Client.

NOTE: Each Local DS-VDR Tool can only be used with one DS-Client.

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3. If you are reconfiguring the Local DS-VDR Tool and want to reset the hardware cookie, click **Reset**.
4. To test the DS-Client's connection with the Local DS-VDR Tool, click **Connect**. The result is displayed as a message at the bottom of the dialog box.
5. To update the Local DS-VDR Tool's database with the DS-Client's current Local DS-VDR backup set configurations, click **Sync**.
6. Click **OK**.

3.7 Configuring the bandwidth throttle settings

A bandwidth throttle allows the DS-Client Administrator to manage the amount of bandwidth used by DS-Client at any time during the defined period. Separate throttles can be defined for both directions: To the DS-System (backups) and from the DS-System (restores). By default, if these throttles are not configured, the DS-Client will use as much bandwidth as it can to perform operations as fast as possible.

NOTE: Your service providers might impose their own bandwidth restrictions from their respective sides (carrier, DS-System).

To configure the bandwidth throttle settings:

1. On the **Setup** menu, click **View Bandwidth Throttle**. The **Bandwidth Throttle** dialog box appears.

   F1 Help: Bandwidth Throttle

NOTE: You can set the bandwidth throttle settings for both directions: To the DS-System (backups) and from the DS-System (restores).

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2. To use the maximum bandwidth to perform operations as fast as possible, select **Unlimited.**
3. To define the bandwidth usage, select **Limited to**, and then specify the bandwidth in KB/sec.
4. To configure a bandwidth throttle schedule detail, do one of the following:
   - To add a bandwidth throttle schedule detail, click **Add**.

- To modify an existing bandwidth throttle schedule detail, select a schedule or schedules, and then click **Modify**.
- To select a group of schedules, click **Select Group**.

F1 Help: New / Edit Bandwidth Throttle Schedule Detail

5. Select the day(s) and time period to apply this detail, and then click **OK**.

NOTE: This detail will be an exception against the default (which is either "Unlimited" or "Limited To"). To create more specific exception periods, you need to use multiple details.

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6. To save the bandwidth throttle settings, click **Apply** and then **OK**.

3.8 Configuring the filter for the Event Log

Events come with a default severity. Over time, you might notice that some events should have either a higher or lower severity than the default. The **Event Filter** allows you to alter the Event Log by over-ruling an event's default severity with your custom setting.

To configure the filter for the Event Log:

1. On the **Setup** menu, click **Event Filter**. The **Event Filter** dialog box appears.

   F1 Help: Event Filter

2. Do one of the following

   - To add a new filter, click **New**.
   - To edit an existing filter, select the filter, and then click **Edit**.

   The **Add / Edit Event Filter** dialog box appears.

   F1 Help: Add / Edit Event Filter

3. Select the following:

   - **Event #**: This must be the exact event number, as it appears in the Event Log Viewer.
   - **Category**: This must be the same category as the corresponding event number, as it appears in the Event Log Viewer.
   - **Type**: Select what Event Severity to apply. This over-rules the default for the corresponding event. Remember that this can affect the notifications that are sent.
     - **Information**
     - **Warning**

- **Error**

- **Description**: Shows the corresponding description for this event. This field cannot be edited.

4. Click **OK**.

5. Click **OK** to save the settings and close the Event Filter dialog box.

The next time the filtered event(s) appear in the Event Log Viewer, the filter will apply the designated severity type (over-ruling the default setting). The filter only applies if both the Event # and Category match with a corresponding event.

3.9 Configuring the printer settings

DS-User can interface with the existing printers that are configured on the computer where it is installed.

To configure the printer settings:

- On the **Setup** menu, click **Printer Setup**. This opens the operating system's printer setup. For more information see the operating system documentation.

3.10 Configuring the appearance of the main window

To configure the appearance of the main window:

- On the **Setup** menu, point to **Look & Feel**, and then select one of the available themes.

3.11 Managing system activities

Administrators and Backup Operators have access to more detailed tools to administer DS-Client and to perform real-time troubleshooting. You can communicate with users connected to DS-Client, disconnect users from, view the process queues, specify administrative backups, and shut down or reboot the DS-Client computer.

3.11.1 Enabling or disabling DS-Client activities

You can enable or disable scheduled and on-demand activities on DS-Client.

NOTE: By default, scheduled and on-demand activities are enabled.

To disable scheduled or on-demand activities:

1. On the **Setup** menu, click **System Activities**. The **System Activities Administration** dialog box appears.

   F1 Help: System Activities Administration

2. Under **DS-Client Activities**, do one of the following:

   - Beside **Scheduled activities**, click **Disable**.
   - Beside **Demand activities**, click **Disable**.

NOTE: Disabled activities are automatically enabled the next time the DS-Client service restarts.

To enable scheduled or on-demand activities:

1. On the **Setup** menu, click **System Activities**. The **System Activities Administration** dialog box appears.
2. Under **DS-Client Activities**, do one of the following:

   - Beside **Scheduled activities**, click **Enable**.
   - Beside **Demand activities**, click **Enable**.

3.11.2 Managing administrative processes

The DS-Client software is designed for unattended operation, which requires regular administrative processes to back up the DS-Client database, create statistical data, and verify backup sets with the DS-System online storage.

You can schedule the daily and weekly administrative processes or run them on demand. You can also update statistical data on demand.

The types of administrative processes are as follows:

- **Local Admin** — Performs activities that do not require a connection to the DS-System. The Local Admin process runs every time the DS-Client service starts, once every 12 hours from the previous Admin, or every 24 hours. This process cannot be disabled.
- **Daily Admin** — Performs all Local Admin activities, verifies backup sets, and transfers the DS-Client database dump to the DS-System. The Daily Admin process can be disabled or configured to run at a specific time.
- **Weekly Admin** — Performs all Daily Admin activities and a low-level synchronization of backup sets. The Weekly Admin process can be disabled or configured to run at a specific date and time.

The following table describes the administrative process activities in the order that they are performed. The DS-System column indicates whether a connection to the DS-System is required for that activity.

Administrative process activity	Local	Daily	Weekly	DS-System
1. Prepare database dump For Microsoft SQL Server databases, this activity depends on the **Keep DS-Client database dump file** setting (see Section 3.1.5, “Configuring the parameter settings”, on page 25): • a) **Do not delete –** Saves the previous dump, dumps the DS-Client database and dsdelta database, and runs database consistency checks (DBCC). If a fatal error occurs, it restores the previous dump. Otherwise, it deletes the previous dump and only keeps the current dump in the DS-Client buffer. • b) **Delete after successful backup –** Saves the previous dump (if it exists), dumps the DS-Client database and dsdelta database, and runs database consistency checks (DBCC). If no errors occur, it removes the previous database dump (if it exists) from the DS-Client buffer before connecting to the DS-System. If step 6 (Transfer Database Dump) is successful, then it removes the current database dump from the DS-Client buffer. • c) **Always delete –** Dumps the DS-Client database and dsdelta database and runs database consistency checks (DBCC). After the Daily Admin or Weekly Admin finishes, it deletes the database dump. Note: This step is not performed for PostgreSQL databases.	X	X	X	

Administrative process activity	Local	Daily	Weekly	DS-System
2. Clean database • Deletes old history logs (activities, events and statistics), drops unused tables, and deletes unused records.	X	X	X	
3. Update statistical data • Updates statistical information for each backup set (number of files and online amount). • Updates statistical information used by the storage summary.	X	X	X	
4. Expand database (if necessary) • Updates statistical information for each backup set (number of files and online amount). • Updates statistical information used by the storage summary.	X	X	X	
5. Verify backup sets • Sends a list of all backup sets to the DS-System. The DS-System sends back a list of backup sets that either: (a) do not exist on the DS-System storage, or (b) exist on the DS-System storage but are not in the DS-Client's list. • Updates the information required to recover backup sets falling into category 'b'.		X	X	X
6. Transfer database dump • For Microsoft SQL Server databases, transfers database dumps to DS-System if Activity 1 was performed successfully. Deletes database dumps if activity 1 is configured for **Delete after successful backup** or **Always delete**. • For PostgreSQL databases, performs backup of the database to DS-System via pipe.		X	X	X
7. Synchronization (normal) • Performs synchronization check for all backup sets that are not in category 'a' or 'b' of activity 5. (This is the same as a 'Normal' synchronization, however any synchronized files retain an 'active' backup status.)			X	X
8. Send daily email notification • If the DS-Client is configured for email notifications, sends a summary of backup activities to the administrator showing what occurred since the last admin process. (For more information, see Section 3.1.3, “Configuring the notification settings”, on page 23.)	X	X	X	

3.11.2.1 Scheduling administrative processes

The default configuration for administrative processes is as follows:

- The Daily Admin process is scheduled to run once every day between 20:00 and 06:00.
- The Weekly Admin process is scheduled to run once a week between 20:00 Friday and 06:00 Monday.

NOTE: To distribute the administrative process load across many DS-Clients, the default start time is randomly determined by an algorithm based on the DS-Client number, which results in a time with an interval of 15 minutes (for example: 19:30 or 01:45).

The DS-Client can be configured to reboot after an admin process. By default, this option is turned off (see Section 3.1.5, “Configuring the parameter settings”, on page 25).

No other activities are allowed while an administrative process executes. If an activity is running at the time the administrative process is scheduled, it waits for all activities to finish. Therefore it is possible that the scheduled administrative process never gets the opportunity to run (for example, if you have scheduled backups that run 24hours a day, 7days a week). If it is not possible to schedule an administrative process, you should occasionally run one manually.

NOTE: We recommend that you schedule administrative processes at times that do not conflict with scheduled backup activities.

To schedule Daily Admin:

1. On the **Setup** menu, click **Configuration** and then click the **Parameters** tab.
2. Ensure that the **Daily start** check box is selected.
3. Type a time of the day when you want the Daily Admin process to start.
4. Click **OK**.

To schedule Weekly Admin:

1. On the **Setup** menu, click **Configuration** and then click the **Parameters** tab.
2. Ensure that the **Weekly start** check box is selected.
3. Select a time of the day and a day of the week when you want the Weekly Admin process to start.
4. Click **OK**.

3.11.2.2 Running administrative processes on demand

The following provides instructions on how to run administrative processes on demand.

To run Daily Admin on demand:

1. On the **Setup** menu, click **System Activities**. The **System Activities Administration** dialog box appears.

   F1 Help: System Activities Administration

2. Under **Administrative Processes**, beside the time stamp of the **Last Daily Admin run on** box, click **Run Now**. The **Daily Admin process** window appears.

To run Weekly Admin on demand:

1. On the **Setup** menu, click **System Activities**. The **System Activities Administration** dialog box appears.

   F1 Help: System Activities Administration

2. Under **Administrative Processes**, beside the time stamp of the **Last Weekly Admin run on** box, click **Run Now**.

   F1 Help: Weekly Admin Options

   a) In the **Weekly Admin Options** dialog box, the default is to synchronize all backup sets with a "normal" synchronization. If the **Synchronize all sets** check box is cleared:

      - Weekly Admin performs a normal synchronization on any backup sets that have already been marked "Out of Sync".
      - In addition, Windows DS-Client will perform normal synchronization on a backup set if it detects any database inconsistencies that might cause it to be "Out of Sync". (This does not apply to Linux DS-Clients.)

   b) In the **Number of simultaneous synchronizations** box, type how many synchronizations to run at the same time. For more information, see Section 7.4, "Synchronizing a backup set", on page 312.

3. Click **OK**.

NOTE: If you run Weekly Admin specifically to obtain a DS-Client database backup for recovery purposes, and you see synchronization for any backup sets, you should run Weekly Admin again to obtain the latest and most accurate backup of the DS-Client databases. This avoids repeating the synchronization process after the database is recovered.

3.11.2.3 Updating statistical data on demand

The DS-Client accumulates statistical information that can help you to analyze load, utilization, and storage trends.

For new target backup servers, the DS-Client can perform statistical backups for a few days or weeks to generate this information. These are similar to online backup sets except no data is sent to DS-System (the data source is scanned, and files are processed for compression and encryption to obtain statistics). You can then analyze the data amounts, trends, and incremental amounts before performing actual backups.

Statistical data is updated automatically during a Daily Admin or Weekly Admin process. If no administrative processes are scheduled, DS-Client automatically updates statistical data daily. You can also update statistical data on demand to ensure that it is available immediately before generating reports.

In production environments, the statistical information accumulates for all backup set types (online, statistical, self-contained, local-only, and instant recovery). These details are presented in reports that DS-Client generates. For more information, see Chapter 10, “Working with reports”.

To update statistical data on demand:

1. On the **Setup** menu, click **System Activities**. The **System Activities Administration** dialog box appears.

   F1 Help: System Activities Administration

2. Under Administrative Processes, beside the time stamp of the **Statistics updated on** box, click **Update Now**.

3.11.3 Viewing the system status

You can view DS-Client system status information when checking performance or troubleshooting. System status information includes current network connections and processes and the details of message queues and database connections.

To view DS-Client system status:

1. On the **Setup** menu, click **System Activities**. The **System Activities Administration** dialog box appears.

   F1 Help: System Activities Administration

2. Click **System**. The **DS-Client System Status** dialog box appears.

   F1 Help: DS-Client System Status

3. Do the following to view system status information:

   a) To view the network connections, click the **Network Connections** tab.

   b) To view the database connections, click the **Database Connections** tab.

c) To view the message queues, click the **Message Queues** tab.

d) To view the threads, click the **Threads** tab.

4. To update the data, click **Refresh**.
5. When you are finished, click **Close**.

3.11.4 Managing network connections

While viewing the system status, you can also communicate with users who are currently connected to the DS-Client and remove those network connections if necessary.

To manage network connections:

1. On the **Setup** menu, click **System Activities**. The **System Activities Administration** dialog box appears.

   F1 Help: System Activities Administration

2. Click **System**. The **DS-Client System Status** dialog box appears.

   F1 Help: DS-Client System Status

3. Click the **Network Connections** tab, and then do the following:

   a) To send a message to a user who is currently connected to the DS-Client, select the user,, and then click **Send Message**. In the **Enter Message** dialog, in the **Send Message** box, type the message, and then click **Send**.

   F1 Help: Enter Message

   b) To remove a connection from the DS-Client, select the connection, and then click **Disconnect**. You can also send a message to inform the user before you remove the disconnection.

   c) To update the list of network connections, click **Refresh**.

   F1 Help: DS-Client System Status

4. When you are finished, click **Close**.

3.11.5 Shutting down the DS-Client computer

The following steps describe how to shut down the DS-Client computer:

To shut down the DS-Client computer:

1. On the **Setup** menu, click **System Activities**. The **System Activities Administration** dialog box appears.
2. Beside **Shutdown DS-Client computer,** click **Initiate**. The **Initiate System Shutdown** dialog box appears.

F1 Help: Shutdown DS-Client Computer

3. Type the time (in seconds) after which system should shutdown.
4. If you want the DS-Client computer to reboot after shutdown, click **Reboot**.
5. If required, type the message that you want to send to users connected to the system.
6. Click **Shutdown**.

3.12 Managing passwords (Windows)

Password management allows you to manage the network security of backup sets in two ways:

- Associate specific backup sets to designated users
- Rotate the password of the designated users on demand or automatically

When prompted, the DS-Client Service changes the Windows password of the specified network user or computer user. When automatic password rotation is enabled, DS-Client randomly selects a new password for the specified user at a frequency and within the constraints that you define in a rotation rule.

IMPORTANT: When password rotation is applied to a user account, the account cannot be used for logon or as credentials on your network until an administrator manually resets the password in the computer management console of Windows.

NOTE: When password management is used, you must manage backup sets in the Password Management dialog box. You cannot use the Backup Set Properties dialog box because the password is changed.

To manage passwords:

1. On the **Setup** menu, click **Password Rotation**. The **Password Management** dialog box appears.

   F1 Help: Password Management

2. Do one of the following:

   - To add the password of a user, click **Add**.
   - To edit the password of a user, click **Edit**.

3. In the **Create User** dialog box, do the following:

   F1 Help: Password Management - User Details Tab

   a) In the **Enter User Information** section, type the new user's logon information, and then click **Next**.

   b) To enable automatic password rotation, select the **Enable Automatic Password Rotation** check box.

   NOTE: If you do not enable automatic password rotation, the password of this user can be rotated on demand after the user has been added to the Managed Passwords list.

c) In the **Available Password Rotation Rules** dialog box appears, do the following:

- To apply an existing rotation rule, select the required rule, and then click **Select**.
- To add a new password rotation rule, click **New.** Type a name for the password rule and define the length constraints for the password.
- To define a new complexity rule, click **Add**. In the **Add Complexity Rule** dialog box, select the minimum length and character set from which to choose the characters for the password, and then click **OK**.

F1 Help: Add / Edit Complexity Rule

- When you have finished defining the password rotation rule in the Add Password Rotation Rule dialog box, click **OK**.

The password rotation rule is added to the list of Available Password Rotation Rules

1. In the Available Password Rotation Rules dialog box, select the required rule from the list, and then click **Select**.
2. In the Select Password Rotation Rule section, type and select the details for rotation frequency, and then click **Next**.

This password rotation rule is now applied to the rotation settings to enable automatic password rotation for this user.

d) To associate one or multiple backup sets with this user, click **Select**. In the Select Backup Sets dialog box, select one or multiple backup sets to associate with the user, and then click **OK**.

NOTE: After you have applied your selection, your selection will overwrite the Connect As setting (Backup Set Properties) for all selected backup sets.

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e) Click **Finish**.

4. To associate a backup set with an existing user that has managed password, select the user in the Password Management dialog box, and then click **Edit**.

a) In the Modify User dialog box, in the Backup Sets tab, click **Select**.

F1 Help: Password Management - Backup Sets Tab

b) In the Select Backup Sets dialog box, select one or multiple backup sets to associate with the user, and then click **OK**.

NOTE: After you have applied your selection, your selection will overwrite the Connect As setting (Backup Set Properties) for all selected backup sets.

F1 Help: Select Backup Sets (Password Management)

The backup set is now associated with the user.

5. To dissociate a backup set from a user that has managed password, select the user in the Password Management dialog box, and then click **Edit**.

   a) In the Modify User dialog box, in the Backup Sets tab, click **Select**.

   b) In the Select Backup Sets dialog box, clear the backup set that you want to dissociate from the user, and then click **OK**.

   The backup set is now dissociated with the user.

6. To edit the password rotation settings of a user, select the user in the **Password Management** dialog box, and then click **Edit**.

   a) To enable automatic password rotation, in the Modify User dialog box, in the Password Rotation tab, select **Enable Automatic Password Rotation** and do the following:

   NOTE: If you do not select this option, the password of this user can be rotated on demand after the user has been added to the Managed Passwords list.

   F1 Help: Password Management - Password Rotation Tab

   - To apply an existing rotation rule, select the required rule in the Available Password Rotation Rules dialog box, and then click **Select**.
   - To add a new rotation rule to apply, click **New** and do the following.

   1. In the Add Password Rotation Rule dialog box, type a **Name** for the password rule and define the length constraints for the password.
   2. To define a new complexity rule, click **Add** in the **Complexity Constraints** section and type the required parameters in the **Add Complexity Rule** dialog box, and then click **OK**.
   3. When you have finished defining the password rotation rule, click **OK** to add the password rotation rule to the list of Available Password Rotation Rules.
   4. In the Available Password Rotation Rules dialog box, select the required rule from the list, and then click **Select**.

   F1 Help: Available Password Rotation Rules

   5. To configure rotation frequency, in the Modify User dialog box, in the Password Rotation tab, type and select the details in the Rotation Settings section.

b) To apply a different password rotation rule for automatic password rotation, in the Modify User dialog box, in the Password Rotation tab, click **[...]**. In the Available Password Rotation Rules dialog box, select the required rule, and then click **Select**.

c) To modify an existing password rotation rule and apply the rule to the user, In the Available Password Rotation Rules dialog box, select the rule, click **Edit**, and do the following.

1. In the Edit Password Rotation Rule dialog box, make the necessary modifications to the password rotation rule.
2. When you have finished defining the password rotation rule, click **OK**.
3. In the Available Password Rotation Rules dialog box, select the required rule from the list, and then click **Select**.

d) When you have finished modifying the password rotations of the user, click **Apply** and **OK**.

7. To rotate a password immediately, select the user in the Managed Passwords list, and then click **Rotate Now**.

   The password is changed, and the Last Updated time is updated. All password changes are logged in the DS-Client Audit Trail. For more information, see Section 9.3.3, “Viewing the Audit Trail”, on page 377.

8. When you have made the required password management changes, in the Password Management dialog box, click **Close**.

3.13 Exporting the DS-Client configuration to an XML file

NOTE: This feature is not supported for backup sets that have been configured with the Local-DS-VDR option.

You can export the current DS-Client configuration to an XML file named **config-update.xml**, which you can use for two purposes:

- To manually update the configurations of existing DS-Clients.
- To deploy and configure a large number of DS-Clients. For more information, see the *DS-Client Mass Deployment Guide*.

DS-Client will read any XML file named config-update.xml and will verify that its structure is correct. If the file has not previously been applied, DS-Client applies its settings. You can use an exported config-update.xml file as is, edit the file, or create your own. However, the XML file must conform to the structure defined in the file **asigra_conf.dtd**.

- For Windows DS-Clients, place the file config-update.xml in the program folder containing the DS-Client service.

- For Linux / Mac DS-Clients, place the file config-update.xml in the `/etc` sub-folder of the program folder containing the DS-Client service.

NOTE: The config-update.xml is not intended to be used to recover an existing DS-Client. It is meant to update a properly functioning DS-Client. If you need to recover a DS-Client that has its database backed up to DS-System, it is always better to use the Repair DS-Client function. (For more information, see Section 7.11, “Recovering the DS-Client database”, on page 322.)

When the **AllowAutoConfig** parameter is enabled, DS-Client checks at startup (and every 10 seconds afterward) for a file named config-update.xml, reads the configuration file, and applies any updates it finds to its database. The DS-Client only applies the config-update.xml file if the file signature is different from the file signature of the previous file that was applied. Any existing configurations, backup sets, schedules, or retention rules are only overwritten if the associated “replace-existing” attribute is set to “yes”. After the XML file is applied, DS-Client renames the file to **config-update-nnn.xml**, where nnn is an incremental number.

NOTE: The DS-Client Configuration elements <account-name>, <account-number>, <client-number>, and <encryption-keys> are updated only when DS-Client restarts.

To export the DS-Client configuration to an XML file:

1. On the **Setup** menu, click **Export to XML**. The **Export DS-Client configuration to XML** dialog box appears.

   F1 Help: Export DS-Client configuration to XML

2. You can export the following:

   - **DS-Client Configuration** – Exports all settings from the DS-Client configuration.
   - **Backup Schedules** – Exports all (or selective) backup schedules.
   - **Retention Rules** – Exports all (or selective) retention rules.
   - **Backup Sets** – Exports all (or selective) backup sets.

   NOTE: Recovered orphaned backup sets that have not been migrated (or had their backup information for connection, backup items, and schedule re-specified) cannot be exported.

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3. To include DS-Client and account keys in the XML file (they will be encrypted), select the **Include Encryption Keys** check box.

4. To use a meta symbol wherever necessary in the config-update.xml file, select the **Meta Symbol** check box (Windows DS-Client only). You can use the XML file to be used for DS-Clients on different localized operating systems.
5. To save the XML file, click **Save As**.
6. Click **Close**.

3.14 Viewing storage quotas

You can view the storage quotas for your customer account and for your DS-Client account. This information is view-only and is configured by your service provider from the DS-System side.

To view the storage quotas:

- On the **Setup** menu, click **View Quotas**. The **View Quotas** dialog box appears.

  F1 Help: View Quotas

3.15 Viewing the DS-NOC settings

The DS-NOC tool must be enabled either by you or your service provider from the DS-NOC server. If enabled, the DS-Client will send event information (backup logs) to DS-NOC for monitoring purposes.

- On the **Setup** menu, click **DS-NOC Settings**. The **DS-NOC Settings** dialog box appears.

  F1 Help: DS-NOC Settings

Use Proxy enables / disables the use of proxy configuration whenever DS-Client needs to connect to DS-NOC.

- **Configuring proxy settings**: See Section 3.1.6, “Configuring the DS-System connection settings”, on page 28.

  The rest of the information displayed is obtained from the DS-System and is read-only. The buttons allow you to perform the following tasks:

- **Check New Settings**: Connects immediately to DS-System to obtain the latest settings. DS-Client automatically updates these settings on every connection with DS-System.
- **Connect to DS-NOC**: Immediately connects the DS-Client to the DS-NOC server to send monitoring information.

3.16 Viewing the memory allocation

Memory information applies to the current instance of DS-User (not the underlying service).

1. On the **Setup** menu, click **Show Memory**. In the top right corner of the DS-User window, a memory usage bar appears. When you hover the cursor over the bar, the following details are displayed:

   - **Maximum Memory** – Displays the maximum amount of memory the DS-User can use on this computer.
   - **Total Memory** – Displays the amount of memory that has been used (allocated) on the computer for this DS-User instance.
   - **Free Memory** – Displays the amount of allocated memory that is still free to use.
   - **Used Memory** – Displays the amount of memory that is currently being used.

3.17 Updating the DS-Client configuration file parameters

The DS-Client configuration file (dsclient.cfg) is a text file that stores basic configuration information for the DS-Client, such as the account number and account key of the DS-Client and the IP address of the DS-System. The DS-Client configuration file is created during installation and is only available in the Linux or Mac DS-Client. For the Windows DS-Client, the equivalent information resides in the registry and the database.

The DS-Client configuration file also stores any values of the DS-Client advanced parameters that differ from the default value. When you modify a parameter, the most recently configured value of the parameter is stored in the DS-Client configuration file.

In the DS-Client configuration file, information is listed as key-value pairs, in which a colon (“:”) separates the key from the value. The name of the key can be followed by any number of spaces before the colon (“:”). Depending on the key, the value may or may not be case sensitive.

IMPORTANT: We recommend that you do not access or modify the DS-Client configuration file except when performing database migration or troubleshooting database issues. If the dsclient.cfg file is improperly configured, damaged, or missing, DS-Client might not start.

To update the DS-Client configuration file parameters:

1. On the Linux or Mac computer, access the DS-Client configuration file in the following location:

   ```
   /<DS-Client HOME>/etc/dsclient.cfg
   ```

2. Find the key-value pair that represents the parameter that you want to modify.
3. Specify the value of the parameter.

   NOTE: When modifying the value of a parameter, always assume that the value is case sensitive wherever applicable.

4. When you have made the necessary changes, save the DS-Client configuration file.

To update passwords in the DS-Client configuration file:

NOTE: Passwords must be stored in an encrypted format in the configuration file.

- Before typing a password in the configuration file, use the **asigraenc** tool to encrypt the string manually.

  This tool is provided in the DS-Client installation directory. It generates an encrypted string for any input string. The encrypted string can vary between different runs performed by the tool.

  NOTE: Separately store passwords in a secure place. No tool is available to decrypt the strings that are encrypted by the **asigraenc** tool.

4 Working with schedules

This section describes how to create schedules for automatic unattended activities.

4.1 About schedules

You can perform automatic, unattended activities on specified backup sets when you create a schedule and assign backup sets to that schedule. A schedule is composed of details that define when unattended backups will be performed.

NOTE: The Backup Schedules tab allows Administrators and Backup Operators to monitor and adjust the scheduled backup load on DS-Client.

You can limit the number of scheduled activities that can run concurrently by configuring the **MaxSessions** (Windows) or **MaxSessions Number** (Linux) advanced parameter. This is useful if you are running simultaneous backups and some data is being backed up using a slower connection. Similarly, if there are too many backup sets using the same schedule, this will decrease the efficiency of DS-Client. For more information, see Section 3.1.8, “Configuring the advanced settings”, on page 33).

NOTE: For Grid DS-Clients, the limit will be the sum of all the MaxSessions parameters from all running nodes.

How scheduled operations start and run

DS-Client checks for scheduled operations that are to be triggered 24 hours a day. If a scheduled activity is started but cannot finish because the connection to DS-System cannot be established or is lost, the DS-Client retries thee times, at a five-minute intervals (by default) to resume or initiate the connection. To configure the number of attempts and the interval between retries, verify the DS-Client’s **Attempt to reconnect** setting (see Section 3.1.5, “Configuring the parameter settings”, on page 25). If the scheduled operation is missed for this reason, an attempt will be made to perform it at the next scheduled time. For example, a backup scheduled to take place every day at 14:00 will retry the next day at 14:00.

If the communication between the DS-Client and the customer's LAN fails for any reason, no attempts will be made to reconnect. The backup will stop since the DS-Client has no control over the customer's LAN.

If an activity is running at the time of a scheduled operation, and that activity prevents other operations from running, the scheduled operation will start as soon as that activity ends. By default, DS-Client will attempt to start a scheduled operation every minute for 6 hours from the (actual) scheduled start time. This

interval is configurable on DS-Clients using the **ScheduleMiss** parameter from DS-Client Advanced Configurations. For more information, see Section 3.1.8, “Configuring the advanced settings”, on page 33.

Scheduling from a DS-User in a different time zone

When you connect to a DS-Client from a DS-User in a different time zone, the times returned by DS-Client are all converted to match the time zone of the DS-User. For example:

- A DS-User in the Pacific Standard time zone connects at 07:50 AM to a DS-Client in the Eastern Standard time zone (10:50 AM). The DS-User (PST) sets the DS-Client (EST) schedule to 07:51 AM. On DS-Client, that 07:51 AM PST schedule is interpreted as the corresponding current local time (10:51AM EST).
- All log times returned by DS-Client database are Eastern Standard Time.
- If the DS-User is not in the same time zone, the time is converted to the equivalent value for the time zone. For example, if a DS-User (EST) displays 10:51 AM for an activity, that same activity will show a time of 07:51 AM on a remote DS-User (PST).

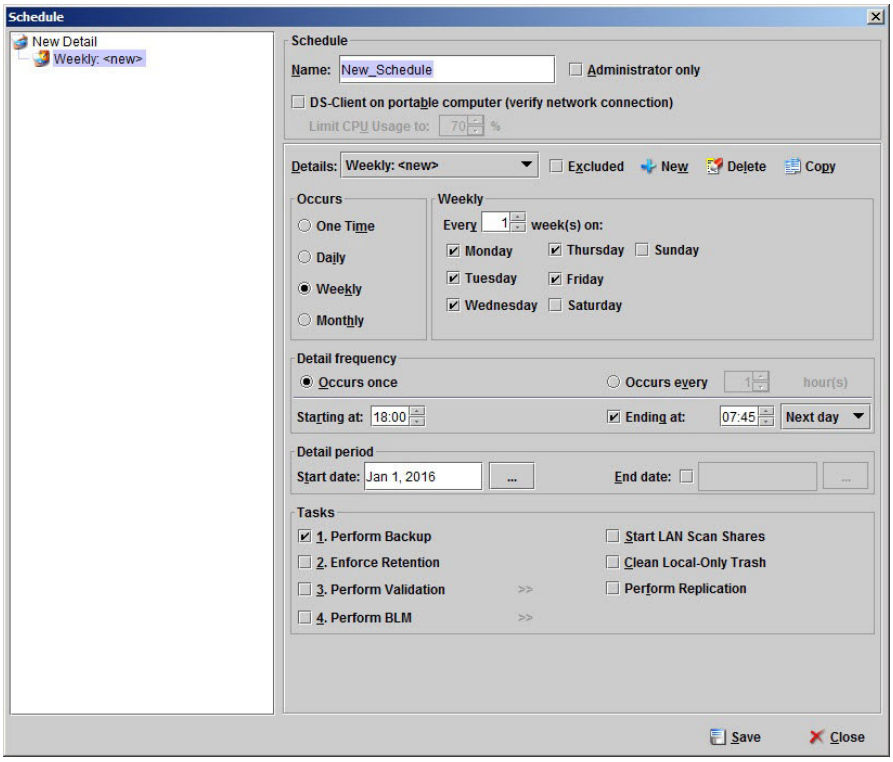
4.2 Configuring a schedule

A schedule consists of a set of details. Each detail refers to a specific backup circumstance, for example, “Occurs every 2 week(s) on Friday, at 6:00 PM”. Each schedule must have at least one detail. You can add as many details to a schedule as required.

To configure a schedule:

1. Click the **Backup Schedules** tab, and then do one of the following:
   - To create a new schedule, on the **Schedule** menu, click **New Schedule**.
   - To modify an existing schedule, select the schedule, on the **Schedule** menu, click **Edit Schedule**.

   The **Schedule** dialog box appears.



F1 Help: Schedule

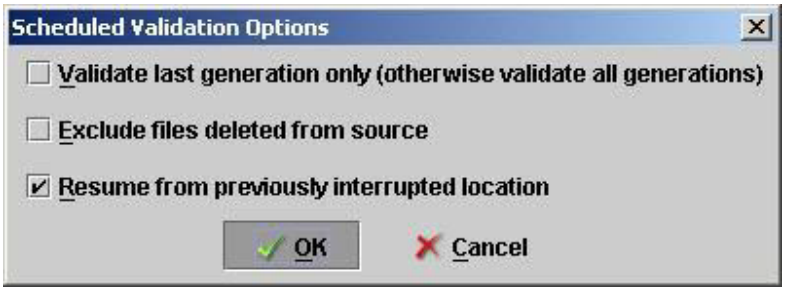
2. In the **Name** box, type or edit the name of the schedule.
3. If this schedule is for a portable computer, select the box **DS-Client on portable computer (verify network connection)** and set **Limit CPU usage to (%)**. This limits the DS-Client service's CPU to permit continued use of other applications on the portable.
4. Do one of the following:
   - To make a new detail, under **Occurs**, select the frequency at which the schedule runs. Click **New**, and then configure the details.
   - To edit a detail, click on its name in the tree or select if from the **Details** box.
5. In the corresponding section for **One Time**, **Daily**, **Weekly**, or **Monthly**, specify when you would like this detail to run.
6. In the **Detail Frequency** section, specify the frequency when this detail will run.
7. In the **Detail Period** section, specify the dates when this detail will be active for this schedule.
8. In the **Tasks** section, specify the task(s) to run for this detail. You can run one or multiple tasks in a single detail.
   - **1. Perform Backup** — Start a scheduled backup session.

- **2. Enforce Retention** — Enforce retention rules assigned to backup sets. For more information, see Chapter 5, “Working with retention rules”.
- **3. Perform Validation** — Perform scheduled validation of backup set data. For more information, see Section 7.15, “Deleting backup sets and backup set data”, on page 333 for more information.

a) When you select this box, the **Verify Encryption Key** dialog box appears; type the DS-Client encryption keys.

F1 Help: Verify Encryption Key

b) Beside **3. Perform Validation**, click **>>**.



F1 Help: Scheduled Validation Options

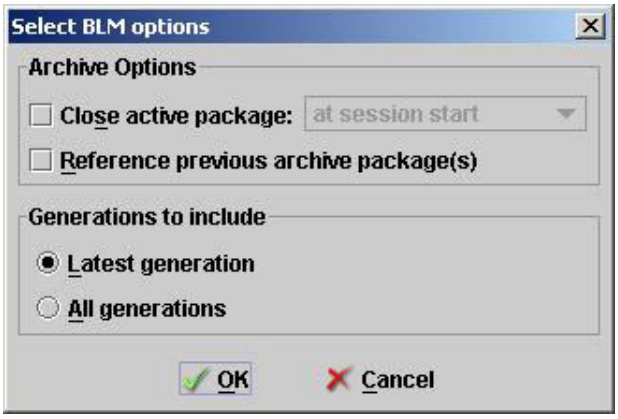
c) In the Scheduled Validation Options dialog box, select any of the following options:

- **Validate last generation only** — Select to validate only the latest generation of backup data for the selected backup set.
- **Exclude files deleted from source** — Select to skip validation of files that have been deleted from the source computer.

- **Resume from previously interrupted location** — Select to configure this schedule to resume validation from the point of interruption if the last scheduled Validation did not finish. This is useful for large backup sets

- **4. Perform BLM** — Request DS-System to copy a backup set snapshot to BLM. For more information, see Section 12.3, “Backup Lifecycle Management (BLM)”, on page 432.

  a) Click **>>** to display the **Select BLM Options** dialog box.



F1 Help: Select BLM Options

Archive Options	Archive packages are specific to a particular backup set. • The default (if these options are not selected) is for each BLM Request to be added to the current Archive Package on the BLM Archiver.
Close active package	Select to use a new archive package. Otherwise, this Archive request will be added to the current archive package on the BLM Archiver. • You must specify when the package will be closed: • at session start - makes a new Archive Package. This means the previous package (if one exists) will be closed, and the new request will go to the new package. • at session end - uses the current Archive Package. This means the new request will go to the current package, and after it finishes, the package will be closed. Once a package is closed, no new data will be added. Subsequent archiving requests will create a new archive package.
Reference previous archive packages	Select to allow the Archive Package to contain references to older packages. This saves space by removing data redundancy. • The default (if this option is not selected) is for each Archive Package to contain all of the required files.
Generations to include	• Latest generation - Creates a BLM Archive containing the latest generation of all items selected. • All generations - Creates a BLM Archive containing all the (online) generations of all items selected.

- **Start LAN Scan Shares** — Start scanning the LAN shares for statistical data. Since this can take a significant amount of time, this task is run last. For a description of this process, see Section 13.1, “About the LAN Storage Discovery Tool”, on page 473.
- **Clean Local-Only Trash** — Start a Clean Local-Only Trash process on all Local-Only storage locations for the DS-Client. For a description of this process, see Section 7.15.4, “Deleting local-only backup set data”, on page 342.
- **Perform Replication** — Start a replication process for any VM replication sets to which this schedule is assigned. For a description of this process, see Section 8.1, “About VM replication”, on page 345.

NOTE: Tasks 1-4 will run in that order on a backup set. Other tasks will start immediately.

9. Click **Save**.

   Each new detail is automatically assigned a name, based on the frequency selected, and a number (e.g. daily:1, weekly:2).

10. When you have finished adding details, click **Close** to exit.

4.3 Assigning a schedule to a backup set

You can assign a schedule to a backup set in any of the following ways:

- When they are created in the New Backup Set Wizard.
- By selecting it in the Backup Sets tab and on the **Sets** menu, point to **Backup Sets**, and then click **Properties**. Then click the **Schedule** tab.
- In the DS-User main window, click the **Backup Schedules** tab. DS-Client administrators can manage all the schedules here.

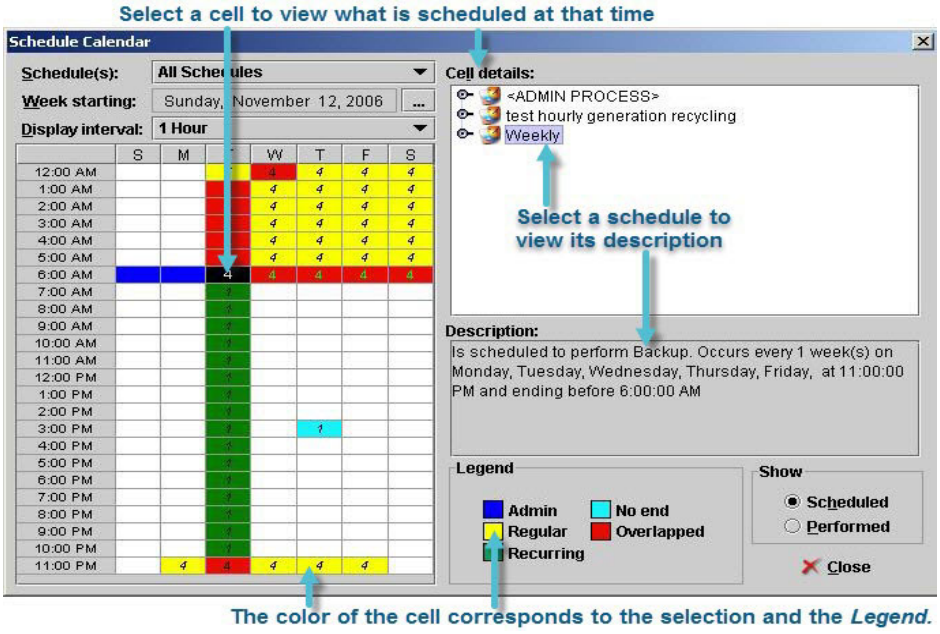
When a schedule has more than one assigned backup sets, you must manage the order in which the backup sets run.

Even though a backup schedule has a specific start time, the actual start time of a backup session depends on the backup set’s priority in the schedule.

NOTE: Only one backup schedule can be assigned to a backup set at a time.

4.4 Viewing scheduled backups

The schedule calendar is a visual representation of the backup schedules and backups that are scheduled or performed. You can see schedules that overlap (which might cause higher network traffic) or errors that have occurred during backup sessions.



To view the Schedule Calendar:

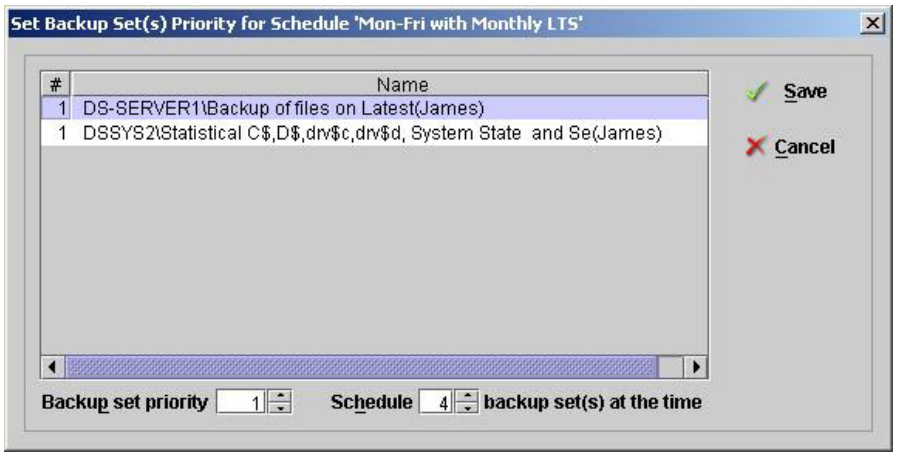
1. In the DS-User main window, click the **Backup Schedules** tab.
2. On the **Schedule** menu, click **Schedule Calendar**.

   F1 Help: Schedule Calendar
3. By default, the Schedule Calendar dialog box shows all schedules for the current week. To change the display, select a different display parameter in the **Schedule(s)**, **Week starting**, and **Display interval** boxes.
4. To display the schedules/processes for a particular time period, click on the cell that contains the time. The **Description** section displays the details of the selected schedule.
5. To display processes that have run, in the **Show** section, click **Performed**. The numbers in the calendar reflect the actual number of backups at that time.
   - Click a time cell with a number to display the sets that were backed up. In the **Cell Details** section, you can browse all backup sets that ran.

4.5 Setting the priority of a schedule

You can view a list of all the backup sets through a specific schedule.

1. Click the **Backup Schedules** tab.
2. Select the schedule that you wish to view, right-click, and select **Set Priority**. The **Set Backup Set Priority for Schedule** dialog box appears. The list displays the names of all backup sets assigned to this particular schedule.



F1 Help: Set Backup Set(s) Priority for Schedule '...'

3. Select the backup set you want to prioritize.
4. In the **Backup set priority** box, click the arrows to change the priority of the selected backup set. The number in the **#** column changes with the number field. The set will sort automatically by priority (lower number = higher priority).
5. Click **Save**.

4.6 Activating or suspending a schedule

You can suspend an active schedule or activate a suspended schedule. By default, a schedule is active, and DS-Client performs all the scheduled tasks of the schedule according to the details of the schedule for all the backup sets that are currently assigned to the schedule. Active schedules appear in black on the **Backup Schedules** tab.

When a schedule is suspended, DS-Client stops performing the scheduled tasks of a schedule for all the backup sets that are currently assigned to the schedule. Suspended schedules appear in gray on the **Backup Schedules** tab.

To activate a schedule:

1. Click the **Backup Schedules** tab.
2. In the tree, select the suspended schedule that you want to activate.
3. On the **Schedule** menu, click **Activate**.

To suspend a schedule:

1. Click the **Backup Schedules** tab.
2. In the tree, select the schedule that you want to suspend.
3. On the **Schedule** menu, click **Suspend**.

4.7 Deleting a schedule or a schedule detail

You can delete a schedule that is not currently associated with any backup sets.

To delete a schedule:

1. Click the **Backup Schedules** tab and select the schedule you want to delete.
2. On the **Schedule** menu, click **Delete Schedule**. A confirmation dialog box appears.
3. Click **Yes** to delete the schedule.

To delete a detail from a schedule:

1. Click the **Backup Schedules** tab and select the backup schedule you want to edit.
2. On the **Schedule** menu, click **Edit Schedule**.
3. In the **Details** box, select the detail you want to delete.
4. Click **Delete**. A confirmation dialog box appears.
5. Click **Yes** to delete the detail.

NOTE: You cannot delete the last remaining detail from a schedule.

5 Working with retention rules

This section describes how to create and work with retention rules for backup set data.

IMPORTANT: The system does not automatically delete backup set data. This process must be performed by an authorized user. Apply caution when performing this process because data cannot be recovered after it has been deleted.

5.1 About retention rules

Retention rules allow you to implement granularity for backed up generations. For example, you might want to retain all generations from the previous day, then 1 generation each day for a week, 1 generation each week for a month, 1 generation each month for a year, and 1 generation each year for the next 10 years. When using retention, you must know the nature of the backup set data such as number of generations and frequency of changes.

Retention rules are optional. If you do not use the retention feature, your backup data remains online based on the backup set item maximum generation settings. The oldest generation of a file will be overwritten if the maximum number of generations is reached. Generations are created on the online storage when the backup detects that a file has changed. Files that never change have only one generation on the DS-System online storage.

As a best practice, you should create specific retention rules, and avoid combining the different types. For example, if you have a backup set that uses local storage, create a specific local storage retention rule. If you combine two or more of the above types, then some overlapping of the rules can occur which will affect the behavior of the retention.

NOTE: Obsolete data is what the retention rule determines should be deleted. For safety, especially when testing new retention rules, you can configure retention to send all the obsolete data to BLM Archiver, while deleting from DS-System online storage.

After assigning a retention rule to a backup set, you can enforce the rule either on demand or on a schedule. When a retention rule is enforced, any data that does not qualify for retention is deleted.

The following types of retention rules can be configured:

Time-based online retention

This type of retention uses time-based rules to determine what data to keep online. All other data is considered obsolete. If the **Move obsolete data to BLM** option is not selected, obsolete data is permanently deleted.

The following time-based online retention rules can be configured:

- **Keep most recent generations** — Removes all generations of a file from the DS-System online storage with the exception of the latest (most recent) generation. If this number is very high (e.g. 9999), all the other time-based rules specified in this retention rule will not have any effect because they will be over-ruled by this particular rule. This option has a default value of 1
- **Keep all generations for [x] interval of time for [y] interval of time** — Allows you to define a very precise time-based online retention rule.

Deletion of files removed from source / HSMed data

The Delete Options for files that have been removed from the backup source will always apply. They are the first rules that apply when a retention rule is enforced on a backup set.

If the **Move obsolete data to BLM** option is not selected, data that is not retained online is permanently deleted.

The following applies to the **Deletion of files removed from source / HSMed data** option:

- Once you enforce this retention rule on a backup set, it applies the options configured for the files that are removed from source, and for data that has been moved by a third-party HSM/ILM solution to a remote location.
- Once the file has been removed from the source machine, you can configure this retention rule to keep [x] number of generations for each file in the backup set for a specific period. DS-Client detects if files have been removed from source during the backup process.
- If Windows DS-Client detects a placeholder / stub is on the source machine, retention can delete all file generations backed up before the placeholder / stub, or it can delete all generations that are not a placeholder / stub and were backed up in an earlier session.
- By default, enforcing any retention rule deletes all obsolete data from the DS-System online storage. However, a copy of this data can be sent to BLM Archiver before it is removed completely from the DS-System online storage.

Archive old data to BLM

Every time you delete dats, you have the option to send a copy of the generations that are about to be deleted to the BLM Archiver. If **Archive old data to BLM** is used with other retention rule types, it is applied last, and only to the files that remain online after the Delete Options and Time Retention Options have run.

You specify the age of the files to move to BLM Archiver. Retention compares the last modification date with the backup session date and applies the older of the two for the archiving rules. For example, if all files older than one month should be sent to the BLM Archiver, DS-Client will compare the **last modification time** and **backup time** of a file. It takes the oldest value to calculate the age of the file.

Local Storage retention

This type of retention is used with the Local Storage feature. This only applies to the files saved in the DS-Client Local Storage.

To have the DS-Client save multiple generations on the local storage, the backup set must be assigned to a retention rule that has the Local Storage Retention options enabled. Data is kept on the Local Storage only if the same generation also exists on the DS-System online storage.

Component data integration options for VSS-aware backup sets

This type of retention is used with Windows VSS-aware backup sets.

5.2 Configuring a retention rule

The Retention Rule Wizard guides helps you configure a retention rule. Once a retention rule is defined, it can be assigned to a backup set.

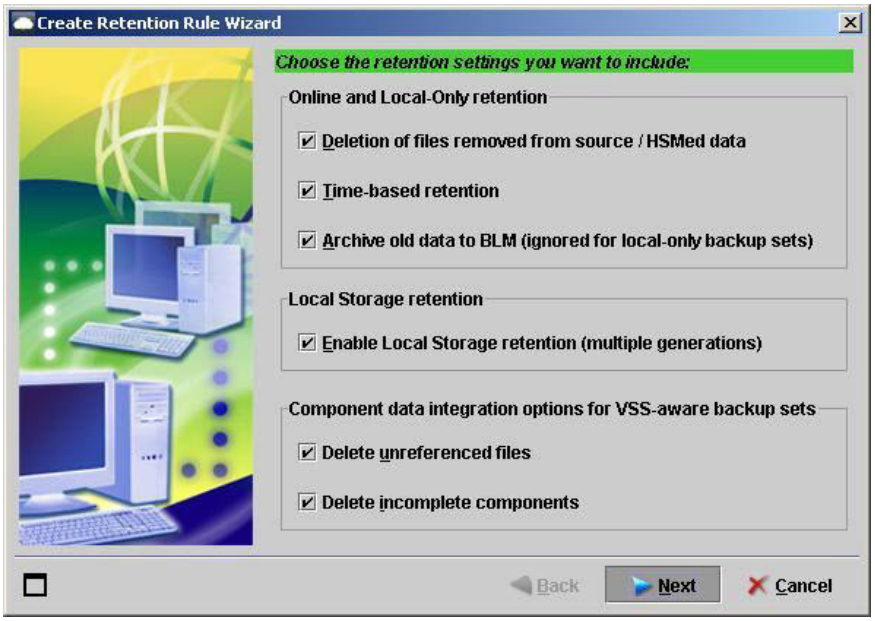
When you enforce a retention rule on a backup set, the DS-Client determines what data to retain in online storage. If data qualifies for at least one of the keep-data options, it is retained (even if it qualifies for delete in another option). If data does not qualify for any keep-data options, it is obsolete data.

You do not need to select and specify every option within a retention rule.

The **Archive old data to BLM** and **Move obsolete data to BLM** options require configuration of the BLM Archiver. For more information, see Section 12.3, “Backup Lifecycle Management (BLM)”, on page 432.

To create or edit a retention rule:

1. In the DS-User main window, click the **Retention Rules** tab and do one of the following:
   - To create a new retention rule, on the **Retention** menu, click **New Retention Rule**.
   - To modify an existing rule, select it and on the **Retention** menu, click **Edit Retention Rule**.



F1 Help: Retention Rule Wizard - Choose Retention Settings

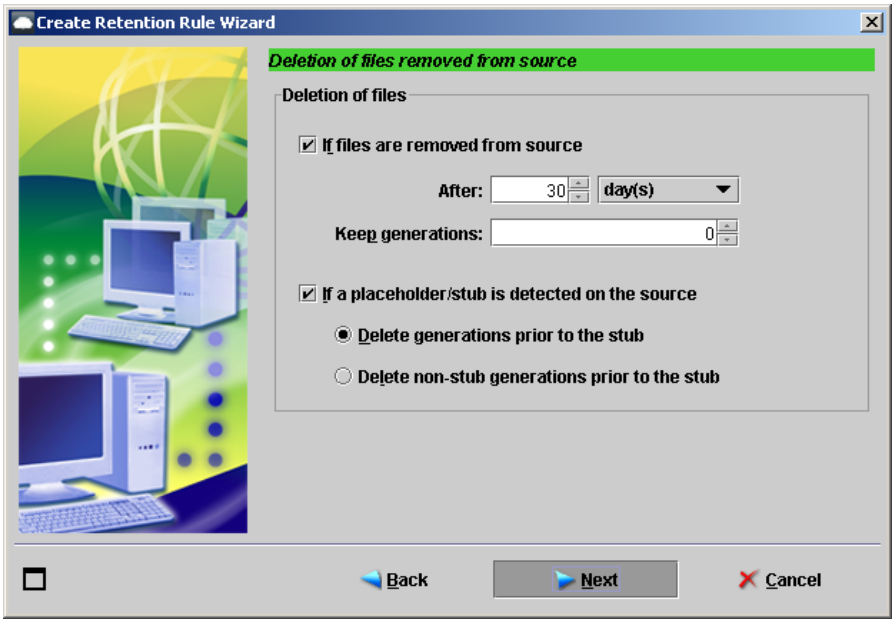
2. In the **Choose Retention Settings** page, select the options you want to define for the retention rule.

   The pages that follow depends on the selections made in this page. For details on these options, see the online help for the page.

NOTE: To explain the different dialog boxes, the following instructions assume that you have selected every available option in this page. However, in practice, it is easier to create specific retention rules that minimize overlapping.

---

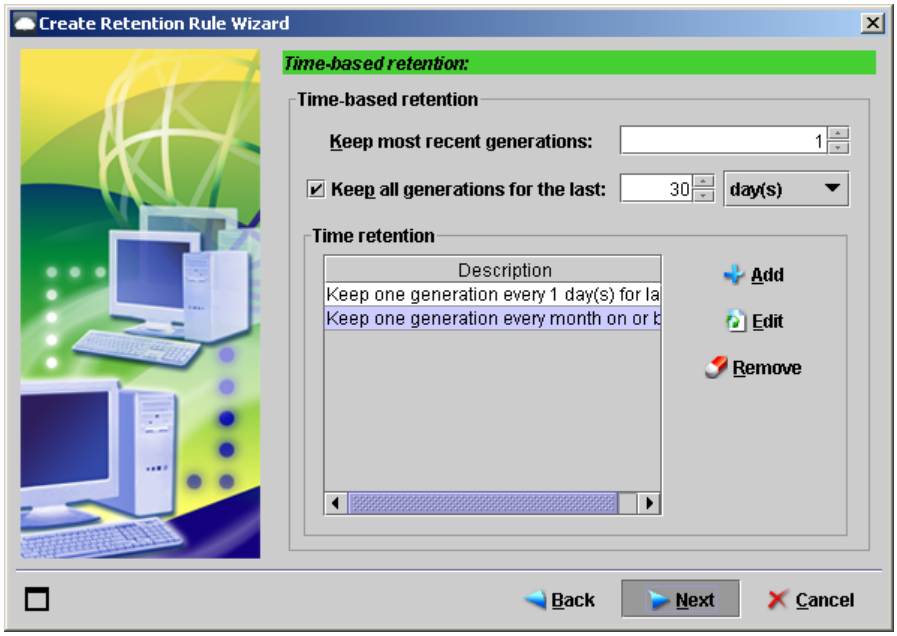
3. Click **Next**.
4. In the **Delete Options** page, select at least one delete option. For details on these options, see the online help for the dialog box.



F1 Help: Retention Rule Wizard - Delete Options

5. Click **Next**.
6. In the **Time-based Retention** page, configure at least one time-based retention option.

NOTE: When creating a retention rule for a Microsoft SQL Server database backup based on the Transaction Log Only database backup policy, you must specify a value of **0** in the **Keep most recent generations** box, select the **Keep all generations for the last** check box, and specify a time period. For all other backup set kinds, you must specify a value of **1** or higher in the **Keep most recent generations** box.

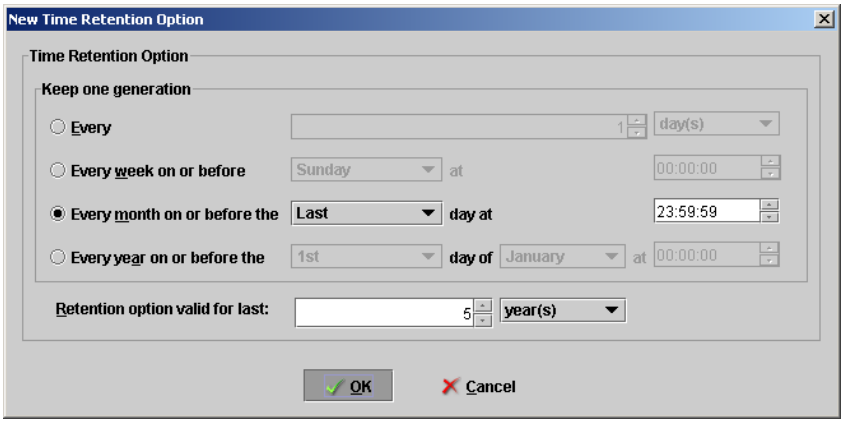


F1 Help: Retention Rule Wizard - Time Retention Options

a) In the **Keep most recent generations** box, define the minimum number of generations of a file to retain.

b) To keep all backed up generations for a minimum period, select the **Keep all generations for the last** check box, and type a number and select the amount of time.

c) To add a time-based retention option, click **Add** and do the following:

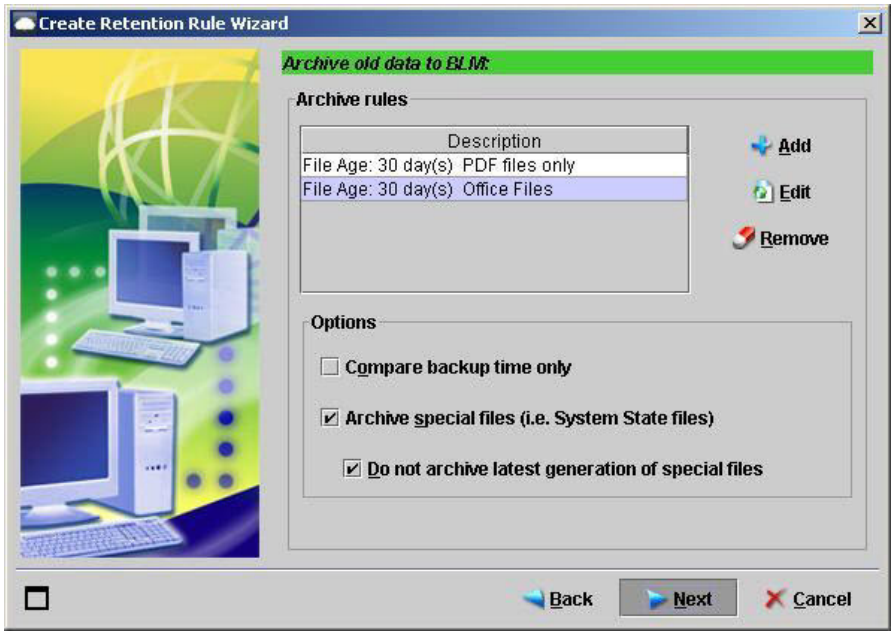


F1 Help: New Time Retention Option

- In the **New Time Retention Option** dialog box, configure the required details, click **OK**.

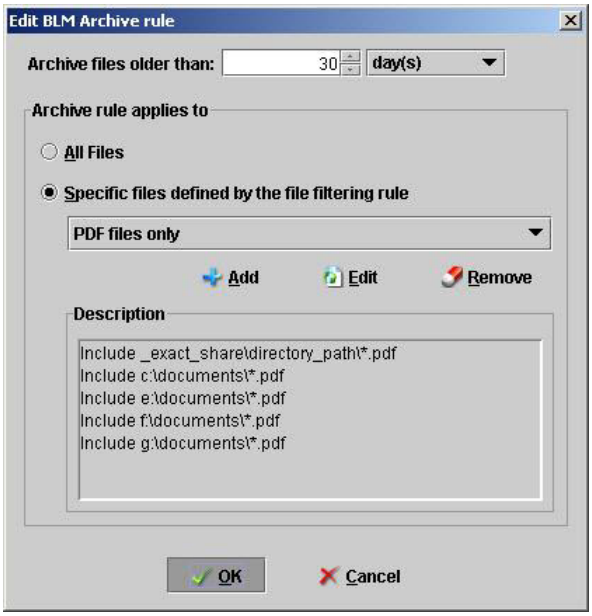
7. Click **Next**.

8. In the **Archive Old Data to BLM** page, configure at least one archive rule. For details on these options, see the online help for the page.



F1 Help: Retention Rule Wizard - Archive Old Data to BLM Options

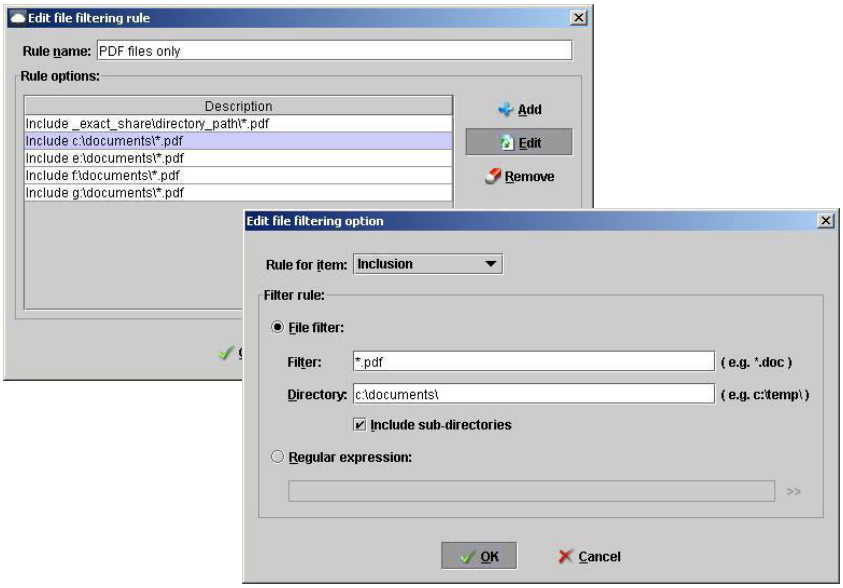
a) To add an Archive option, click **Add**. In the **BLM Archive Rule** dialog box, select the parameters that qualify a generation to be pushed to BLM.



F1 Help: BLM Archive Rule

b) In the **Archive files older than** box, type a number and select the amount of time to define the age of the files to archive. Online files older than the specified number of days will be 'pushed' to BLM.

c) In the **Archive rule applies to** section, you can select **All Files** or select a file filter rule from the drop-down list, or add a new filter rule and select it. For details on these options, see the online help for the dialog box.

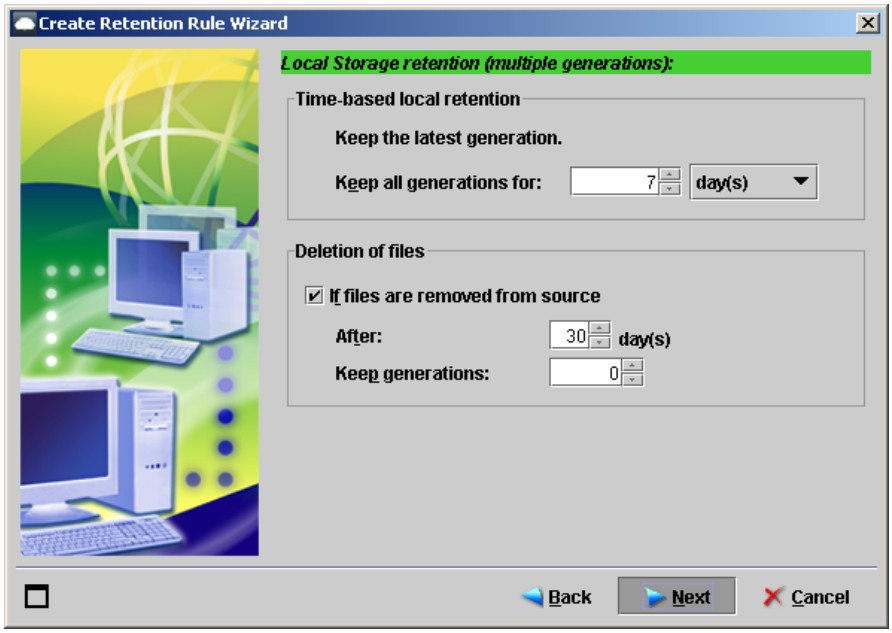


F1 Help: File Filtering Rule

F1 Help: File Filtering Option

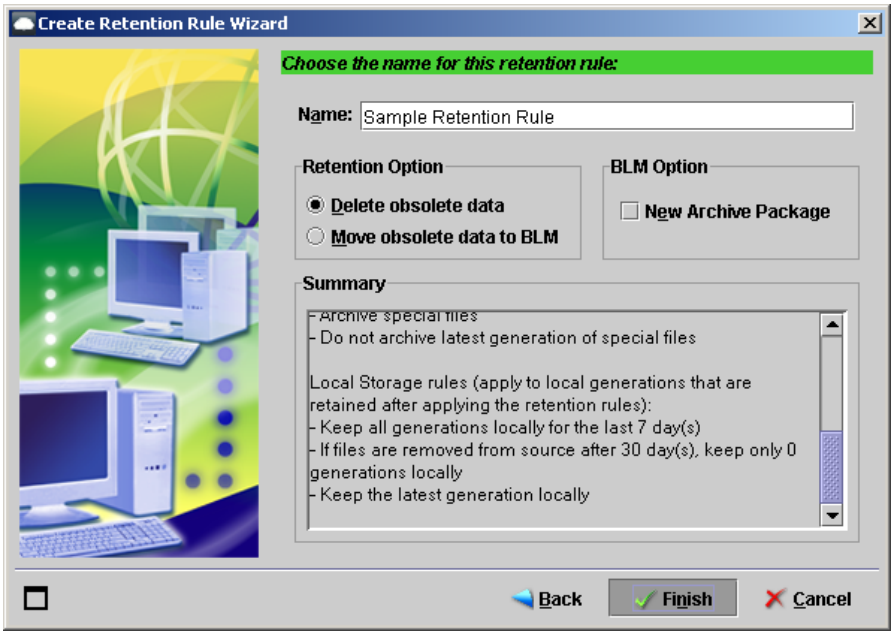
NOTE: Try to keep any rules as simple as possible.

9. Click **Next**. In the **Local Storage Retention (multiple generations)** dialog box, configure the local storage retention options. For details, see the online help for the dialog box.



F1 Help: Retention Rule Wizard - Local Storage Retention Options

10. Click **Next**.



F1 Help: Retention Rule Wizard - Choose a name

11. In the **Choose the name for this retention rule** page, do the following:

    a) In the **Name** box, type a name for the retention rule.

    b) Under the **Retention Option** section, do one of the following:

        1. To allow delete of all obsolete data when enforcing the retention, select **Delete obsolete data**.

        2. To archive all obsolete data to BLM, select **Move obsolete data to BLM**.

    c) In the **BLM Option** section, select **New Archive Package** to have the BLM Archiver create a new archive package every time data is sent.

    d) In the **Summary** section, you can review the configured options, or click **Back** to make corrections.

12. Click **Finish** to save the retention rule.

5.3 Assigning a retention rule to a backup set

You can assign a retention rule to a backup set when creating a new backup set in the New Backup Set Wizard. You can also assign a retention rule to an existing backup set or dissociate a retention rule that is assigned to an existing backup set.

NOTE: If two-factor authentication is enabled on the DS-Client, you can assign a retention rule to an existing backup set only if you are an authorized user listed in the two-factor authentication settings for the DS-Client. For more information on two-factor authentication, see Section 3.5, “Configuring the two-factor authentication settings”, on page 66.

When you are a DS-Client administrator, you can manage all the retention rules on the **Retention Rules** tab.

NOTE: Retention rules apply only when they are enforced either on demand or on schedule.

To assign a retention rule to a backup set:

1. Do one of the following:
   - On the **Sets** menu, point to **Backup Sets**, and then click **Properties**. Click the **Retention** tab.

     F1 Help: Set Properties - Retention tab
   - If you are a DS-Client administrator, click the **Retention Rules** tab. Browse for the backup set to which you want to apply the retention rule, right-click it, and then click **Assign to Retention**.

     F1 Help: Assign to Retention
2. Ensure that the **Use a specific Retention Rule** option is selected.
3. Select the retention rule that you want to assign to the backup set, and then click **OK**.
4. (If two-factor authentication is enabled) In the **Two-factor Authentication Validation** dialog box, in the **Authentication Code** box, type the authentication code that you have received from the DS-System, and then click **Validate**.

   NOTE: The authentication code is sent to the email address that is associated with your user account in the two-factor authentication settings for the DS-Client. The code is valid for two hours. To request an authentication code be resent to you, click **Resend**.

To dissociate a retention rule from a backup set:

1. Do one of the following:

   - On the **Sets** menu, point to **Backup Sets**, and then click **Properties**. Click the **Retention** tab.

     F1 Help: Set Properties - Retention tab

   - If you are a DS-Client administrator, click the **Retention Rules** tab. Browse for the backup set to which you want to apply the retention rule, right-click it, and then click **Assign to Retention**.

     F1 Help: Assign to Retention

2. Ensure that the **No Retention Rule** option is selected, and then click **OK**.

5.4 Enforcing a retention rule

The frequency at which a retention rule is applied should be a major consideration. If you define an extremely granular retention rule such as time-based retention with rules for daily, weekly, monthly, and yearly retention that apply to a backup set with data from a long period of time online (like 10 years). This type of retention works best when applied only once.

If you apply it again, the next day, even if changes have been made in the past 24 hours and backed up, the other retention rules (weekly, monthly, yearly) will probably not capture data fitting the policy. By applying the rule only once, you can make it as 'granular' as you want, based on your knowledge of the data online.

Regular retention, such as weekly scheduled enforcement is more effective with retention rules that do not contain rule intervals longer than the frequency of enforcement. This means if you enforce retention weekly, it is best not to have rules for intervals longer than one week.

You must also consider the frequency of data changes.

To enforce a retention rule on a backup set on demand:

1. Click the **Backup Sets** tab.
2. In the tree, select the backup set on which you want to enforce retention.
3. On the **Retention** menu, click **Enforce Retention**.
4. In the confirmation dialog box, click **Yes**.

5.5 Deleting a retention rule

You can delete a retention rule that is not currently associated with any backup sets.

To delete a retention rule:

1. Click the **Retention Rules** tab.
2. In the tree, select the retention rule that you want to delete.
3. On the **Retention** menu, click **Delete Retention Rule**. A confirmation dialog box appears.
4. Click **Yes** to delete the schedule.

6 Working with backup sets

This section provides information about creating and modifying backup sets.

6.1 About backup sets

A backup set consists of a list of the items that need to be backed up and the settings that define how to perform the backup.

The following backup sets are supported by DS-Clients running on different operating systems.

Backup set	Windows	Linux	Mac
File System Backup			
File System	S		
NAS, UNIX-SSH, NFS, Local File System		S	
UNIX-SSH, NFS, Local File System			S
Permissions	S	S	S
Cloud Backup			
Google G Suite	S		
Microsoft Office 365	S		
Microsoft Office 365 Groups	S		
Salesforce.com	S		
Database Backup			
IBM DB2		S	
Microsoft SQL Server (classic or VSS-aware)	S		
Oracle Database	S	S	
Oracle MySQL	S	S	S
Oracle-SBT		S	
PostgreSQL		S	S
Email Message Backup			
Microsoft Exchange Server	S		
Microsoft Outlook	S		
Server Backup			
Microsoft Exchange Server	S		
Microsoft SharePoint Server (classic or VSS-aware)	S		
Virtualization			
Microsoft Hyper-V Server (Standalone or Cluster)	S		
Physical-to-Virtual (VMware vCenter)	S	S	
VMware VADP	S	S	

Table 1 Supported backup set kinds, indicated by the letter “S”

Backup set	Windows	Linux	Mac
VM Replication			
Microsoft Hyper-V Checkpoint Replication	S		
VMware vSphere Snapshot Replication	S		

Table 1 Supported backup set kinds, indicated by the letter "S"

6.1.1 Backup set types

This section describes how to create and use the different backup set types in addition to the Online backup set type.

6.1.1.1 Statistical backup sets

DS-Client can generate statistical data on data backup usage and trends before you perform actual backups.

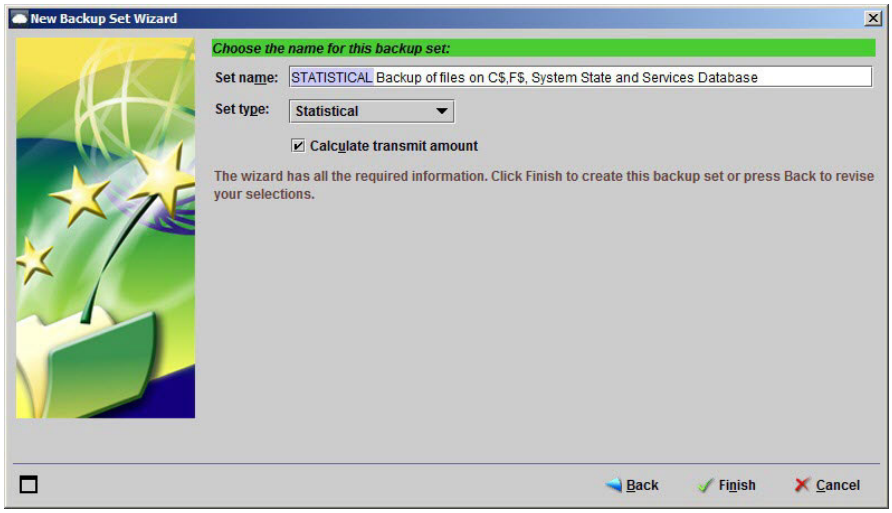
Using Statistical backup sets, you can estimate the initial backup size and the amount of data changes between backups, so that you can determine the duration of the initial backup of baseline data and of subsequent backup sessions.

To perform a statistical backup, you do not need a customer account with a service provider. No backup data is transmitted; only statistical data is gathered and stored in the DS-Client database during a Statistical backup session.

NOTE: You cannot convert a Statistical backup set to an Online backup set.

To create a statistical backup set:

1. Configure the backup set in the New Backup Set Wizard.
2. On the **Choose the name for this backup set** page, in the **Set Type** box, select **Statistical**.



F1 Help: Choose the name for this backup set

F1 Help: Choose the name for this backup set (Linux DS-Client)

3. Select the **Calculate Transmit Amount** check box to emulate an actual backup transfer process. During statistical backups, specified backup files will be read from their source and processed for compression and encryption.
4. Click **Finish**.
5. Allow the backup set to run on schedule or on demand to generate the statistical data. As a guideline, run the **Statistical** backup set in your data environment for at least two weeks.

   The longer the period for which you run a **Statistical** backup set, the more accurately the trend will be represented.
6. Use the DS-Client Load Summary, Storage Summary, and Report features to view the statistics generated. See Chapter 9, “Monitoring DS-Client activities”.

6.1.1.2 Self-contained backup sets

You can use Self-Contained backup sets to perform backup and restore tasks using only local storage. Self-Contained backup sets have the following features and limitations:

- Platforms: DS-Client running on Windows / Linux / Mac
- Data is stored locally at customer site (local disk or UNC path)
- Up to 5 Self-Contained backup sets
- Up to a total of 10 GB of protected data
- Only the latest generation of a file is protected

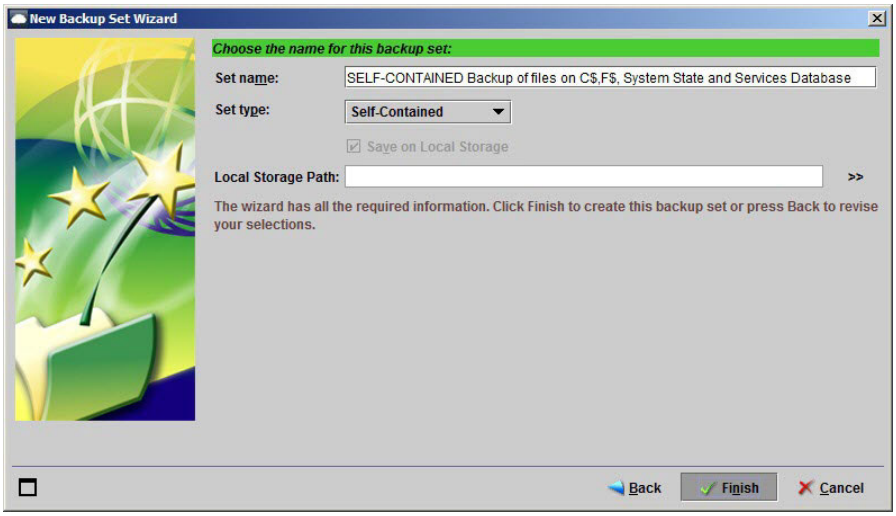
- Data stored is compressed

NOTE: You cannot convert a Self-Contained backup set to an Online backup set. You can use the **Clone** feature to duplicate it as a new Online backup set (see Section 7.7, “Cloning a backup set”, on page 315).

IMPORTANT: Before creating a Self-Contained backup set, you must configure the Local Storage Path. (On the **Setup** menu, click **Configuration** and then click **Parameters**. Beside the **Local Storage Path** box, click **>>** to browse and select the path. Click **OK** or **Apply** to save the setting.)

To create a self-contained backup set:

1. Configure the backup set in the New Backup Set Wizard.
2. On the **Choose the name for this backup set** page, in the **Set Type** box, select **Self-Contained**.



3. Click **Finish**.

6.1.1.3 Local-only backup sets

Local-Only backup sets must be enabled by your service provider from DS-System. These are the same as Self-Contained backup sets but without the restrictions on the number of sets or capacity. Local-Only backup sets have the following features and limitations:

- Platforms: DS-Client running on Windows / Linux / Mac
- Data is stored locally at customer site (local disk or UNC path)
- Data stored is compressed; however, no master/delta processing is applied.

- The total amount of Local-Only storage is allocated from DS-System in GB. You can verify the allocated amount in the **DS-Client Local-Only Storage Quota** section of the **View Quotas** dialog box (On the **Setup** menu, click **View Quotas**).

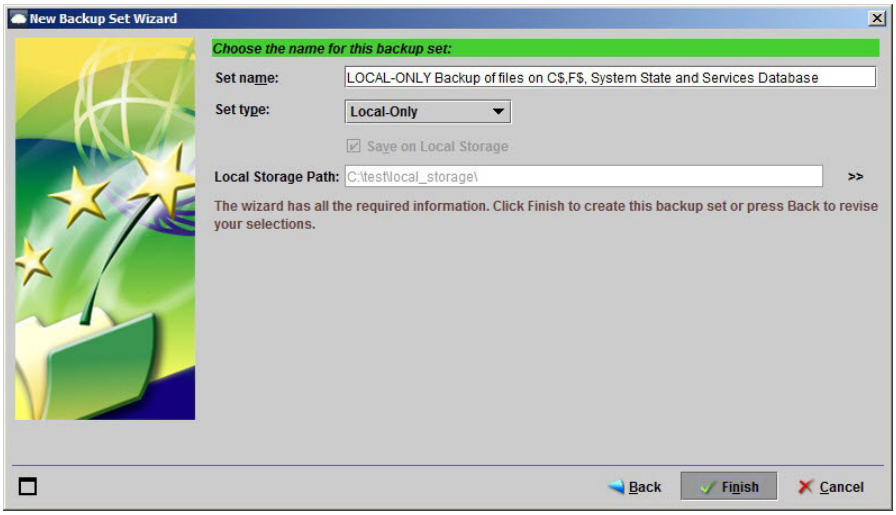
IMPORTANT: There must be enough capacity available in the Local Storage Path to accommodate the total amount of Local-Only capacity licensed.

- To convert a Local-Only backup set to an Online backup set, see Section 7.8, “Converting a backup set”, on page 316.
- Local-Only backup set data is protected from accidental or inadvertent deletion by a Safe Delete mechanism. See Section 7.15.4, “Deleting local-only backup set data”, on page 342.

IMPORTANT: Before creating a Local-Only backup set, you must configure the Local Storage Path. (On the **Setup** menu, click **Configuration** and then click **Parameters**. Beside the **Local Storage Path** box, click **>>** to browse and select the path. Click **OK** or **Apply** to save the setting.)

To create a local-only backup set:

1. Configure the backup set in the New Backup Set Wizard.
2. On the **Choose the name for this backup set** page, in the **Set Type** box, select **Local-Only**.



3. Click **Finish**.

6.1.1.4 Instant Recovery backup sets

You can use instant recovery backup sets to save uncompressed and unencrypted backup data in its native format to a configured storage location called the instant recovery vault.

NOTE: For more information on instant recovery backup sets, see Section 7.2, “Working with instant recovery backup sets”, on page 301.

6.1.2 Backup considerations

To create a new backup set, you will walk through the pages in the New Backup Set Wizard to make all the necessary selections. After a backup set is created, you can still modify its properties.

The following selections are common to all backup sets:

- Select the kind of backup.
- Select the computer to backup.
- Select the items to backup.
- Select any special backup options for the backup items.
- Select a Retention Rule for the backup set.
- Select any special backup options for the backup set.
- Select any notification options for the backup set.
- Select a Schedule for the backup set.
- Select a name for the backup set.
- Select the type of backup set (Online, Self-Contained, Local-Only, Instant Recovery, or Statistical).

Most pages in the New Backup Set Wizard correspond to a tab in the **Backup Set Properties** dialog box where the options are the same (see Table 2). Some page titles are different, depending on the kind of backup set selected.

Page in the New Backup Set Wizard	Tab in Backup Set Properties
Choose the kind of backup set	**N/A**
Select the computer Select the backup source (Linux)	**N/A**
Select share & path for the database / data dump dialog box	**N/A**

Table 2 Corresponding tabs in the Set Properties dialog box

Page in the New Backup Set Wizard	Tab in Backup Set Properties
Specify the protocol for dumping the database (Linux DS-Client)	**N/A**
Select Items for backup set	**Items**
Select backup item options	**Items**
Specify backup set options	**Options**
Specify backup set Advanced Options (Windows DS-Client)	**Advanced Options**
Specify backup set performance options	**Performance**
Specify notification options	**Notification**
Choose a retention rule for this backup set	**Retention**
Choose a schedule for this backup set	**Schedule**
Choose the name for this backup set	**Set Info**

Table 2 Corresponding tabs in the Set Properties dialog box

Some options are common to most backup sets, including Pre/Post, Exclude Old Files, and Continuous Data Protection.

To start the New Backup Set Wizard:

1. On the **Sets** menu, click **New Backup Set**. The New Backup Set Wizard appears.
2. On the **Choose the kind of backup set** page, select the kind of backup.

   F1 Help: Choose the kind of backup set

   F1 Help: Choose the kind of backup set (Linux DS-Client)

   NOTE: This function is available only when you create a backup set. It cannot be modified. The dialog box is different, depending on the type of DS-Client you are using (Windows, Linux, Mac), the tools that are enabled for the DS-Client, and if any pre-requisite software is installed on the DS-Client computer.

3. Click **Next**.

   The next dialog box depends on the kind of backup set you are creating.

6.1.2.1 DS-Client configuration

The DS-Client software is designed to perform unattended, scheduled backups of single computers or an entire LAN. To maximize the DS-Client's performance, consider the following:

Use the latest supported operating system	Running the DS-Client software on the latest supported operating system will boost backup speed.
Provide adequate CPU and memory	Since the DS-Client software performs compression and encryption during the backup, it is CPU-intensive. Use the Load Summary to determine CPU and memory use during backups (on the **Reports** menu, click **Load Summary**). If it is very high, you should consider a more powerful CPU and more memory for the DS-Client computer.
Use multi-processor systems	The DS-Client software is designed to scale on SMP systems, when installed on Windows. Running the DS-Client on such a system provides large performance boosts when compared with a single CPU configuration.
Use a dedicated database server	The DS-Client uses a database to store backup logs (catalogs). When using the DS-Client in a LAN configuration that can exceed a few hundred thousand backup files, the database update and retrieve speed can affect backup performance significantly. Use a dedicated computer for the DS-Client database to provide faster performance.
Provide faster LAN connections.	When running the DS-Client on a powerful system, LAN connections can become a bottleneck. Provide a faster LAN connection to significantly improve the backup speed.
Schedule appropriate number of backups	Scheduling too many backups at the same time will increase overall backup time due to CPU, memory and LAN connection over utilization. Use the Load Summary to determine CPU and memory utilization during backups.

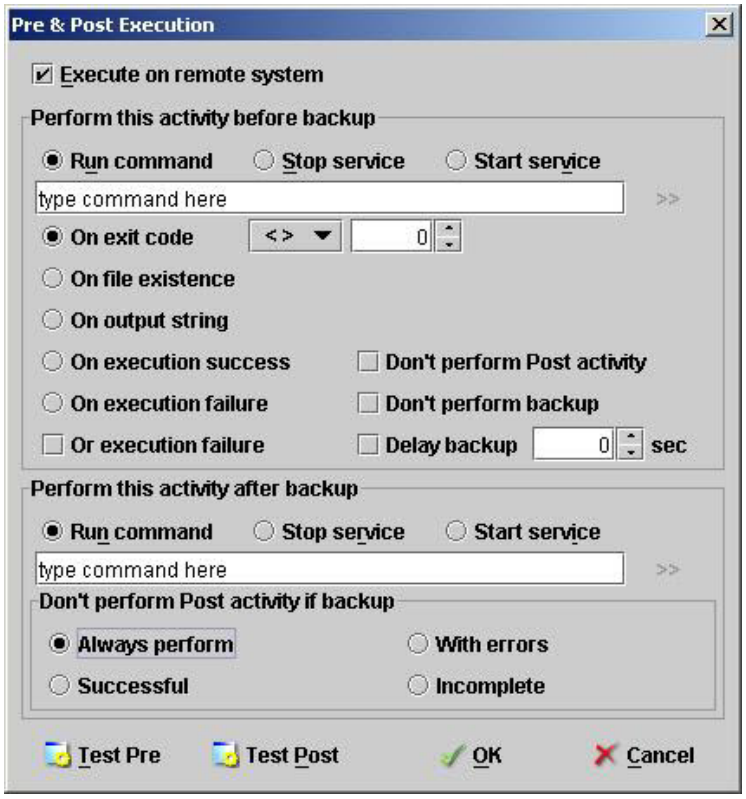
6.1.2.2 Enabling Pre/Post processes in Backup Set Options

Pre/Post allows you to specify a command to run before (Pre) and/or after (Post) execution of the backup.

You can access Pre/Post settings in Backup Set Options in the New Backup Set Wizard or Backup Set Properties. You can also access Pre/Post settings from the Restore Wizard to execute Pre/Post options with a restore operation (ex: stop service, restore file, start service).

To enable Pre/Post processes:

1. Browse the Backup Sets tree and select the required backup set.
2. On the **Sets** menu, point to **Backup Sets**, and then click **Properties**.
3. In the **Backup Set Properties** dialog box, click **Options**.
4. Click **Pre/Post**. The **Pre & Post Execution** dialog box appears.



F1 Help: Pre & Post Execution

F1 Help: Pre & Post Execution (Linux DS-Client)

For details on these options, see the F1 help for the dialog box.

5. After selecting the required options, click **OK** to save the Pre/Post settings.

Backing up Windows service using Pre/Post processes:

You can back up Windows services using the Pre/Post processes. Services normally lock associated files while the Windows computer is running (i.e. these files will not be backed up). Examples of services are DHCP and WINS.

NOTE: There could be issues with back up of services on the DS-Client computer itself, since shutting down some core services can cause problems for the backup process.

The steps that apply to Windows service backups are identical to file system backups. However, you must know the specific file path of the service files to be backed up.

6.1.2.3 Excluding old files

You can exclude old files from being backed up.

NOTE: This option is not available if the Windows “System State” or “Services Database” is selected for backup.

To exclude old files:

1. Browse the Backup Sets tree and select the required backup set.
2. On the **Sets** menu, point to **Backup Sets**, and then click **Properties**.
3. In the **Backup Set Properties** dialog box, click **Options**.
4. Click **Exclude old files**.

   F1 Help: Exclude Old Files
5. In the **Old files exclusion** section, select one of the following:
   - No exclusion
   - Exclude files older than [...] days / weeks / months / years
   - Exclude files older than [date]

   NOTE: The age of a file is determined by its **Last Modified** date.

   ---
6. Click **OK**.

6.1.2.4 Enabling Continuous Data Protection (CDP)

When CDP has been enabled in a backup set, the backup trigger is the detection of a change to a file on the backup source. CDP is available in these backup set kinds:

- File system backup sets (Windows / UNIX DS-Client)

  NOTE: CDP supports pure file system backup items only. System Status and Services Database are not supported.

- Email message backup sets of Microsoft Exchange Server using EWS (Windows DS-Client)

Prerequisites for continuous data protection:

Before using CDP in backup sets, you must do the following:

- Know your data environment. Statistical backups and LAN Storage Discovery can help you to assess your data environment. See Section 6.1.1.1, “Statistical backup sets”, on page 112 and Section 13.1, “About the LAN Storage Discovery Tool”, on page 473.
- Consider the number of generations that you want to maintain online. Normally, each change counts as a generation. The file change detection method depends on the operating system and backup set kind. Backup frequency depends on the interval for changes selected, which can be wide (up to many hours) or precise (down to the second-level).
- Ensure the system clocks on the DS-Client computer and the backup source computer are synchronized. CDP is a time-sensitive operation.
- For CDP in Microsoft Exchange Server backup sets that use EWS, also ensure the following:
  - That Autodiscover has been enabled on the Exchange server.
  - That the address that Autodiscover provides is resolvable.
  - That the internal network in which data requires CDP backups has a DNS server / hosts file configuration.
  - This ensures that, when the client attempts to connect to the Exchange server via the FQDN provided by the Autodiscover service, an IP address of the Exchange server can be returned. This is because the name provided by the Autodiscover service is not an IP address but a FQDN or a domain name, for example, ewsserver.example.com.

You can enable CDP when creating a new backup set or after a backup set has been created.

To enable continuous data protection, do one of the following:

- In the New Backup Set Wizard, on the **Specify backup set options** page, select **Continuous data protection**, and then click **[>>]**.
- In the **Options** tab of a backup set's properties, select **Continuous data protection**, and then click **[>>]**.

For more information about CDP, see the Knowledge Base article in Section 15.27, "Continuous data protection (Backup set option)", on page 622.

6.1.2.5 Using the DS-Client buffer

The DS-Client buffer is a temporary storage location on the DS-Client computer. When the **Use Buffer** option is selected, backup files are transferred to the buffer location first, and then the backup or restore operation is performed. This minimizes the time that the LAN must support the additional backup or restore traffic. This is particularly useful if the DS-Client's connection to the DS-System is much slower than its connection with the LAN. The DS-Client deletes all files from the DS-Client buffer after each activity, regardless of whether or not the operation was performed successfully.

The DS-Client buffer can also provide temporary storage as the database dump location for Microsoft SQL and Microsoft Exchange database backups, which avoids the need for extra disk capacity on network servers. Backup sets configured to use the DS-Client buffer also automatically benefit from the Block-level resume feature. For more information, see Section 15.26, "Block-level resume", on page 620.

NOTE: Note: For information on how to change the location of the DS-Client buffer, see Section 3.1.5, "Configuring the parameter settings", on page 25.

The following DS-Client activities and backup set types use the DS-Client buffer:

Backup and Restore	The DS-Client buffer speeds up backup operations by copying files to DS-Client buffer first (at LAN speed) and then transferring files to the DS-System (at DS-System connection speed). This minimizes time that the network resource is used for the backup operation. The DS-Client speeds up restore operations by restoring files to the DS-Client buffer first (at DS-System connection speed) and then copying files to the network resource (at LAN speed). This minimizes the time that the network resource is used for the restore operation.
Microsoft Exchange Server	The DS-Client always copies the Microsoft Exchange Server database(s) to the DS-Client buffer first, and then transfers the files to the DS-System. For extremely large Microsoft Exchange Server databases, you can specify that the backups be performed using the DS-Client Pipe option.

Microsoft SQL Server, Oracle Server	When performing backups/restores of Microsoft SQL Server or Oracle Server databases with the Dump to DS-Client Buffer option selected, database dump(s) are created on the DS-Client buffer and then transferred to the DS-System. This provides disk space for database dumps on the DS-Client computer and eliminates the requirement for extra disk capacity on the database servers.

For best results when using the DS-Client buffer, do the following:

- Ensure that sufficient disk capacity is available on the drive containing the DS-Client computer's buffer directory. For example, to support the backup activities for SharePoint Online data, the DS-Client buffer must provide the storage capacity calculated based on the advanced parameters SharePointOnlineBackupBatchSize (in the Miscellaneous category) and MaxSessions (in the Performance category) and the largest possible size of files that are larger than 500 MB in SharePoint Online:

  ```
  SharePointOnlineBackupBatchSize x MaxSessions x Largest file size
  ```

  Sample values are assigned below to provide an illustration:

  - SharePointOnlineBackupBatchSize: value = 1
  - MaxSessions: value = 2
  - Largest possible size of files that are larger than 500 MB in your SharePoint Online Server: 10 GB

  In this example, the DS-Client buffer capacity required for SharePoint Online backup activities is 1 item per batch x 2 sessions x 10GB = 200 GB

- Ensure that the buffer storage location supports the same structure as the source. For example, if your DS-Client buffer is on a Linux DS-Client, the maximum number of sub-directories allowed within a single directory is 32767. If you try to back up a path that holds more than this number of sub-directories using the DS-Client buffer, it will fail since it exceeds the maximum number of sub-directories allowed.

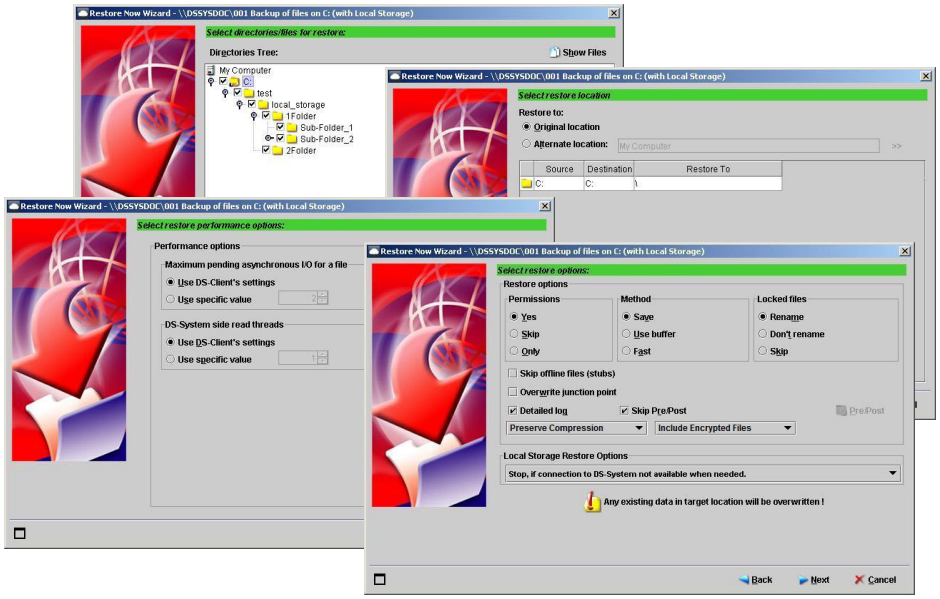
- Do not select the **Use Buffer** option for backup sets that have data on the DS-Client computer. Use Buffer copies backup files to the DS-Client buffer. From there, they are processed for backup by the DS-Client. If the DS-Client buffer directory is part of a backup set, problems can occur because the backup might catch a loop that reads the same directories being copied for backup.

- To maximize speed, provide enough credentials for all backup sets to access the DS-Client buffer directory.

  The DS-Client buffer is also used by activities that access DS-Client database to create temporary files for bulk insert (for optimization of processing). If a backup set is not assigned enough credentials to create, delete, read, and write files in the DS-Client buffer directory, bulk insert operations will fail and a regular insert is used instead.

6.1.3 Restore considerations

DS-Client performs data restores for individual backup sets. To initiate a restore for a backup set, you need to select the data to be restored, designate the destination location, and define the restore results and the restore process through several steps in the Restore Now Wizard. During restore, the DS-Client recreates the digital signature and compares it to the one attached to the file to verify that the restored file content is exactly the same as that which was backed up.



Restore Now Wizard page	Description
Step 1. Select the backup set	See Section 6.2.5.1, “Selecting the backup set”, on page 159.
Step 2. Select items to restore	See Section 6.2.5.2, “Selecting the items to restore”, on page 159. • See Section 6.1.3.1, “Customizing data selection and the restore process”, on page 125. • See Section 6.1.3.2, “Restoring a specific file or files of a specific pattern”, on page 127. • See Section 6.1.3.3, “Restoring only modified files”, on page 129. • See Section 6.1.3.5, “Restoring a specific generation of a file”, on page 130.
Step 3. Select the restore destination	See Section 6.2.5.3, “Specifying the restore destination”, on page 161. • See Section 6.1.3.8, “Restoring data to an alternate location”, on page 134.
Step 4. Select performance options	See Section 6.2.5.4, “Specifying performance options (Windows DS-Client)”, on page 162.
Step 5. Specify restore options	See Section 6.2.5.5, “Specifying restore options”, on page 163. • See Section 6.1.3.6, “Using Pre/Post processes to run processes before and/or after a restore”, on page 133.

Restore Now Wizard page	Description
Step 6. Specify the reason for the restore	See Section 6.2.5.6, “Specifying the reason for the restore”, on page 164.

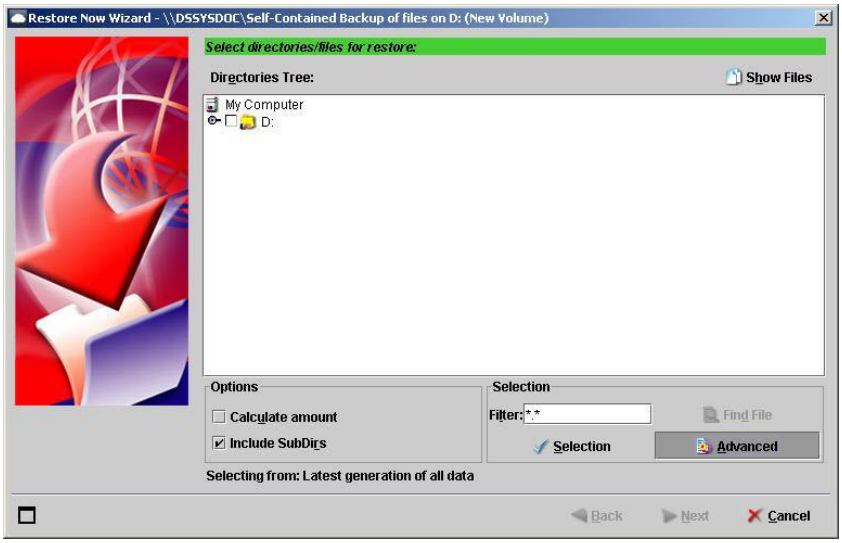
Instructions on restoring different types of backups are provided in separate sections.

The Restore Now Wizard offers features for customizing the restore process and results. These features are highlighted in the following sections.

6.1.3.1 Customizing data selection and the restore process

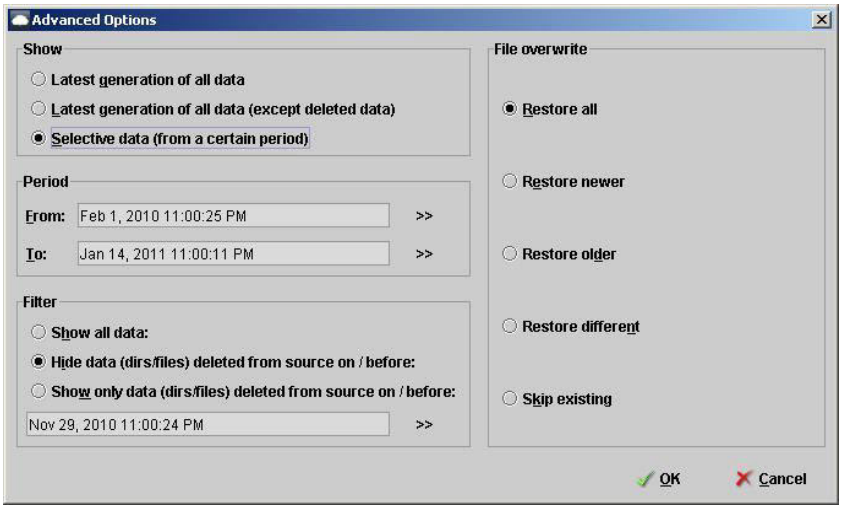
The Restore Now Wizard offers two kinds of advanced options.

- **Show**, **Period**, and **Filter** options allow you to narrow down the data that the Restore Now Wizard will display for you to select.
- **File Overwrite** policies, on the other hand, allow you to define the results you require for the restore. They do not affect the display of data in the Restore Now Wizard but determine how DS-Client will perform the restore.
  - To open the Restore Now Wizard, browse the Backup Sets tree and select the required backup set. Then on the **Restore** menu, click **Restore Now**.



F1 Help: Select directories / files (Restore / BLM / Delete / Validation)

  - To access advanced options for restore, in the Restore Now Wizard click **Advanced**.



F1 Help: Advanced Options

- To narrow down the data the Restore Now Wizard displays, make selections in the sections **Show**, **Period**, and **Filter**.

  Your selections in these sections will immediately determine the data displayed for you to select in the **Select directories/files to restore** page.

- To customize the results of a restore, select one of the **File Overwrite** policies.

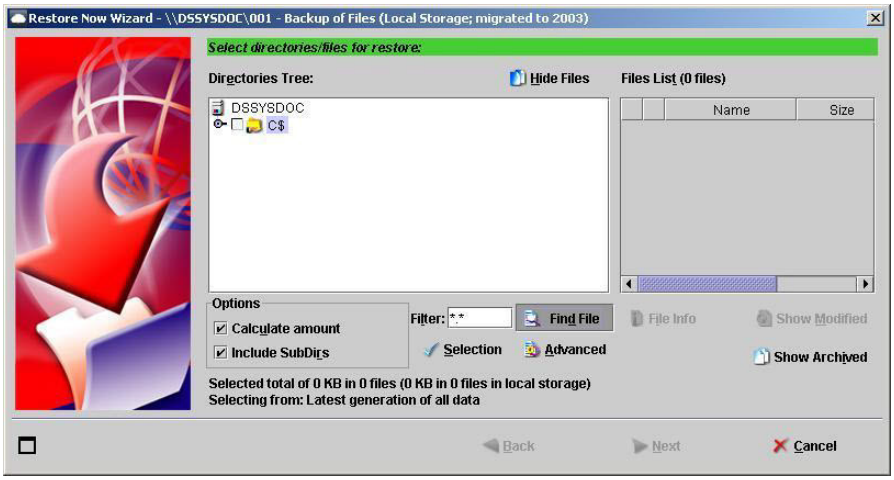
  However, unlike the **Show**, **Period**, and **Filter** options, the **File Overwrite** policy that you select will not affect the data displayed in the **Select directories/files to restore** page. Instead, it will determine how DS-Client performs the restore after you have finished with the Restore Now Wizard.

  For information, see the F1 help for the **Advanced Options** dialog box.

6.1.3.2 Restoring a specific file or files of a specific pattern

The Restore Now Wizard offers a **Filter** feature and a **Find Backed Up Files** feature to help you locate specific backed up files for restore.

- To open the Restore Now Wizard, browse the Backup Sets tree and select the required backup set. Then on the **Restore** menu, click **Restore Now**.



To browse for backed up files of a specific pattern for restore:

The **Filter** narrows down both the folders available for selection and the files displayed in the **Select directories/files to restore** page of the Restore Now Wizard.

1. On the **Select directories/files to restore** page, type a pattern, file name, or extension in the **Filter** box.

   Only folders containing files that match the filter will be available for selection.

2. To browse for specific files, select a directory, and then click **Show Files**.

   Only files that match the filter will be displayed in the **Files List**.

3. Select the check box beside each file or folder you want to restore.

To search for backed up files by name or extension for restore:

The **Find Backed Up File** feature performs searches through the backup set in the DS-Client database according to the pattern you enter.

1. On the **Select directories/files to restore** page, click **Find Files**. The **Find Backed Up File** dialog box appears.

2. In the **Search For** section, select how you want to search for backed up files:

   - **File Name** — You can search for one or multiple files by a specific file extension or search for a specific file by its file name and file extension.

   - **File ID** — You can search for a specific file by its ID, which is automatically assigned by DS-Client.

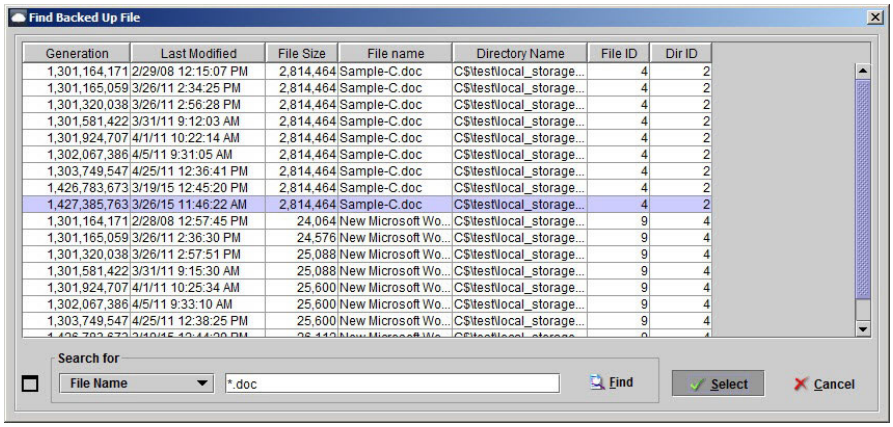
3. Type the required search term, and then click **Find**.
   - Searching by file name — type an extension (for example: `*.exe`) or type the file name and extension of a specific document (for example: `budget.xlsx`) that you are trying to find.
   - Searching by file ID — type the ID of a specific file.
4. To select one file or multiple files from the search results for restore, do one of the following:
   - One file — Click the required file, and then click **Select**.
   - Multiple files — Click the required files while holding CTRL, and then click **Select**.

Microsoft Office 365 backup sets only: To search for files by various columns

1. On the **Select directories/files to restore** page, click **Find Files**. The **Find Backed Up File** dialog box appears.
2. In the **Search For** section, select a column from the drop-down menu, type a search term or parameter, and then click **Find**.
3. To select one file from the search results for restore, click the file, and then click **Select**.

To see a list of the files that you have currently selected for restore:

- On the **Select directories/files to restore** page, click **Selection**.



F1 Help: Find Backed Up File

6.1.3.3 Restoring only modified files

You can specifically restore modified files, which can be either of the following:

- Files that do not currently exist on the backup source
- Files that differ from the version on the backup source

The Restore Now Wizard has a **Show Modified** feature to help locate these files. Once found, you can use the **Add Modified** option to select these files for restore. DS-Client locates modified files by searching through the backup source and comparing its results with details of the backup set in the DS-Client database.

- To open the Restore Now Wizard, browse the Backup Sets tree and select the required backup set. Then on the **Restore** menu, click **Restore Now**.

To locate and add modified files for restore:

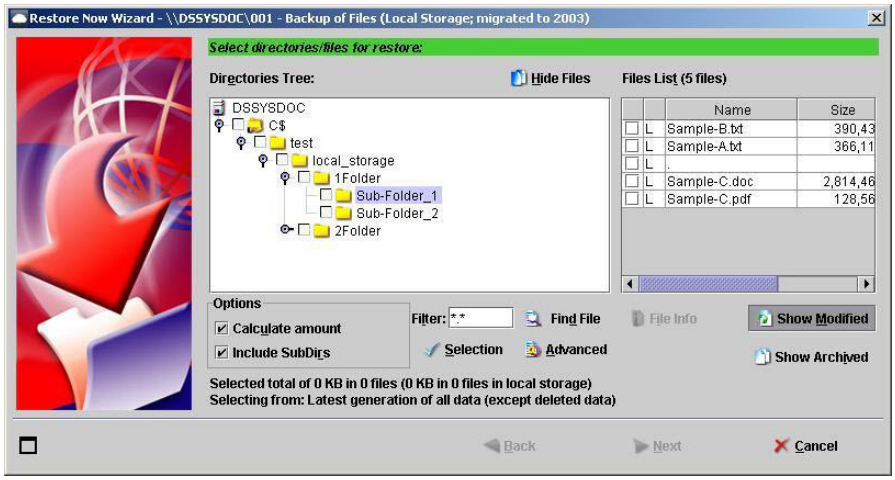
1. On the **Select directories/files to restore** page, select a directory, and then click **Show Files**. Modify the **Filter** if necessary (page 127).

   Only files that match the **Filter** are displayed in the **Files List**.

2. To locate modified files, click **Show Modified**.

   Modified files that DS-Client has located are highlighted in **Files List**.

3. To select the modified file(s) and include them for restore, click **Add Modified** while they are highlighted.



6.1.3.4 Maximum generations

The maximum generations parameter is set up in the backup set properties, and it must be a number between 1-9999. This means that this backup set will save up to this maximum number of restorable generations on DS-System online storage. It will not keep more than this number on the online storage (when it reaches the

limit, the oldest generation is overwritten). Overwriting is done during the backup process and does not take into consideration any retention rules that might apply, since retention is a separate process

The best uses for maximum generations are:

- For CDP backup sets, where files are constantly changing and immediately backed up, and you want to control the amount of online storage.
- When there are no retention rules, but online storage size is a concern.

All cumulative backups (on-demand and scheduled) will keep up to the maximum generation number. If a low number of maximum generations is configured for a scheduled backup set, be aware that if you run an on-demand backup, what is kept online might not be what you expect.

For example, you create a backup set with maximum generations set to 7, and schedule it to run daily (to keep the daily changes for a week). Assuming all backup files change daily, you expect one generation for each day. If an on-demand backup runs on this set, it might disrupt the pattern, giving you 2 generations from the same day, and restorable generations going back 6 days, instead of 7. (This assumes that the file changed before the on-demand backup, and before the scheduled backup.)

NOTE: Maximum generations allow passive delete, which means the oldest generation is overwritten whenever necessary on the DS-System online storage. If you have the BLM Archiver tool configured, you can archive the oldest generation before it is deleted.

6.1.3.5 Restoring a specific generation of a file

The number of generations stored online for a backup item is determined by the **Maximum Generations** setting of the backup set item, and by the retention rule (if assigned) that is enforced on the backup set.

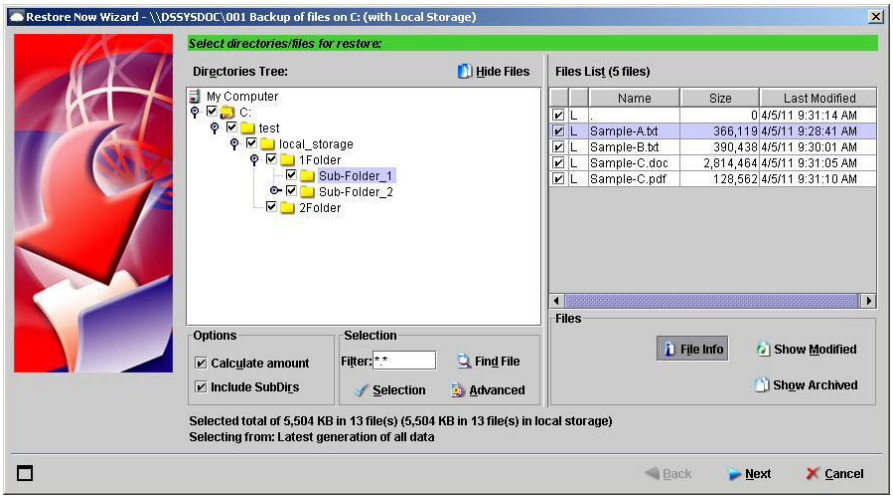
When CDP is not enabled in a backup set, items that have changed since the last backup session are backed up once. For every backup session in which an item is backed up, a generation of the item is created and stored online unless subsequently removed by a retention rule. All items backed up in the same session are of the same generation with the same backup time.

When CDP is enabled in a backup set, each item is backed up when a change in the item is detected. Multiple generations of the item are created and stored online within a backup session if changes are detected for multiple times. Each generation is timestamped with the backup time.

In some cases, you might want to restore an older version of a backed up file. For example, if you discover that files after a certain date are corrupted or you want to restore a project that requires files from the same backup session. The number of generations online depends on the backup set option settings, as well as the number of backups performed and the frequency of changes to the backup file.

The Restore Now Wizard allows you to select a specific version of a backed up item (or file) for restore through the **File Info** button and two buttons in the **Backup Generations** dialog box of individual files: **Select** and **Select Session Only**.

- To open the Restore Now Wizard, browse the Backup Sets tree and select the required backup set. Then on the **Restore** menu, click **Restore Now**.



To display and select data of one specific backup session for restore:

The following procedure allows you to select only items or files from one specific backup session for restore.

1. Do one of the following to limit the items and files available for selection:
   - Specify a backup session as a certain period:
     a) On the **Select directories/files to restore** page, click **Advanced**.
     b) In the **Advanced Options** dialog box, select **Selective data (from a certain period)**.
     c) Beside the **From** date, click **>>** and select your required backup session, and then click **OK**.
     d) Beside the **To** date, click **>>** and select the same backup session, and then click **OK**.
     e) In the **Advanced Options** dialog box, click **OK** to apply the changes.
   - Specify a backup session by selecting a generation of an item or a file:

a) On the **Select directories/files to restore** page, select a directory, and then click **Show Files**.

b) In the **Files List** section, click an item or a file that you need. Then click **File Info** to see all the generations that are stored for the item or the file.

c) Select the required backup generation, and then click **Select Session Only**. Each backup generation is distinguished by backup time.

Two changes occur in the Restore Now Wizard:

- That specific generation of the selected file is now selected for restore.
- The **Show** option in the **Advanced Options** dialog box (page 125) automatically changes to **Selective data (from a certain period)** with the backup session of your selected generation as the period.

NOTE: Only items or files that have been backed up in the selected backup session will be available for selection.

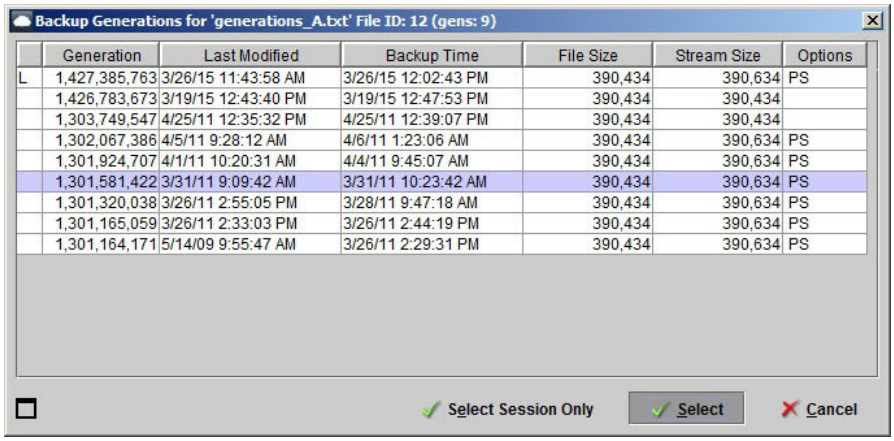
2. On the **Select directories/files to restore** page, select the folder(s), items, or files from the **Files List** you want to restore.

To select data of various backup generations for restore:

The following procedure allows you to select from the earliest backup generations stored online up to a specific time of your choice for restore.

1. On the **Select directories/files to restore** page, click **Advanced**.
2. In the **Advanced Options** dialog box, ensure that **Latest generation of all data** is selected, and then click **OK**.
3. On the **Select directories/files to restore** page, select a directory, and then click **Show Files**.
4. In the **Files List**, click a required item. Then click **File Info** to see all the generations that are stored for the item.
5. Select the required generation of the item, and then click **Select.**

NOTE: In the **Advanced Options** dialog box, the option **Selective data (from a certain period)** in the **Show** section is then automatically selected. If the generation that you have just selected is not the latest generation of the item or file, the **To** date will be updated to reflect the backup time of the item, consequently setting a limit on the period from which you can select data. The **From** date remains unchanged unless it is more recent than the **To** date.



F1 Help: Backup Generations for '...'

6.1.3.6 Using Pre/Post processes to run processes before and/or after a restore

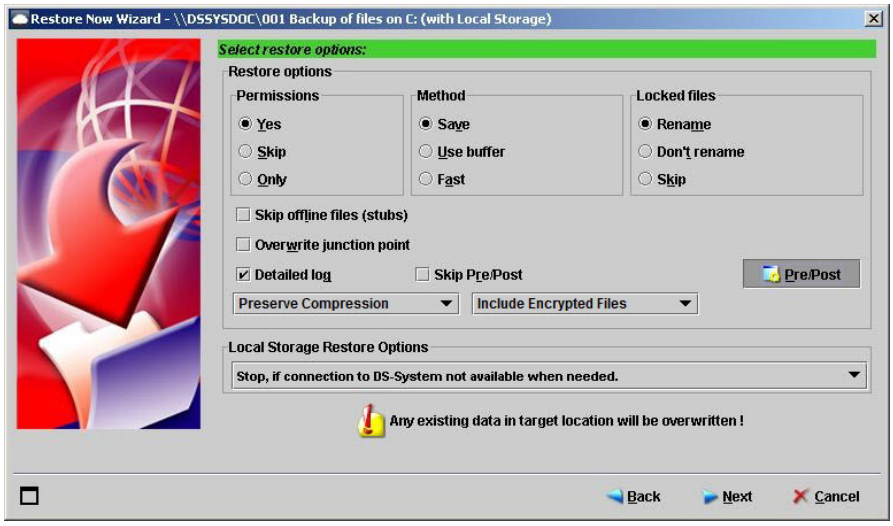
DS-Client can perform a specified activity on the DS-Client computer or on the restore destination computer before and/or after a restore operation. For example, such an activity might be to stop a Windows service before restore and to restart it after restore.

Like Pre/Post Execution for backup, the Pre/Post Execution options selected in the Restore Now Wizard for a backup set will be automatically reapplied before and after each subsequent restore of the set.

- To open the Restore Now Wizard, browse the Backup Sets tree and select the required backup set. Then on the **Restore** menu, click **Restore Now**.

To execute pre-restore and/or post-restore activities:

1. On the **Select restore options** page of the Restore Now Wizard, make sure the check box **Skip Pre/Post** is selected.



2. Click the **Pre/Post** button.
3. In the **Pre & Post Execution** dialog box, select the required command(s) and setting(s).

   For more information, see the F1 help for the dialog box:

   - Pre & Post Execution
   - Pre & Post Execution (Linux DS-Client)

To disable pre-restore and/or post-restore activities:

- On the **Select restore options** page of the Restore Now Wizard, make sure the **Skip Pre/Post** check box is cleared.
- The following in

6.1.3.7 Restoring a specific

- The following in

Retention c

6.1.3.8 Restoring data to an alternate location

You can restore your backups to a location other than the original source location.

Each backup set kind has particular requirements and specifications. The following information is an example based on the restore of a File system backup set to an alternate location. Specific instructions for other backup set kinds will be provided separately in subsequent sections.

To restore to an alternate location, you must specify the new location and the path of the new location. An alternate location can be another disk drive on the same computer, another share on a different computer, or another server on a different network (with some restrictions).

Alternate location, truncation, and the security of restored Items:

In the Restore Now Wizard, you can select multiple items that are from the same drive and share a common path on the source to restore them to an alternate location. When you do that, the common path will be displayed as part of the restore destination path, which you can shorten using **Truncate**.

NOTE: When restoring to an alternate location, note that the security of restored items at the destination location might not resemble the security of those items during backup.

This can happen when users and/or groups that were included in the security descriptor of an item during backup cannot be resolved in the restore destination environment (for example, when users or groups have been deleted or when data is restored to a different domain).

Users and groups are stored as security identifiers (SIDs) and remain in the security descriptor of the restored items; when the host cannot match the SIDs against valid names, it will not display them as valid names but only as SIDs, which look like this: S-1-5-21-1614895754-299502267-682003330-1139.

Also, note the following when you restore data to an alternate location while truncating the destination path to the maximum: If you select the dot file (.) under the last directory that is being eliminated from the path, DS-Client will restore the security of that last directory to the destination directory in the alternate location.

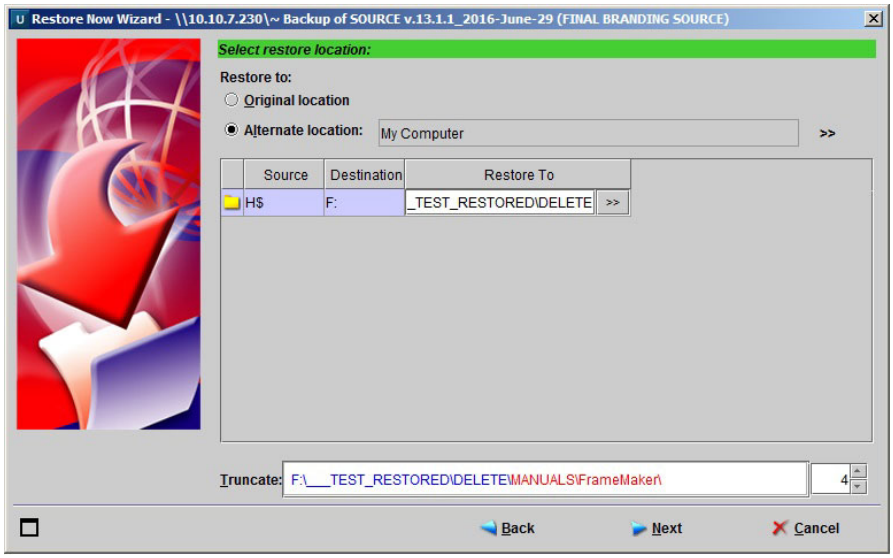
These are the main steps for restoring data to an alternate location:

1. Section 6.1.3.8, “Selecting the backup set items to restore:”, on page 135
2. Section 6.1.3.8, “Specifying the destination computer (optional):”, on page 136
3. Section 6.1.3.8, “Selecting the destination share:”, on page 137
4. Section 6.1.3.8, “Specifying the path on the destination share:”, on page 138

Selecting the backup set items to restore:

1. In the Restore Now Wizard, perform all necessary steps to specify the items to restore.
2. On the **Select Restore Location** page, select **Alternate Location**.

   Options specific for alternate location become available.



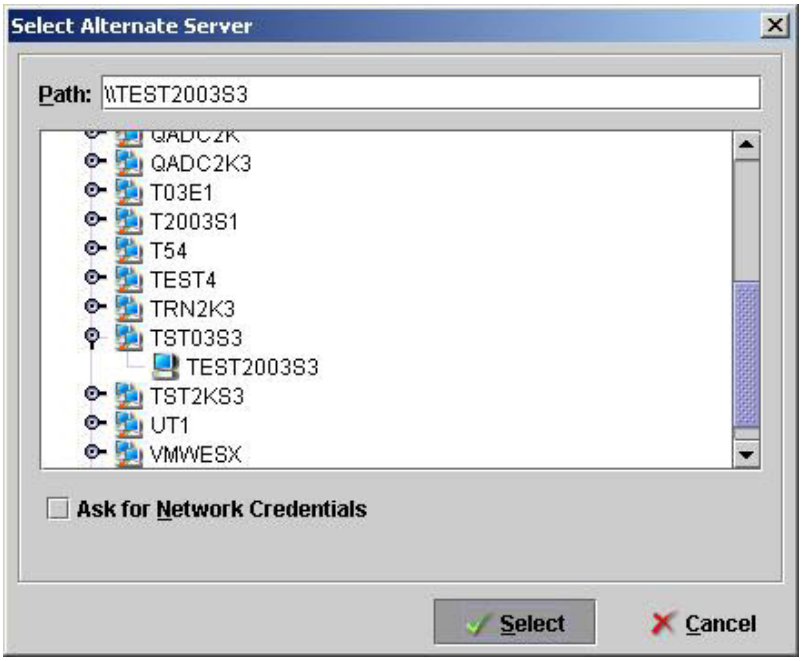
Specifying the destination computer (optional):

Before selecting an alternate location, see important recommendations in Section 6.1.3.8, “Alternate location, truncation, and the security of restored Items:”, on page 135.

- To restore to an alternate location on the same computer, proceed to Section 6.1.3.8, “Selecting the destination share:”, on page 137.
- To select a different computer as the alternate location, do the following:

  1. On the **Select Restore Location** page, beside the **Alternation Location** box, click **>>**.

     The **Select Alternate Server** dialog box appears and displays available servers on the network.



If the **Ask for Network Credentials** check box is selected, the **Enter Network Credentials** dialog box appears and prompts you for credentials to the destination computer. Otherwise, your current logon credentials are used to access the destination computer.

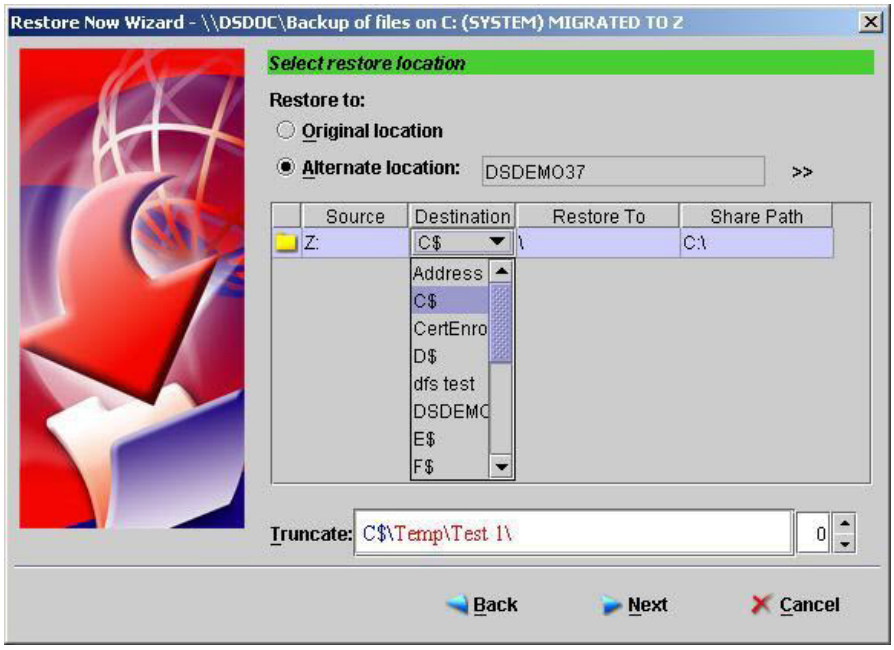
The Restore Now Wizard reappears and displays the computer you have selected as the restore destination location.

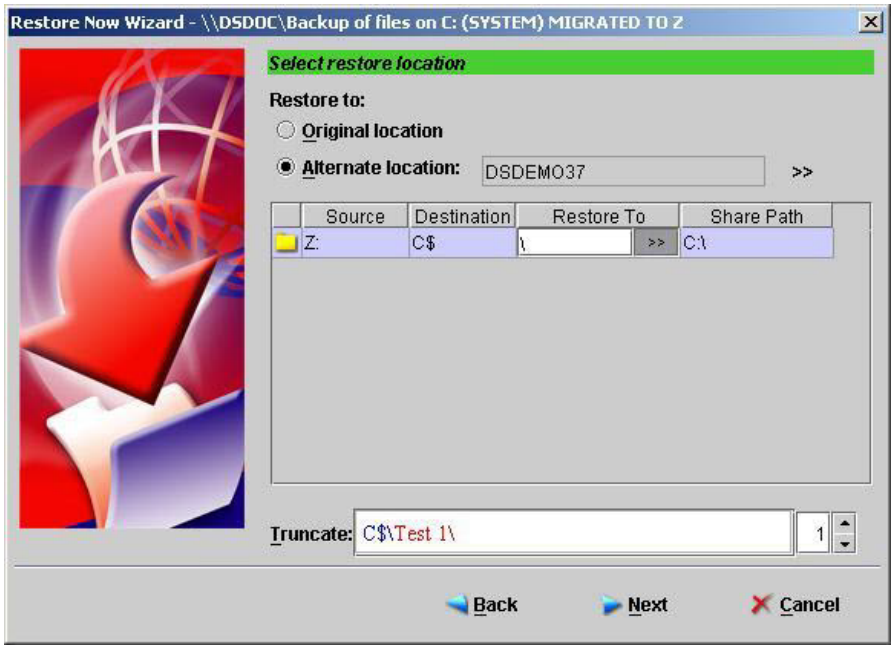
Selecting the destination share:

After selecting a computer as the alternate location, you also need to select a share on that computer.

- Click in the **Destination** cell and select a share from the drop-down list.

  This list includes all the available shares on the computer you have selected. The **Share Path** cell displays the local path of the destination share on that computer.





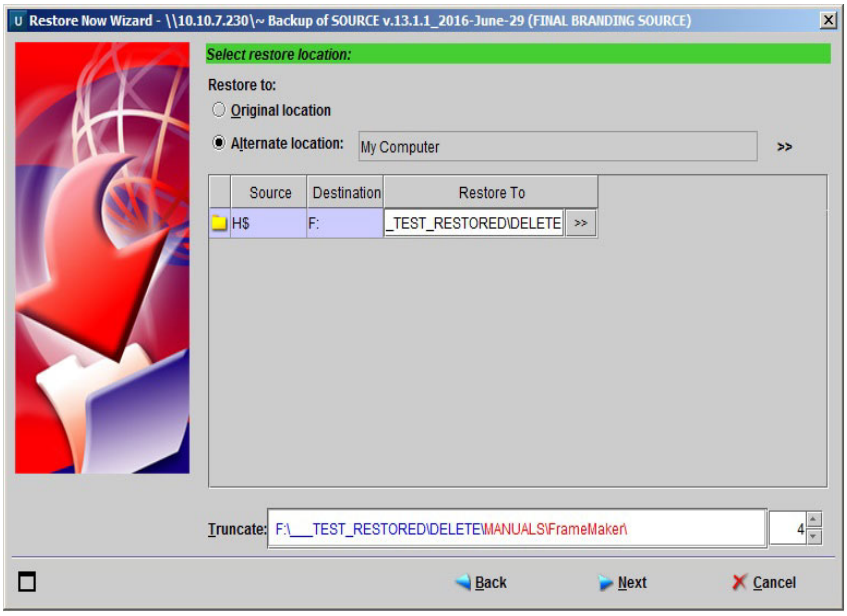
Specifying the path on the destination share:

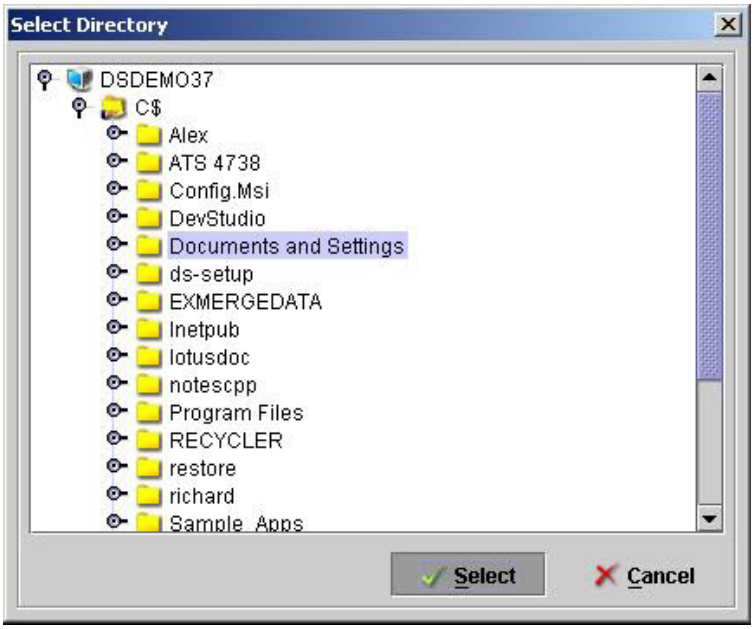
Files will be restored to the share path on the destination computer, as indicated in the **Share Path** cell on the **Select Restore Location** page. You can change or specify the destination directory in that path.

1. To specify the directory to which to restore the backup, do one of the following in the **Restore To** cell:

   - Type the name of the directory in the text field.

- Click in the cell and then click **>>**. In the **Select Directory** dialog box, browse and select the directory, and then click **Select**.





When multiple items that you have selected to restore are from the same drive and share a common path on the source, that common path to which data will be restored is displayed in red in the **Select Restore Location** dialog box. You can shorten this path by eliminating some or all of the common portions in the **Truncate** box.

2. If required, truncate the destination path for the restore by increasing the number to the right of the path.

This number represents the levels of subdirectories to eliminate from the common path. The common portions of the path, which you can eliminate, are displayed in red.

NOTE: Before truncating the restore destination path, see important recommendations in Section 6.1.3.8, “Alternate location, truncation, and the security of restored Items:”, on page 135.

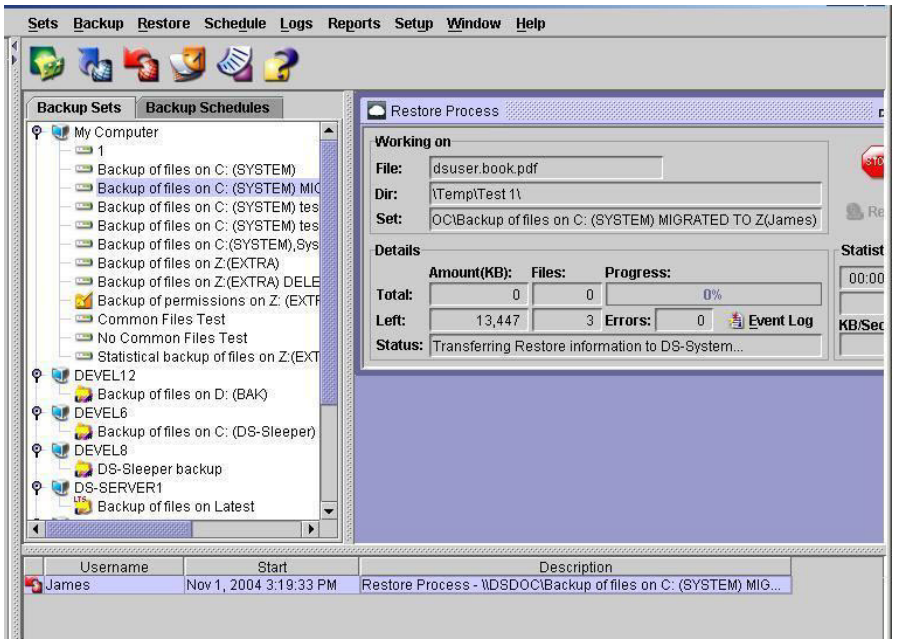
3. Click **Next** to proceed to the **Select restore performance options** page. See Section 6.2.5.4, “Specifying performance options (Windows DS-Client)”, on page 162.

   The following provides information on subsequent pages:

   - **Select Restore Options** page: Section 6.2.5.5, “Specifying restore options”, on page 163.
   - **Select Restore Reason** page: Section 6.2.5.6, “Specifying the reason for the restore”, on page 164.

4. On the **Select Restore Reason** page, click **Finish** to start the restore.

   The **Restore Process** dialog box appears, showing the progress of each file being restored.



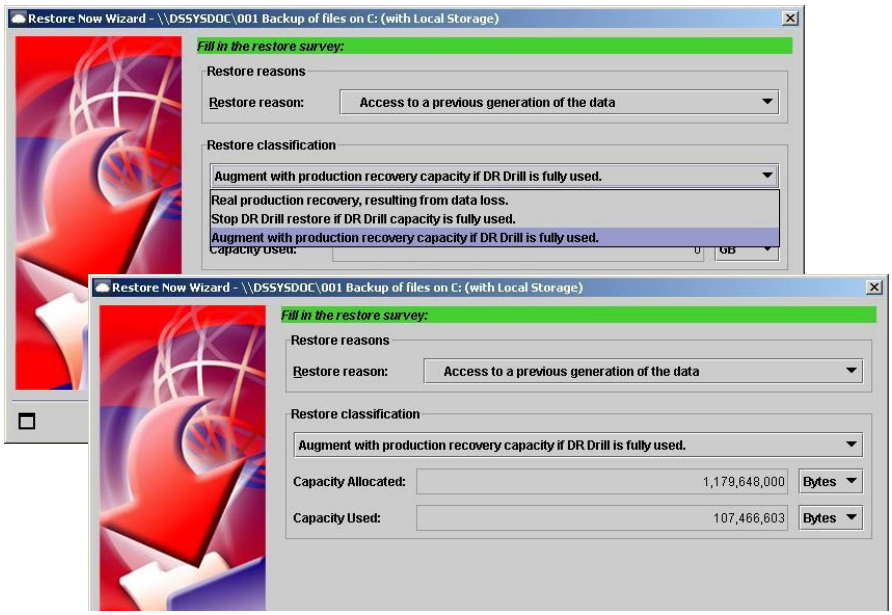
6.1.3.9 Types of Restore Licenses in Recovery Drill Period

The **Restore Classification** drop-down list only appears for backup sets that are currently in a scheduled recovery drill period. You need to indicate the type of restore to ensure that the appropriate license(s) are used in this restore for billing purposes: Regular Restore license and/or Recovery Drill license.

NOTE: In the Recovery License Model™, a real production recovery or any restored amount in a Recovery Drill that is treated as real production recovery can affect your Recovery Performance Score.

From the **Restore Classification** drop-down list, select the appropriate type of restore.

- **Real production recovery, resulting from data loss** — Select this type to perform a normal restore for a real data loss.
- **Stop DR Drill restore if DR Drill capacity is fully used** — Select this type if this restore is a Recovery Drill and you want the restore to stop when your DR Drill capacity runs out. This restore will use your DR Drill capacity for billing purposes and stop when your DR Drill capacity is used up. The DR Drill capacity allocated and the amount used are displayed.
- **Augment with production recovery capacity if DR Drill is fully used** — Select this type if this restore is a Recovery Drill and you want the restore to continue when your DR Drill capacity runs out. This restore will use your DR Drill capacity until your DR Drill capacity is used up and will then treat the remaining balance of the restore as real production recovery. The DR Drill capacity allocated and the amount used are displayed.



F1 Help: Select Restore Reason

6.1.3.10 Restoring data from continuous data protection (CDP) backups

When you are restoring data of a backup set in which CDP is enabled, the generations of an item are identified by their individual backup times, not by the backup session. This is unlike backup sets in which CDP is not enabled.

For information on how to select a specific generation of an item to restore it, see Section 6.1.3.5, “Restoring a specific generation of a file”, on page 130

6.1.3.11 Restoring Windows system state and services database

There are additional backup items that you can select for backup in Windows backup sets:

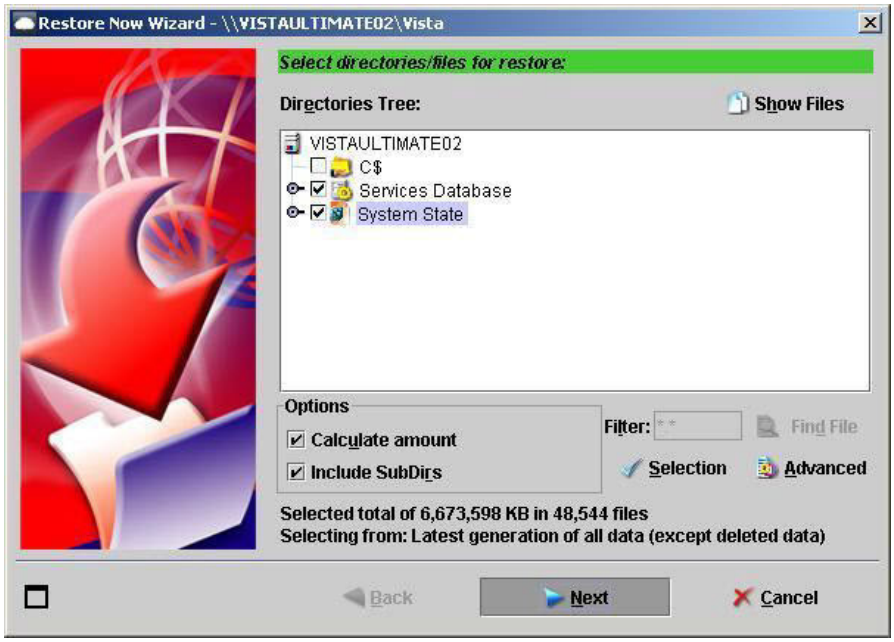
- System State
- Services Database

One example of when you would want to recover the System State would be if a user account was accidentally deleted from a Windows computer. Since user accounts are generated with a unique Security ID, the only way to recover the user account is to restore a backed up System State containing the deleted user account.

- For this type of restore, ensure that **Use Buffer** is not selected as a restore method. Problems can result from restoring Windows System State and Service Database via the DS-Client buffer.

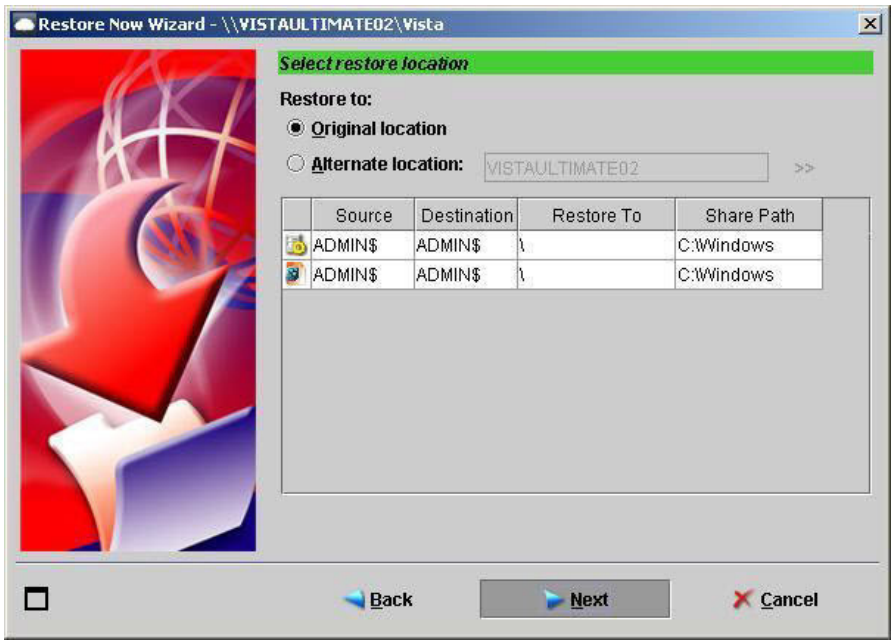
NOTE: The System State contains information that is critical to your computer and applications. Use caution when using this feature.

1. Browse the Backup Sets tree, select the backup set to restore, and then on the **Restore** menu click **Restore Now**. The Restore Now Wizard appears.



2. In the **Directories Tree**, select the System State and/or Services Database check boxes, and then click **Next**.

   The **Select Restore Location** page appears. By default, **Original location** is automatically selected as the destination location.



3. Specify the required destination location for the restore, and then click **Next**.

IMPORTANT: In the **Select Restore Options** page, make sure that **Use Buffer** is not selected as a restore method. Problems can occur in the restore of this type of data if the DS-Client buffer is used.

4. On the **Fill in the restore survey** page, make the required selections, and then click **Finish** to start the restore process.
5. After the restore process is complete, reboot the system for the restored System State and/or Services Database to take effect. You can then manually delete the old Registry files.

   The old Windows Registry files are located in the following directories:

   - `%SystemRoot%\HKEY_LOCAL_MACHINE\`
   - `%SystemRoot%\HKEY_USERS\`

   where by default, `%SystemRoot%` points to `C:\Windows` on Windows operating systems.

NOTE: You will lose any registry changes that have occurred since the backup time of the System State / Services Database being restored.

6.2 File system backup sets (Windows)

6.2.1 About File system backup sets

File system backup sets allow you to back up data at various levels of the tree structure in a file system. You can select individual files, folders, or drives to back up from a machine that you have access to.

Using a File system backup set, you can also perform a backup of NAS (Network Attached Storage) devices via snapshots. Currently, only CIFS shares of volumes with NTFS security type are supported by the Windows DS-Client.

6.2.2 Before you begin

Before creating a File system backup set, you must ensure that the following requirements are met:

- Be ready to provide the required credentials for the DS-Client to access the backup source.

- When creating a set for backing up data on the local DS-Client computer, you have the option of using the DS-Client service's account credentials to connect to the local DS-Client computer. If you plan to use the DS-Client service's account credentials, ensure that you have logged on to the DS-Client using an Administrator account or equivalent before attempting to create the backup set.
- (Applicable only to the backup of NAS devices) For NetApp NAS volumes, there is a volume configuration option that enables accessing the snapshot file for CIFS when browsing the NetApp volumes. Ensure that this option is selected. Otherwise, the DS-Client will not be able to access the snapshot.

6.2.3 Creating a File system backup set

The following sections describe how to create a File system backup set.

6.2.3.1 Selecting the kind of backup set

1. On the **Sets** menu, click **New Backup Set**. The New Backup Set Wizard appears.
2. On the **Choose the kind of backup set** page, select **File System**, and then click **Next**.

6.2.3.2 Specifying the backup source

1. On the **Select the computer** page, select the computer that contains the files or directories that you want to back up.

   NOTE: **My Computer** represents the local DS-Client computer.

   NOTE: For NAS devices, type the NAS IP address or DNS name in the **Path** box, for example, 10.10.20.123.

   F1 Help: Select the computer

2. Do one of the following to specify how you plan to provide the credentials for the DS-Client to access the backup source, and then click **Next**:
   - To provide the credentials for the selected computer, select **Ask for Network Credentials**. You will be prompted to specify the credentials after clicking **Next**.

- To use the DS-Client service's account credentials to connect to the local DS-Client computer, select **Use DS-Client Account**.

NOTE: This option is available only when you have selected **My Computer** as the source computer in a Windows DS-Client. To use this option, you must be currently logged on using an Administrator account or equivalent.

- To perform a backup of a NAS device, select **Ask for NAS API credentials**.

NOTE: DS-Client backs up data from a snapshot that it creates using a dedicated API from the NAS vendor. When the backup is finished, DS-Client deletes the snapshot.

3. If you selected **Ask for Network Credentials**, in the **Enter Network Credentials** dialog box, provide valid credentials for the selected computer, and then click **OK**.

NOTE: For DS-Client connections to NetWare servers, type a context in the **From** box of the **Connect As** box.

F1 Help: Specify Credentials (Windows DS-Client)

4. If you selected **Ask for NAS API credentials**, in the **Enter Network Credentials** dialog box, provide valid credentials for data access on the NAS device, and then click **OK**. In the **Enter the NAS API Parameters** dialog box, do the following:

   a) In the **NAS Type** box, select the NAS type.

   b) In the **API Protocol** box, select the API access protocol.

   c) In the **Port Number** box, specify the port for the API connection.

   d) In the **User Name** and **Password** boxes, type a valid user name and password of a user who has the privilege to execute the API commands on the NAS device.

NOTE: A user who is a member of the Administrators group usually has such privilege.

   e) Click **OK**.

F1 Help: Enter NAS API Parameters (Windows DS-Client)

6.2.3.3 Specifying the backup items

The **Select Directories/files for backup** page displays the items available for backup on the selected computer.

1. On the **Select Directories/files for backup** page, specify the data that you want to back up by doing any of the following as applicable:

   - To add an entire directory, browse the **Shares & Directories List**, select the directory, and then click **Add**. You can select one directory at a time.

   NOTE: For NAS devices, select the CIFS share, and then click **Add**.

   NOTE: Subdirectories are included by default. To exclude subdirectories, clear the **Include SubDirs** check box before clicking **Add**.

   - To search for files that match a certain criteria, in the **Filter** box, type the file pattern that you want to search for in the selected directory. For example, *.doc will search for all the files with the .doc file extension.
   - To add specific files, browse the **Shares & Directories List**, select the directory from which you want to add specific files, and then click **Files**. A dialog box that displays a list of files in that directory appears. Select the file(s) that you want to add to the backup set, and then click **Add**.
   - To exclude a subdirectory when its parent directory is selected for backup, browse the **Shares & Directories List**, select the subdirectory that you want to exclude, and then click **Exclude**.
   - To exclude data using regular expressions, click **RegEx**. Regular expressions provide more specific filtering than the **Exclude** function. For example, you can use regular expressions to exclude individual filenames or patterns. Use this option only if you are familiar with the syntax.

   NOTE: In a Windows file system, you can also add special backup items like System State (including Registry) and Services Database.

Items that are selected are listed under **Backup Items Selected**. The types of items are distinguished by the icon. They include the following:

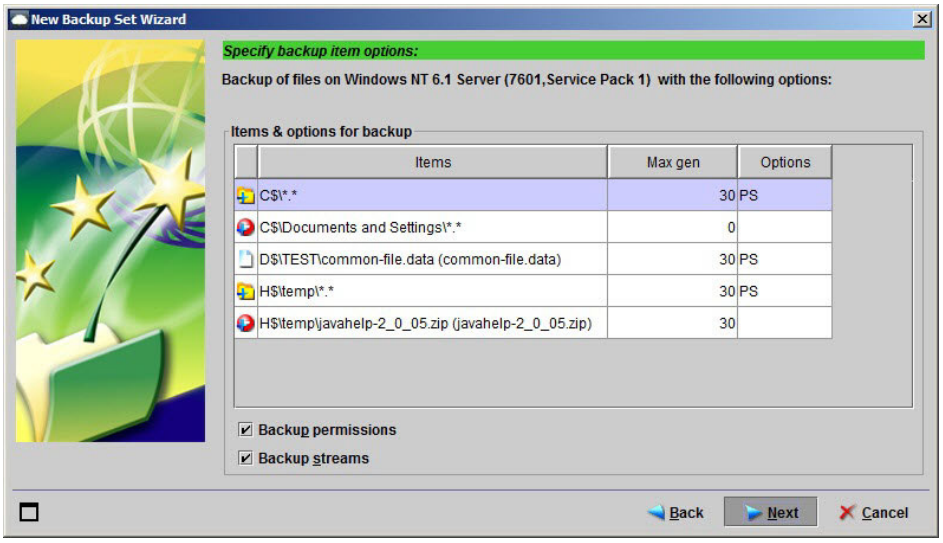
- Directory with subdirectory
- Directory without subdirectory
- File
- Filter extension
- Exclude

F1 Help: Select Items for Backup Set

2. When you have made your necessary selections, click **Next**.

6.2.3.4 Specifying backup item options

The **Specify backup item options** page appears.

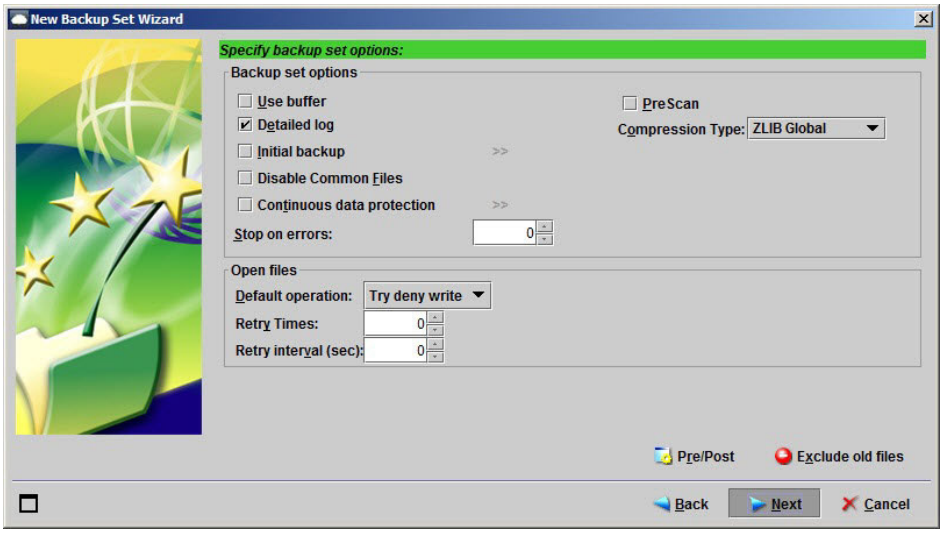


F1 Help: Set Properties - Items tab

1. Retain the default settings, unless there are specific backup set option requirements. For details on these options, see the F1 help for the dialog box.
2. Select a backup item and modify the generation settings and options if required.
3. Click **Next**.

6.2.3.5 Specifying backup set options

Backup options affect the way the set is handled during the backup process. Some options are specific to the type of server that is being backed up.



- On the **Specify backup set options** page, retain the default settings, unless there are specific backup set option requirements, and then click **Next**.

  F1 Help: Set Properties - Options tab

  F1 Help: Set Properties - Options tab (Linux DS-Client)

  – For more detailed instructions on the Pre/Post option, see Section 6.1.2.2, “Enabling Pre/Post processes in Backup Set Options”, on page 119.

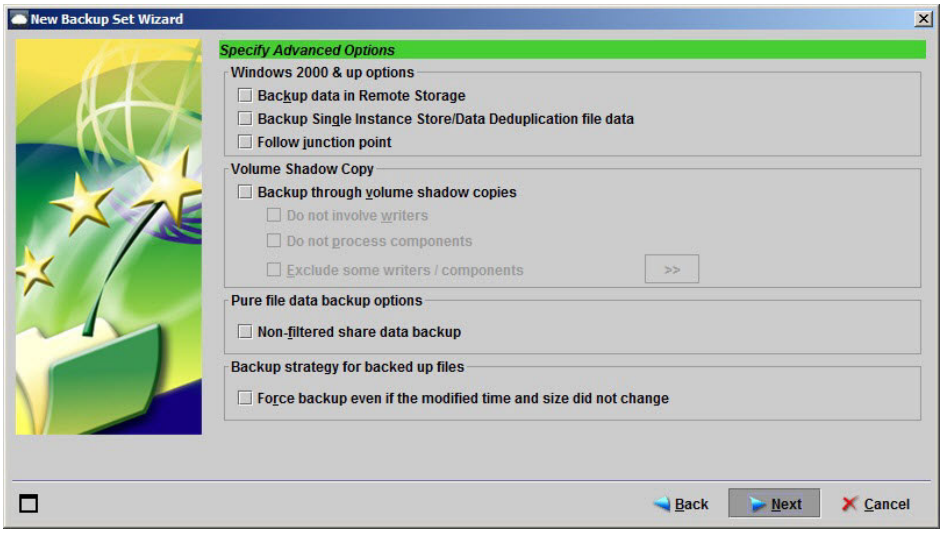
  – For more detailed instructions on the **Exclude old files** option, see Section 6.1.2.3, “Excluding old files”, on page 120.

  – For more detailed instructions on **Continuous data protection**, see Section 6.1.2.4, “Enabling Continuous Data Protection (CDP)”, on page 121.

  For details on the options on this page, see the F1 help.

6.2.3.6 Specifying advanced options (Windows DS-Client)

The **Specify Advanced Options** page contains advanced options that are available for Windows file system backup sets.



- Retain the default settings unless you have a specific, and then click **Next**.

  F1 Help: Set Properties - Advanced Options tab (Windows DS-Client)

  For details on individual options, see the F1 help. The following is an introduction to the sections that appear on this page.

  - **Windows 2000 & up options**

    These additional options are specific to Windows file systems.

  - **Volume Shadow Copy**

    This option is available if the target backup computer supports this feature. When selected, DS-Client will use Volume Shadow Copy Service (VSS) to copy the volume(s) selected for backup, then perform the backup of items from that VSS copy. If the VSS copy fails, DS-Client attempts to backup like a normal file system backup set.

  - **Pure file data backup options**

    This option controls the automatic file filtering performed by DS-Client during Windows file system backups. By default, Windows DS-Client will exclude some files automatically out of the share-based backup of files, even if such files would be readable (e.g. when using VSS). The excluded files can include:

    - temporary files (e.g. pagefile.sys)
    - files that are being backed up as part of “System State” backups (e.g. operating system DLLs, executable)
    - Registry hive files

- Other files that can interfere with a successful Agentless BMR

Use this option only if there are specific reasons why excluded data would need to be included in the share-based backup.

Selecting this option will interfere with the ability to perform agentless bare metal restore (BMR) without manual file filtering. However, it can be used in conjunction with the VSS option to allow bootable-disk BMR (this requires 3rd-party BMR provisioning integration). Unless BMR provisioning is supported by your installed DS-Client, it is recommended that you do not select this option.

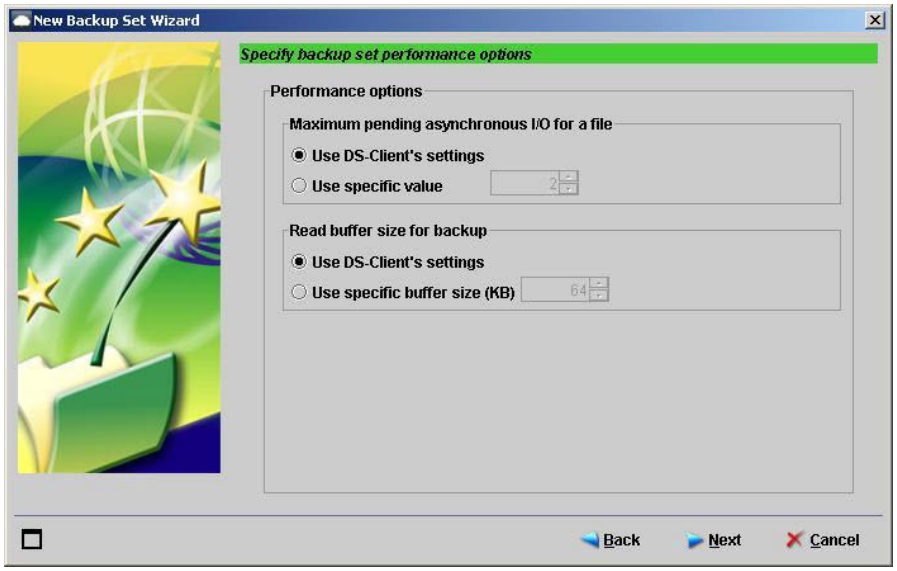
NOTE: This option normally requires the Volume Shadow Copy option to be selected.

- **Backup strategy for backed up files**

  By default, DS-Client skips files that have already been backed up. It uses each backed up file's "last modified" time and size for comparison purposes, and if those on the source match those of the latest generation in the DS-Client database, the file will be skipped. Normally this is the required behavior for backup sets. However, in some specific situations, you might want to force the backup of those files by enabling this option.

6.2.3.7 Specifying performance options (Windows DS-Client)

- In normal operating environments, you should use the default settings on the **Specify backup set performance options** page, and then click **Next**.



F1 Help: Set Properties - Performance tab (Windows DS-Client)

Additional backup set performance options are available for Windows file system backup sets, 'classic' (non-VSS) Microsoft SQL Server database backup sets, Oracle Server backup sets, and VSS-aware backup sets.

NOTE: This option applies only to backup items that are pure data files. It does not work on backup items with 'backup streams', encrypted files, sparse files, junction points, etc.

NOTE: This option does not apply to database backups if the backup set is using **DS-Client Pipe** as a dump option.

These performance options are provided for customers with high performance backup environments, where DS-Client could take advantage of the speed of the storage where the target backup data resides.

- **Maximum pending asynchronous I/O for a file –** This is the maximum number of I/O operations DS-Client will allow to queue for each file from this backup set. This is for storage devices that support better parallel disk I/O, such as NAS devices, RAID 5/10, etc. Increasing this value can significantly increase the backup speed. The optimal setting for this value depends on the storage device and network speed.

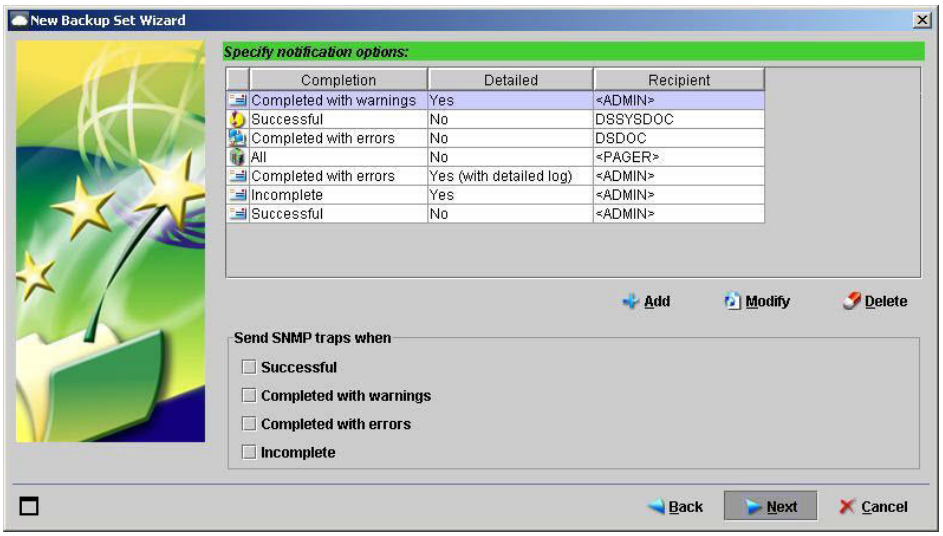
  IMPORTANT: If your storage device does not support better parallel disk I/O (e.g. single read head on a physical disk, etc.), use the default value, otherwise the performance can be significantly degraded.

- **Read buffer size for backup –** This option adjusts the internal buffer amount that the DS-Client allocates for reading individual files for backup.

  IMPORTANT: To achieve optimum backup performance, the DS-Client read buffer size might need to be different, depending on the combination of target storage device, target operating system, as well as any mid-ware involved (between the storage and the operating system).

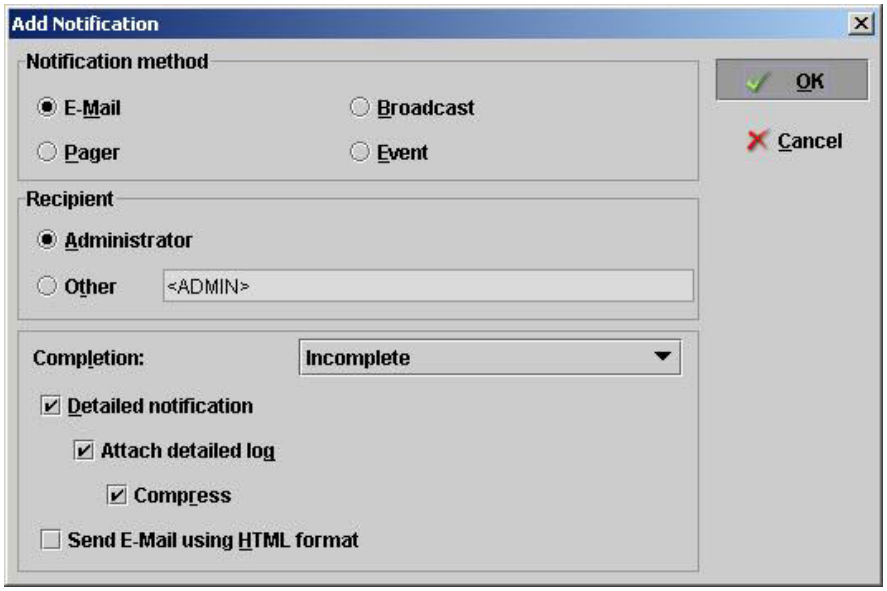
6.2.3.8 Specifying notification options

If DS-Client has been configured with a default notification option (Section 3.1.2, “Configuring the default settings”, on page 22), the default notification will appear in the **Specify Notification Options** page. You can add more notifications to this page, if required.



F1 Help: Set Properties - Notification tab

1. Retain the default settings unless there are specific notification requirements.
2. If you want to add a notification option for the backup set, click **Add**. The **Add Notification** dialog box appears.



F1 Help: Add Notification

3. In the **Notification method** section, select one of the notification options.

NOTE: The email and pager fields will be unavailable if the DS-Client has not been configured for email notification (see Section 3.1.3, “Configuring the notification settings”, on page 23).

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4. In the **Recipient** section, configure the recipient for the notifications. The options in this section will change according to the notification method selected.
5. In the **Completion** section, select a notification condition.

   The specified notification will be sent if a backup meets the selected condition.

   - Detailed notification – An expanded list of the backup will be included.
   - Attach detailed log – A file-level detailed backup log file will be attached to the email.
   - Compress – Indicates if the file attachment (file-level detailed backup log) will be compressed or uncompressed.
6. Click **OK** to save the setting.

   The **Specify notification options** dialog box returns with the new option displayed in the **Notification** list. You can repeat steps 2-6 to add as many notification options and recipients as required.
7. When you have added all needed notification options and recipients, click **OK** to save the settings.
8. In the **Send SNMP Traps when** section, select the condition(s) to notify about the event:

   - **Successful**
   - **Completed with warnings**
   - **Completed with errors**
   - **Incomplete**
9. Click **Next**.

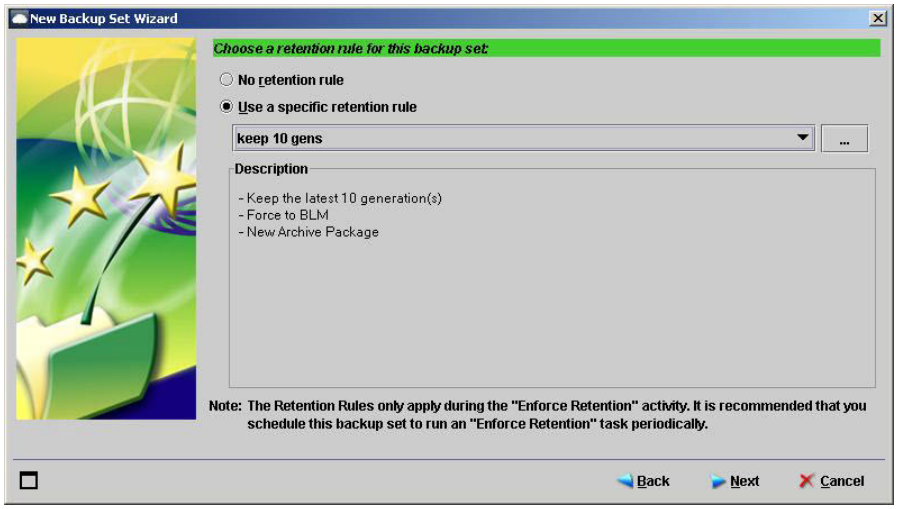
6.2.3.9 Specifying a retention rule

The retention feature allows you to define retention rules, which are specific scenarios when data should be kept online, or otherwise deleted. Retention rules are applied per backup set, but are enforced only on demand or on schedule. For more information, see Chapter 5, “Working with retention rules”.

1. On the **Choose a retention rule for this backup set** page, retain the default settings unless there are specific backup set retention requirements.

   For more details on retention options, see the F1 help for the dialog box.

2. When you have made your selection, click **Next**.



F1 Help: Set Properties - Retention tab

6.2.3.10 Specifying a schedule

When a schedule is assigned to a backup set, activities such as backup, retention, and validation can be performed automatically according to the schedule. For more information, see Section 4.1, “About schedules”, on page 89.

If you do not want to assign a schedule to the backup set:

- On the **Choose a schedule for this backup set** page, make sure **Not scheduled** is selected, and then click **Next**.

If you want to assign a schedule to the backup set, do the following:

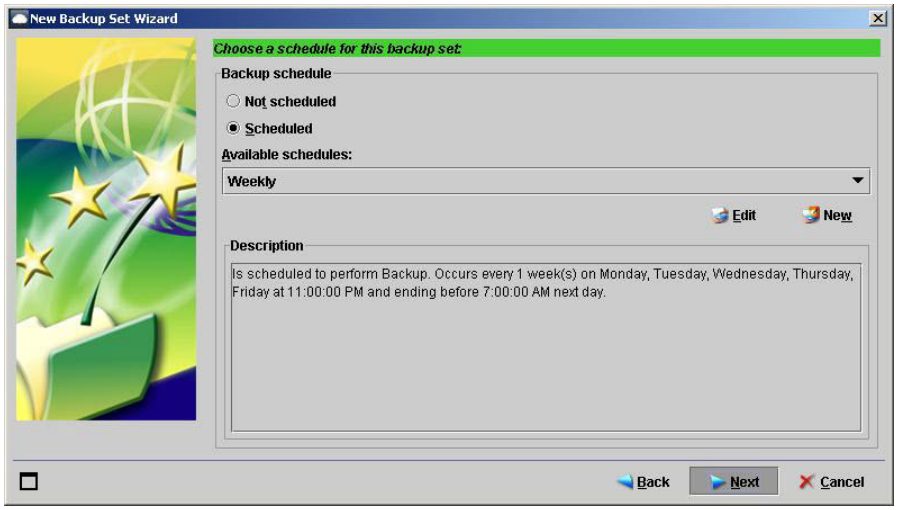
1. On the **Choose a schedule for this backup set** page, select **Scheduled**.

   F1 Help: Schedule Tab

2. In the **Available schedules** box, select an existing schedule or click **New** to create a new schedule to assign to this backup set.

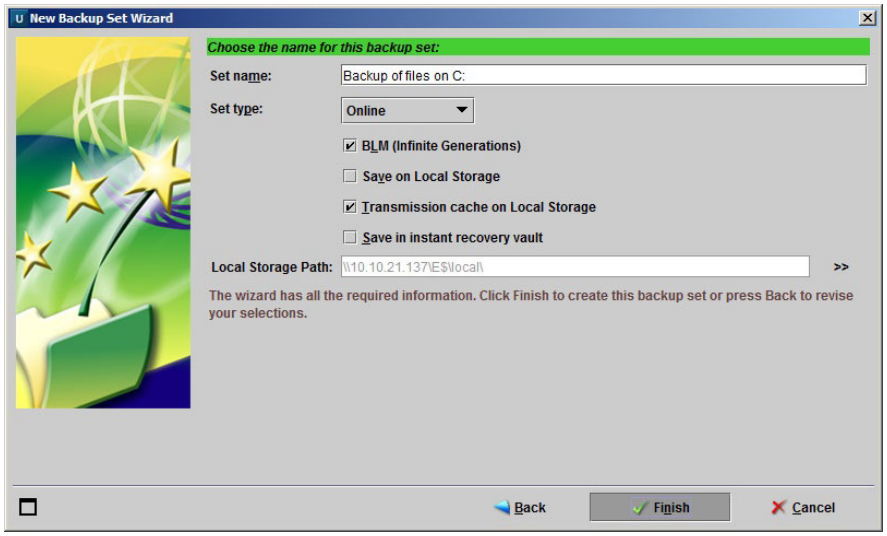
   If you are creating a new schedule, see Section 4.1, “About schedules”, on page 89 for more information.

3. When you have made your selection, click **Next**.



6.2.3.11 Naming the backup set

1. On the **Choose the name for this backup set** page, type a name for the backup set in the **Set name** box.



F1 Help: Choose the name for this backup set

F1 Help: Choose the name for this backup set (Linux DS-Client)

2. In the **Set type** box, select what type of backup set you want to create:

   - **Online –** Creates a full featured backup set of any kind (File system, database, etc.).
   - **Self-Contained –** For information, see Section 6.1.1.2, “Self-contained backup sets”, on page 113.

- **Local-Only –** For information, see Section 6.1.1.3, “Local-only backup sets”, on page 114.
- **Instant Recovery –** For information, see Section 6.1.1.4, “Instant Recovery backup sets”, on page 116.
- **Statistical –** For information, see Section 6.1.1.1, “Statistical backup sets”, on page 112.

3. Additional options appear if they are enabled for the DS-Client. If applicable, you can select the following:
   - **BLM (Infinite Generations) –** For information, see Section 12.3, “Backup Lifecycle Management (BLM)”, on page 432.
   - **Save on Local Storage –** For information, see Section 12.4, “Local Storage Tool”, on page 444.
   - **Transmission cache on Local Storage –** For information, see Section 12.4.2, “About the local storage cache”, on page 445.
   - **Save in instant recovery vault –** This option can be selected for Online backup sets. In addition to the online backup to DS-System, a copy of the backup data is saved in the instant recovery vault. For a description of instant recovery, see Section 6.1.1.4, “Instant Recovery backup sets”, on page 116.
4. Click **[>>]** to select a specific local storage path for this backup set.
   - If you do not make a selection, the default Local Storage Path is used. (See Section 3.1.5, “Configuring the parameter settings”, on page 25.)
5. If the Multi-Tenant feature is enabled, in the **Customer** list, you can select a customer to which you want to assign the backup set. For more information, see Section 12.5, “Multitenant DS-Clients”, on page 451.
6. Click **Finish** to create the backup set.

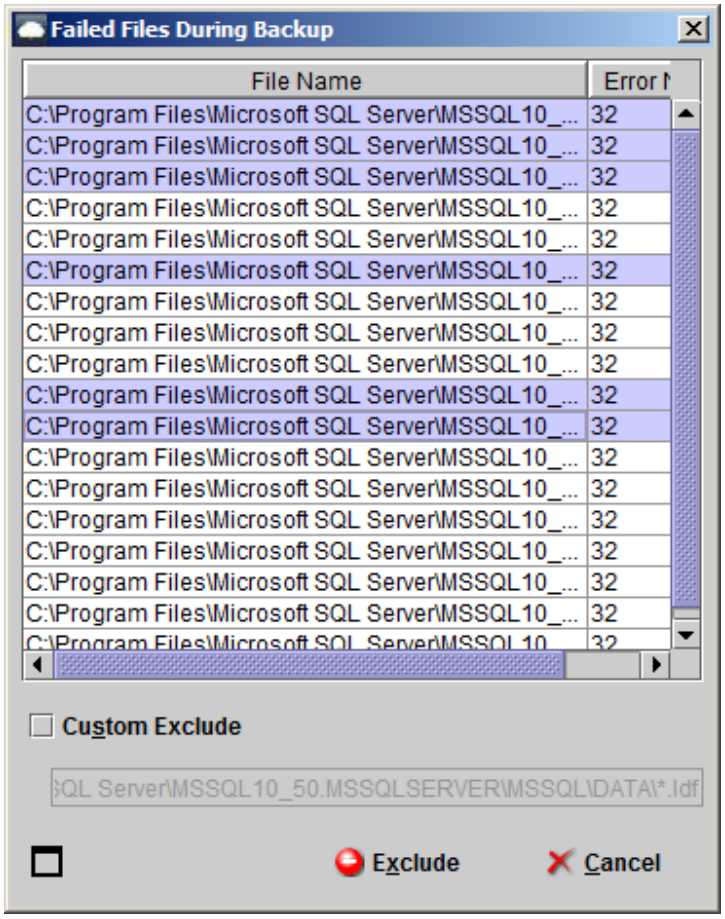
6.2.4 Excluding files that failed to be backed up

This feature is only available to File system backup sets in Windows DS-Client.

There can be specific files or files with specific extensions that cannot be backed up from the source. You can exclude these files from the backup set.

1. Browse the Backup Sets tree and select the backup set you require.
2. On the **Sets** menu, point to **Backup Sets**, and then click **Properties**. The **Backup Set Properties** dialog box appears.
3. In the **Items** tab, click **Edit**. The **Edit Items** dialog box appears.
4. Click **Failed Files**.

The file list displays every file that failed to back up since this backup set was created.



F1 Help: Failed Files During Backup

5. Select files to exclude in one of two ways:
   - Use the CTRL or SHIFT key to select multiple files.
   - Select a failed file and select **Custom Exclude** to exclude all files with the same file extension located in the selected path.
6. Click **Exclude**. The **Edit Items** dialog box appears with the selected files in the list of backup items selected.
7. In the **Edit Items** dialog box, click **Close**.
8. In the **Backup Set Properties** dialog box, click **OK** to save the changes.

6.2.5 Restoring a File system backup set

The following sections describe how to restore a File system backup set.

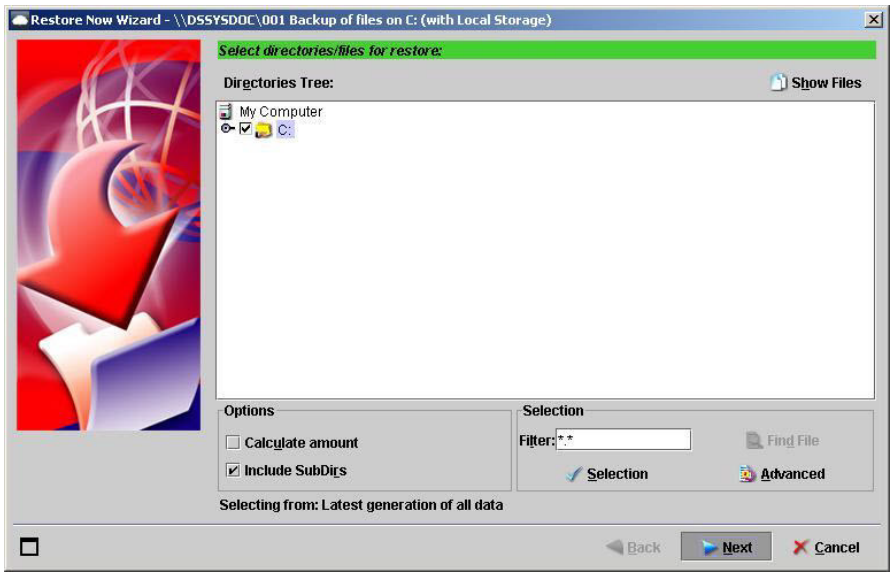
6.2.5.1 Selecting the backup set

- Browse the Backup Sets tree, select the backup set to restore, and then on the **Restore** menu click **Restore Now**.

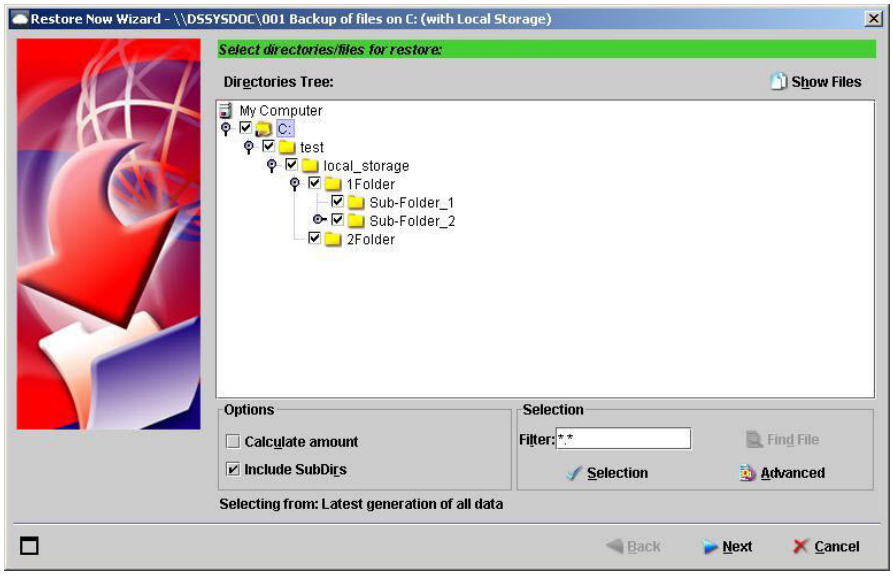
  F1 Help: Select directories / files (Restore / BLM / Delete / Validation)

6.2.5.2 Selecting the items to restore

1. On the **Select directories/files to restore** page, in the **Directories Tree**, select what you want to restore.



2. To restore the entire backup set or an entire directory, browse the Directories Tree and select the check box beside the directory you want.
3. To restore individual files, browse the Directories Tree, select the directory containing the required file, and then click **Show Files**. The **File List** section appears on the right side of the page.

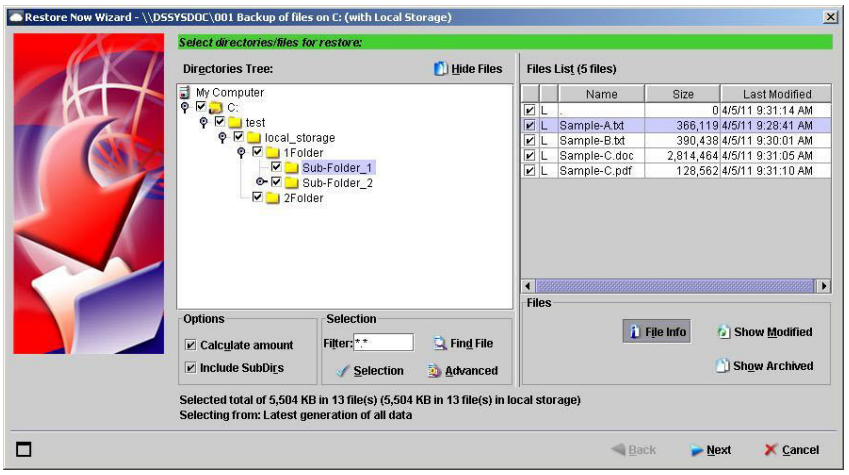


4. Use any of the following options to locate and select the files to restore:

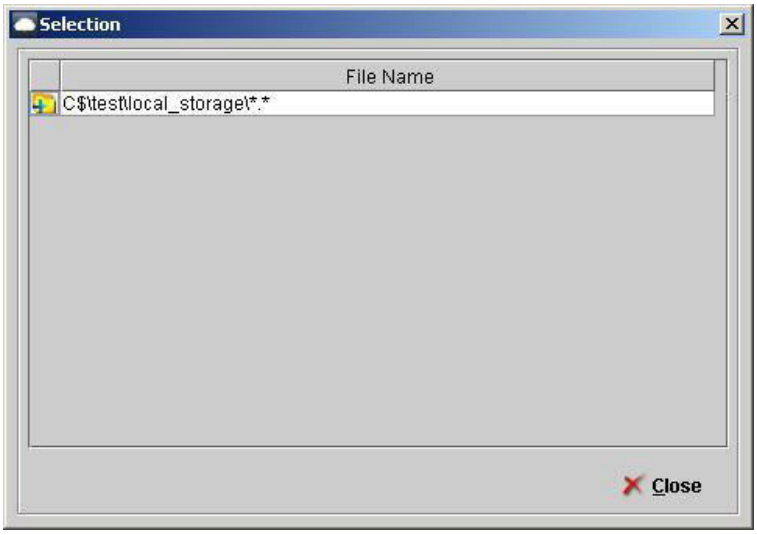
   - **Filter** or **Find Files –** To locate a specific file or files of a specific pattern (page 127)
   - **Advanced –** To narrow down the display of the data for selection (page 125)
   - **Advanced –** To select a **File Overwrite** policy to customize the results of the restore (page 125)

   In the **Files List** section:

   - **File Info –** To locate and select older generations of a file (page 130)
   - **Show Modified –** To select modified files (page 129)
   - **Show Archived –** To see a list of all files in the currently selected directory that have been archived in BLM



5. To review items that are currently selected for restore, click **Selection**. The **Selection** dialog box lists the restore items that are currently selected.



F1 Help: Selection

6. Once you have made your restore selection, click **Next**.

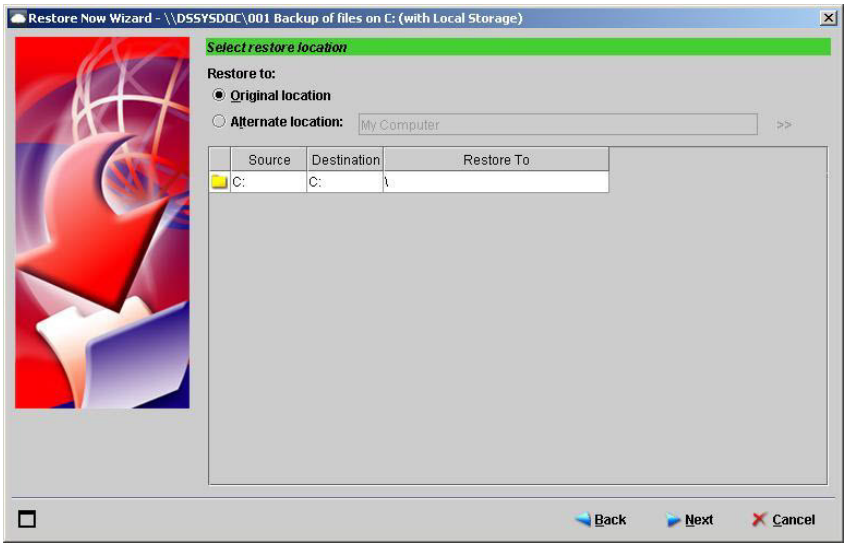
   A warning message can appear if the backup set is configured with a retention rule that includes the **Archive old data to BLM** option.

NOTE: If any of your selected files have already been archived to BLM, you can only restore the archived generations by requesting a BLM restorable image of that data. You can request a BLM restorable image from your service provider or backup administrator. Or, if you have already installed DS-NOC, you can access your BLM data via DS-NOC. For information, see Section 12.3.5, “Restoring from the BLM Archiver”, on page 436.

6.2.5.3 Specifying the restore destination

1. On the **Select Restore Location** page, select the destination location where to restore the data.

   - **Original location –** This option is selected by default. Data will be restored to the original backup source location. Any existing files of the same name will be overwritten.
   - **Alternate location –** Select this option to restore data to a location other than the original backup source. For more information, see Section 6.1.3.8, “Restoring data to an alternate location”, on page 134.



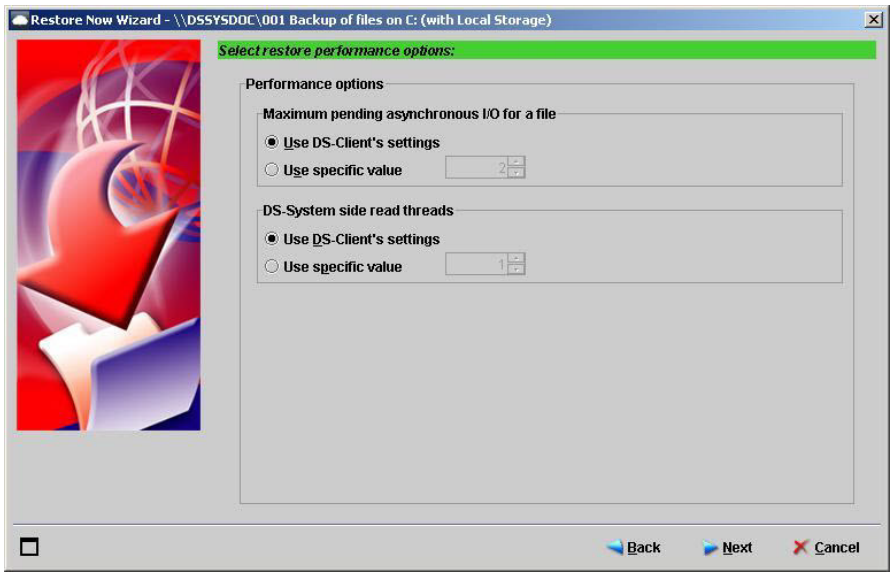
F1 Help: Select restore location

2. Click **Next**.

6.2.5.4 Specifying performance options (Windows DS-Client)

The **Select Restore Performance Options** page appears only for Windows DS-Clients (except Permissions only backup sets). These options are intended for large backup sets in high performance environments.

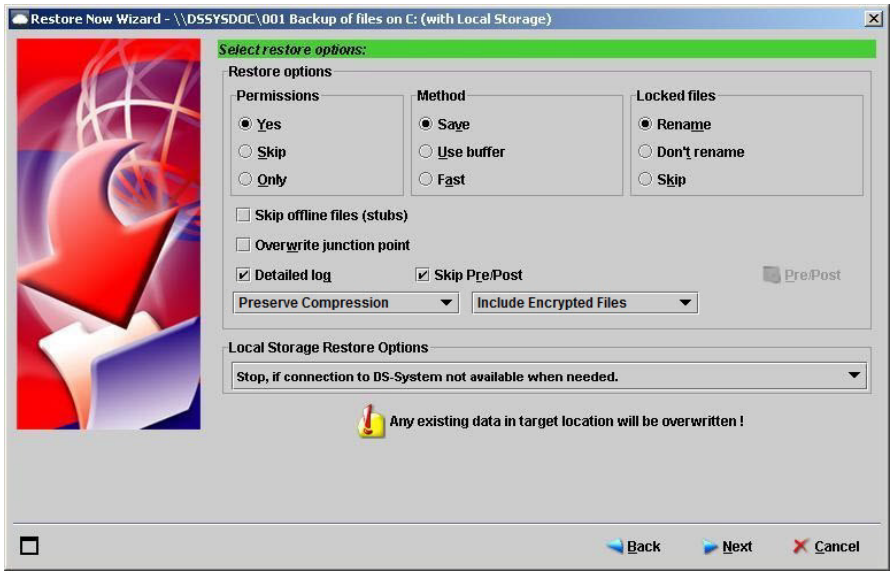
- For typical use, leave the DS-Client default settings, and then click **Next**.



F1 Help: Select Restore Performance Options (Windows DS-Client)

6.2.5.5 Specifying restore options

1. On the **Select restore options** page, select from the following options to customize the restore.



   F1 Help: Select restore options

2. To customize the results of the restore in addition to file overwrite policies in the advanced options (page 125), you can configure the following restore options:

   - Options in the **Permissions** section
   - Options in the **Locked files** section
   - **Skip offline files (stubs)**
   - **Overwrite junction point**
   - Drop-down list for **Compression** settings
   - Drop-down list for settings on **Encrypted Files**

   For more information on individual options, see the F1 help for the page.

3. In the **Method** section, select one of the following methods for DS-Client to complete the restore:

   - **Save –** DS-Client will use an indirect restore method to prevent partially restored files from overwriting an existing file. DS-Client will restore files to a temporary location first. If the file is restored successfully, the original file will then be overwritten with the temporary file.
   - **Use buffer –** DS-Client will restore files to the DS-Client buffer first and then transfer them to the restore destination. This method minimizes the duration for which the restore process will occupy the destination server.

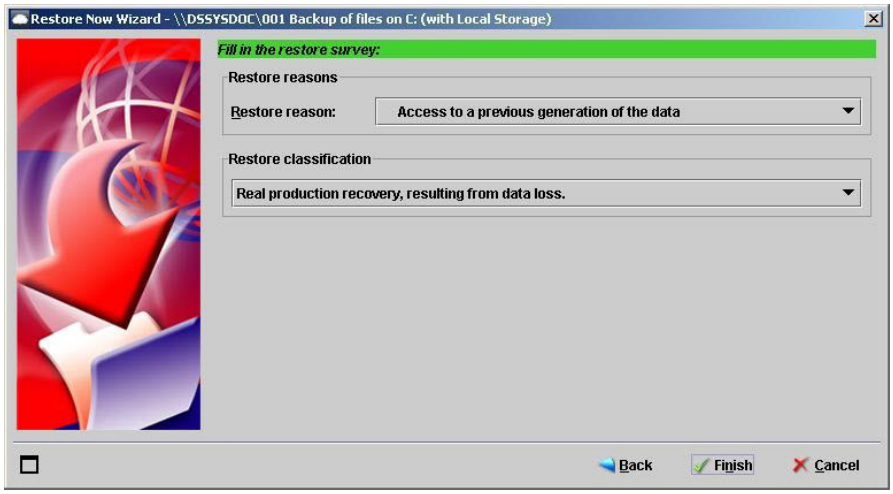
- **Fast –** DS-Client will use a direct restore method, writing data as it is received.

NOTE: When the **Fast** method is selected, files in the destination location will be overwritten upon receipt of the first byte of data.

4. To configure the remaining restore options:
   - **Detailed log –** Select this check box to record all files that are restored.
   - **Skip Pre/Post –** Clear this check box to enable Pre/Post Execution. DS-Client will run a specified activity before and/or after a restore operation. For more information, see Section 6.1.3.6, “Using Pre/Post processes to run processes before and/or after a restore”, on page 133, Pre & Post Execution, and Pre & Post Execution (Linux DS-Client).
5. Click **Next**.

6.2.5.6 Specifying the reason for the restore

1. On the **Fill in the restore survey** page, click the **Restore reason** box and select the reason for this restore.



   F1 Help: Select Restore Reason
2. If the **Restore classification** box appears, click and make the appropriate selection.

   This only appears if the backup set is currently in a scheduled recovery drill period. For more information see Section 6.1.3.9, “Types of Restore Licenses in Recovery Drill Period”, on page 141.
3. Click **Finish** to start the restore process.

The **Restore Process** dialog box shows the progress of each file being restored.

NOTE: During restore, the amount of data received can differ from the **Transmitted Amount** recorded in the backup log. This can occur for two reasons: (1) During an incremental, differential, or CBT backup (e.g. for a database or a virtual machine), or during a delta backup of a file, the amount of data transmitted is usually smaller than the actual size of the item. A reduction of transmitted data is also noticeable when a file is being saved as a common file during backup. In these cases, the amount of data received during restore can be greater than the Transmitted Amount recorded in the backup log. (2) DS-Client sends information such as file name and size along with a file to be stored on DS-System during backup. This additional information is not sent during restore, decreasing data transfer by about 50 bytes for each file.

6.3 Cloud (Google G Suite) backup sets (Windows)

6.3.1 About Google G Suite backup sets

The section describes how to create a Backup from the Cloud (Google G Suite) backup set. For the remainder of this section, the term “G Suite backup set” will be used as an abbreviation for “Backup from the Cloud (Google G Suite) backup set”.

6.3.2 Before you begin

IMPORTANT: Before performing a backup and restore of a G Suite backup set, ensure that all the required prerequisites are met. For details, see the Knowledge Base article in Section 15.23, “Backup from the Cloud (Google G Suite)”, on page 595.

IMPORTANT: For best results, we recommend using the **Cloud Management System** in DS-NOC (Windows) rather than DS-User to create, configure, and schedule G Suite backup sets. For more information, see Section 15.23, “DS-NOC on Windows recommended for G Suite backups:”, on page 596 and the *DS-NOC User Guide*.

6.3.3 Creating a Google G Suite backup set

The following sections describe how to create a G Suite backup set.

6.3.3.1 Selecting the kind of backup set

1. On the **Sets** menu, click **New Backup Set**. The New Backup Set Wizard appears.
2. On the **Choose the kind of backup set** page, select **Backup from the Cloud**, and then click **Next**.

6.3.3.2 Specifying the cloud service type

- On the **Choose the kind of backup set** page, select **G Suite**, and then click **Next**.

NOTE: This option only appears if the G Suite plug-in has already been installed on your DS-Client.

F1 Help: Choose the Cloud Service type

6.3.3.3 Selecting a logon mode

1. On the **Select logon mode** page, select the type of credentials that you will provide to be used by the application to access the backup source.

   It is assumed that you have already generated the required credentials in advance in Google API Console. For details on prerequisites, see the Knowledge Base article in Section 15.23, “Backup from the Cloud (Google G Suite)”, on page 595.

   - **Client ID for native application –** Select this option to provide a client ID for native application. DS-Client will use this client ID to access the Google account for which the client ID was generated. This option allows DS-Client to access only one Google account.
   - **Service account logon –** Select this option to provide the credentials of a service account. DS-Client will use the service account credentials to access one or multiple accounts on your G Suite domain.
   - **www –** Type the name of the G Suite cloud service domain for which you want to back up data. Ensure the name is typed correctly; otherwise, DS-Client will be unable to log on to the domain for you to select items for backup. This field appears only when you select **Service account logon**.

   F1 Help: Select the computer

The **Enter API Access Credentials** dialog box appears. The fields displayed in this dialog box are determined by the logon mode that you have selected.

2. Provide the credentials required for the logon mode that you have selected, then, and then click **OK**:

   - If you have selected **Client ID for native application**, do the following for each field:

     a) **Client ID**: Click **[...]**, browse, and then select the JSON file that contains the OAuth 2.0 client ID and the client secret for the G Suite account for which you want to back up data. The name of the file begins with `client_secret`. Alternatively, type the client ID.

     b) **Client secret**: If you have selected a JSON file for the **Client ID** box, this box is automatically filled. Otherwise, ensure that you have selected the appropriate JSON file. If you have typed the client ID instead of selecting a JSON file, type the client secret that corresponds with the client ID.

     F1 Help: Enter API Access Credentials (Client ID for native application)

     After you click **OK**, DS-Client will attempt to connect to the G Suite API using the client ID and client secret you have just provided. If connection is successful, the Google sign-in page will be displayed in the **Request for Permission** dialog box.

   - If you have selected **Service account logon**, do the following for each field:

     a) **Google account –** Type the user name of the Google administrative account that you have used to create the service account that you will now use for API access. The domain name that you have typed in the previous dialog box is displayed.

     b) **Email address –** Click **[...]**, browse, and then select the JSON file that contains the client email address of the same service account. Alternatively, type the service account client email address.

     c) **Private key –** Click **[...]**, browse, and then select the PKCS12-format (or P12) private key generated for the same service account. This private key is a binary file with a .p12 extension.

     F1 Help: Enter API Access Credentials (Service account)

3. If you have selected **Service account logon**, continue in Section 6.3.3.4, “Specifying users and services as backup items”, on page 168.

4. (This step and subsequent steps apply only if you have selected **Client ID for native application**.) On the Google sign-in page displayed in the **Request for Permission** dialog box, sign in to the Google account for which you want to back up data and, therefore, to which the application needs permission to access.

   NOTE: This Google account must be the same account with which you generated the credentials that you have provided in the **Enter API Access Credentials** dialog box. If not, sign out and then sign in with the correct account.

   F1 Help: Request for Permission

   On successful sign-in, a permission request is displayed in the **Request for Permission** dialog box.

5. Grant the application the permission to access data on the Google account.

   If you allow access permission, a verification code is displayed on the Google account page shown in the **Request for Permission** dialog box.

6. In the **Request for Permission** dialog box, copy the entire string of the verification code, paste the code into the **Code** box, and then click **OK**.

   Successful authentication with G Suite at this step enables DS-Client to access the data of this account.

6.3.3.4 Specifying users and services as backup items

The **Select Users and Services for Backup** dialog box displays the Google accounts for which you have permission to back up data.

1. In the **Select Users and Services for Backup** dialog box, select each item that you want to back up from the Google account, and then click **Add**.

   Selected items are displayed in the **Backup Items Selected** section.

   F1 Help: Select Items for Backup Set

2. When you have selected all the items that you want to back up, click **OK**.

6.3.3.5 Specifying backup item options

- On the **Specify backup item options** page, retain the default settings unless there are specific generation or option requirements for each backup item, and then click **Next**.

  F1 Help: Set Properties - Items tab

6.3.3.6 Specifying backup set options

- On the **Specify backup set options** page, retain the default settings unless there are specific option requirements for this backup set, and then click **Next**.

  F1 Help: Set Properties - Options tab

6.3.3.7 Specifying notification options

The steps for all subsequent wizard pages are the same as for Windows File system backups.

- Continue in Section 6.2.3.8, “Specifying notification options”, on page 153 in the section for File system backups.

6.3.4 Restoring a Google G Suite backup set

Steps that are similar to those for File system restores will only be briefly mentioned.

See important information for this type of restore in the Knowledge Base article in Section 15.23, “Backup from the Cloud (Google G Suite)”, on page 595.

NOTE: Before selecting an alternate location as the restore destination for a G Suite backup set, consider the following in your decision. If the user account that was backed up does not exist in the restore destination, DS-Client will attempt to create the user account in that location before restoring data (this might incur additional costs).

6.3.4.1 Selecting the backup set

- Browse the Backup Sets tree and select the backup set, and then on the **Restore** menu click **Restore Now**.

6.3.4.2 Specifying items to restore

- Select the required item, and then click **Next**.

6.3.4.3 Specifying the restore destination

The **Select restore location** page allows you to select the restore destination.

F1 Help: Select restore location

1. To restore the data to the original backup source location (that is, the original G Suite account), select **Original location**. This option is selected by default.
2. To restore the data to an alternate location, select **Alternate location**, click the Browse **>>** button, and then do the following:

NOTE: When an alternate location is selected as the restore destination, DS-Client will verify if the user account that was backed up exists in that location. If the user account exists, DS-Client will restore data to that destination. If the user account does not exist, DS-Client will first attempt to create the user account and then restore data to that destination (this might incur additional costs). The user account will also have a randomly generated password that the Administrator must reset so that the user can log on.

In the **Select Alternate Server** dialog box, select the logon mode to access the restore destination by doing one of the following:

F1 Help: Select the computer

- To provide a client ID for native application, select **Client ID for native application** and then click **Select**.

  NOTE: DS-Client will use this client ID to access only the G Suite account for which the client ID was generated.

  When you provide the required credentials, the Client ID for native application logon mode allows you to restore data from the original G Suite user account (for example, john.smith@example.com):

  - To the original G Suite user account on the original G Suite domain (for example, john.smith@example.com)
  - To an alternate G Suite user account on the original G Suite domain (for example, mary.brown@example.com)
  - To the original G Suite user account on an alternate G Suite domain (for example, john.smith@newdomain.com)
  - To an alternate G Suite user account on an alternate G Suite domain (for example, mary.brown@newdomain.com)

- To provide the credentials of a service account, select **Service account logon**. In the **www.** box, type the name of the G Suite cloud service domain to which you want to restore the data, and then click **Select**.

  NOTE: DS-Client will use the service account credentials to access one or multiple accounts on your G Suite domain.

  When you provide the required credentials, the Service account logon mode allows you to restore data from the original G Suite user account (for example, john.smith@example.com):

  - To the original G Suite user account on the original G Suite domain (for example, john.smith@example.com)
  - To the original G Suite user account on an alternate G Suite domain (for example, john.smith@newdomain.com)

In the **Enter API Access Credential** dialog box, provide the credentials that are required to access the destination location by doing one of the following:

- If you have selected the **Client ID for native application** logon mode, click **[...]**, browse and then select the JSON file that contains the OAuth 2.0 client ID and the client secret for the G Suite account to which you want to restore the data. The name of the file starts with `client_secret`. Alternatively, type the client ID.

  F1 Help: Enter API Access Credentials (Client ID for native application)

- If you have selected the **Service account logon** mode, in the **Google account** box, do the following:

  a) Type the user name of the Google administrative account that you have used to create the service account that you will now use for API access. The domain name that you have typed in the previous dialog box is displayed.

  b) In the **Email address** box, click **[...]**, browse, and then select the JSON file that contains the client email address of the same service account. Alternatively, type the service account client email address.

  c) In the **Private key box**, click **[...]**, browse, and then select the PKCS12-format (or P12) private key generated for the same service account. This private key is a binary file with a .p12 extension.

  NOTE: The service account must have the required privilege to access the restore destination.

  F1 Help: Enter API Access Credentials (Service account)

3. To restore data to a disk location on the DS-Client computer, select the **Restore to local disk** check box, and then click **[>>]** to specify the location.

   NOTE: UNC paths are not supported with this option.

4. If the restore is for email message backups, in the **Custom Mail Label(s)** box, specify the name of the folder to which the selected email messages will be restored at the destination location.
5. Click **Next**.

6.3.4.4 Specifying restore options

- Select the required restore options, and then click **Next**.

  F1 Help: Select restore options

6.3.4.5 Specifying the reason for the restore

1. On the **Fill in the restore survey** page, click the **Restore reason** box and select the reason for this restore.
2. If the **Restore classification** box appears, click and make the appropriate selection.

   This only appears if the backup set is currently in a scheduled recovery drill period. For more information see Section 6.1.3.9, “Types of Restore Licenses in Recovery Drill Period”, on page 141.

   For more information, see the F1 help for this dialog box and Section 6.2.5.6, “Specifying the reason for the restore”, on page 164.
3. Click **Finish** to start the restore process.

6.4 Cloud (Microsoft Office 365) backup sets (Windows)

6.4.1 About Microsoft Office 365 backup sets

The section describes how to create Backup from the Cloud (Microsoft Office 365) backup sets using DS-User. For the remainder of this section, the term “Microsoft Office 365 backup set” will be used as an abbreviation for “Backup from the Cloud (Microsoft Office 365) backup set”.

Backup from the Cloud (Microsoft Office 365) supports the backup and restore of Exchange Online, SharePoint Online, and OneDrive data.

For information on the types of Microsoft Office 365 data you can restore using DS-Client and known issues, see the Knowledge Base article in Section 15.24, “Backup from the Cloud (Microsoft Office 365)”, on page 602.

6.4.2 Before you begin

IMPORTANT: Before performing a backup and restore of a Backup from the Cloud (Microsoft Office 365) backup set, ensure that all the required prerequisites are met. For details, see the Knowledge Base article in Section 15.24, “Backup from the Cloud (Microsoft Office 365)”, on page 602.

IMPORTANT: For best results, we recommend using the **Cloud Management System** in DS-NOC (Windows) rather than DS-User to create, configure, and schedule Microsoft Office 365 backup sets. For more information, see Section 15.24, “DS-NOC on Windows: Recommended tool for Microsoft Office 365 backups”, on page 605 and the *DS-NOC User Guide*.

6.4.3 Creating a Microsoft Office 365 backup set

The following sections describe how to create a Microsoft Office 365 backup set.

- To back up Microsoft Exchange mailboxes, the user must have the Microsoft Office 365 Exchange Online license or a Microsoft Office 365 license that includes equivalent permissions.
- To back up Microsoft SharePoint site collections, the user must have the Microsoft Office 365 SharePoint Online license or a Microsoft Office 365 license that includes equivalent permissions and be a global administrator.

6.4.3.1 Selecting the kind of backup set

1. On the **Sets** menu, click **New Backup Set**. The New Backup Set Wizard appears.
2. Select **Backup from the Cloud**, and then click **Next**.

6.4.3.2 Specifying the cloud service type

- Select **Microsoft Office 365** as the type of cloud service you want to back up, and then click **Next**.

  F1 Help: Choose the Cloud Service type

6.4.3.3 Specifying the server

On the **Backup from Microsoft Office 365** page, the path to `office.microsoft.com` is provided by default. The option **Ask for Network Credentials** is selected by default.

1. On the **Backup from Microsoft Office 365** page, click **Next**.

   The **Enter Network Credentials** dialog box appears because the option **Ask for Network Credentials** is selected.

   F1 Help: Select the computer

2. In the **Enter Network Credentials** dialog box, provide the credentials that have the required permission and license to access the Microsoft Office 365 cloud server (office.microsoft.com).

   - To back up Microsoft Exchange mailboxes, the user must have the Microsoft Office 365 Exchange Online license or a Microsoft Office 365 license that includes equivalent permissions.
   - To back up Microsoft SharePoint site collections, the user must (1) have the Microsoft Office 365 SharePoint Online license or a Microsoft Office 365 license that includes equivalent permissions and (2) be a **global administrator**.

   For details on user permission requirements, see the Knowledge Base article in Section 15.24, “Backup from the Cloud (Microsoft Office 365)”, on page 602.

   The list of items (e.g., services, users, folders, site collections) displayed in the next dialog box will depend on the credentials typed in this dialog box.

   F1 Help: Specify Credentials (Windows DS-Client)

3. In the field **Connect as**, type the Microsoft Office 365 server user name.
4. Type the password.

5. In the **From** field, type the domain name of the backup source, i.e., your Microsoft Office 365 server domain, as configured on your network. For example, if email messages at the backup source are addressed to user@company.local, type `company.local` in this field.
6. When you have provided the required credentials, click **OK**.

6.4.3.4 Specifying the backup items

If DS-Client can successfully log on to your Microsoft Office 365 domain, the **Select Users & Services for backup** dialog box appears and displays the users and folders for which you have permission to back up.

IMPORTANT: Although you can select multiple user accounts or site collections, we recommend limiting each backup set to one user account or one site collection for performance reasons. When you create Microsoft Office 365 backup sets using **Cloud Management System** in Windows DS-NOC, this limitation is enforced automatically.

NOTE: Do not select items for backup from both sources (Exchange and SharePoint) in the same Microsoft Office 365 backup set. Use a separate Microsoft Office 365 backup set for each backup source.

1. Select a user, folder, or site collection, and then click **Add** or **Exclude**.

   F1 Help: Select Items for Backup Set

   NOTE: You can exclude a folder or individual item only when its parent user, mailbox, or folder has already been added.

   (Exchange Online only) To add or exclude individual items inside a folder:

   a) Expand the user, select the folder (for example, Inbox), and then click **Items**.

      F1 Help: Files in Directory '...' (Select Items for Backup)

      NOTE: The value displayed in the **Size** column reflects the size of the item on the source server in MIME format. This might differ from the size of the item in storage with full fidelity after it has been backed up.

   b) Select individual email messages or entries that you want to specify, and then click **Add** or **Excluded** as needed.

   c) When you have added or excluded the required items, click **Finish**.

After you click **Finish**, the items that you have just added or excluded are displayed in the **Backup Items Selected** section.

2. When you have specified what you want to back up, click **Next**.

6.4.3.5 Specifying backup item options

- On the **Specify backup item options** page, retain the default settings unless there are specific generation or option requirements for each backup item, and then click **Next**.

  F1 Help: Set Properties - Items tab

6.4.3.6 Specifying backup set options

- On the **Specify backup set options** page, retain the default settings unless there are specific generation or option requirements for each backup item, and then click **Next**.

  F1 Help: Set Properties - Options tab

6.4.3.7 Specifying notification options

The steps for all subsequent wizard pages are the same as for Windows File system backups.

Continue in Section 6.2.3.8, “Specifying notification options”, on page 153 in the section for File system backups.

6.4.4 Restoring a Microsoft Office 365 backup set

The following provides instructions on how to restore Microsoft Office 365 backup set data. Steps that are similar to those for File system restores will only be briefly mentioned.

NOTE: Before restoring a Microsoft Office 365 backup set, ensure that you have addressed the considerations described in the following sections and in the Knowledge Base article in Section 15.24, “Backup from the Cloud (Microsoft Office 365)”, on page 602.

6.4.4.1 Requirements for Exchange Online restore activities

Before configuring a restore activity for Microsoft Office 365 backup set data in DS-Client, ensure the following requirements have been met:

- You must decide on the appropriate restore destination. The choice depends on the type of data to be restored, the restore destination, and the network credentials for the restore activity. When specifying the restore destination for an Exchange Online restore activity, choose from these three options according to the guidelines below:
  - Restore to the **Original Location**. For guidelines on when to choose this restore destination, see Table 3 on page 177.
  - Restore to an **Alternate Location**. For guidelines on when to choose this restore destination, see Table 3 on page 177.
  - Restore to the local disk of the DS-Client machine. For details on limitations, see Section 15.24, “Known issues”, on page 614. For details on the option to archive to PST and related prerequisites, see Section 15.24, “Archiving restored files to PST”, on page 614.

Procedure	Environment		Restore Destination		Time
	Exchange Online	On-premises Exchange Server	Domain	Mailbox	
Restore user via the Office 365 Web Portal In *Office 365 admin center*, restore the user to make the deleted mailbox *active* again.	X		Same	Same	Mailbox deleted within last 30 days
Restore to *Original Location* via DS-Client[1] 1. Create a new mailbox with the same name, if the mailbox does not exist or is not active. 2. Restore to *Original Location* via DS-Client.	X	X	Same	Same	Anytime
Restore to *Alternate Location* via DS-Client[2] 1. Create a new mailbox or use an existing mailbox, if the required mailbox does not exist. 2. Restore to the mailbox as an *Alternate Location* via DS-Client.	X	X	Any	Any	Anytime

Table 3 Preparing for an Exchange Online restore activity

1 For example, when restoring Exchange data to the same mailbox in the same domain as the original source, select **Original Location**.

2 When restoring to a different mailbox in the same domain or to the same mailbox in a different domain, select **Alternate Location**.

- If restoring to **Original Location** or **Alternate Location**, prepare the restore destination according to Table 3 on page 177 before performing the restore activity.

- Whether you are restoring to **Original Location** or **Alternate Location**, the domain name of the network credentials used for the restore activity must be identical to the domain name of the restore destination.

IMPORTANT: If the domain name of the network credentials is different from that of the original source, then you must select **Alternate Location** when specifying the restore destination. **Alternate Location** allows you to select an alternative restore destination location that is not the original source and to provide the necessary network credentials for the restore activity.

6.4.4.2 Requirements for Microsoft SharePoint Online restore

The following is required for Microsoft SharePoint Online restore activities.

- Before you configure a Microsoft SharePoint Online restore activity, prepare the restore destination according to Table 4 on page 178.

Procedure	Environment	Restore Destination		Time
	SharePoint Online	Domain	Site Collection	
Restore site collection via Office 365 Web Portal In *Office 365 SharePoint admin center*, restore the site collection to make it *active* again.	X			Site collection deleted within last 30 days
Restore to *Original Location* via DS-Client 1. Create a new site collection of the same type with the same name as the source. If an equivalent site collection currently exists in the recycling bin, remove it permanently. 2. Restore to *Original Location* via DS-Client.	X	Same	Same	Anytime
Not Supported	X	Same	Different	Anytime
	X	Different	Any	

Table 4 Preparing for a Microsoft SharePoint Online restore activity

- SharePoint data can only be restored to the same site collection in the same domain using DS-Client. When specifying the restore destination, you can only select **Original Location**.

6.4.4.3 Selecting the backup set

- Browse the Backup Sets tree, select the backup set to restore, and then on the **Restore** menu click **Restore Now**.

6.4.4.4 Specifying items to restore

1. On the **Select directories/files to restore** page, select the users, folders, or site collections that you want to restore.

   F1 Help: Select directories / files (Restore / BLM / Delete / Validation)

   To select individual items to restore:

   a) Expand the user, select the folder or site (for example, Inbox), and then click **Show Files**.

   b) To search for individual items, click **Find File**. Under **Search for**, select a column to search from in the box, type a string that you want to search for, and then click **Find**.

      F1 Help: Find Backed Up File

   c) Select all the individual email messages or entries that you want to restore.

   NOTE: The value displayed in the **Size** column reflects the size of the item in storage with full fidelity. This might differ from the size of the item on the source server, which is in MIME format.

2. When you have specified what you want to restore, click **Next**.

6.4.4.5 Specifying the restore destination

IMPORTANT: Before restoring Exchange data, you must ensure that the required mailbox already exists and is active in the domain at the destination, whether you select **Original location** or **Alternate location**. Otherwise, the restore will fail.

1. On the **Select restore location** page, select the appropriate options to specify the restore destination and the required details.

   IMPORTANT: The domain name of the network credentials that you provide for the restore activity must be identical to the domain name of the restore destination location, whether you select **Original location** or **Alternate location**.

   For guidelines on choosing between **Original Location** and **Alternate Location**, see Table 3 on page 177 and Table 4 on page 178.

   - **Original location –** This option is selected by default. Data will be restored to the original backup source location, that is, the original Microsoft Office 365 account.
   - **Alternate location –** This option is available for Exchange Online only.

Alternate location on Microsoft Office 365 (Exchange Online)	a) Click **>>** to open the **Select Alternate Server** dialog box. b) Verify that `OFFICE.MICROSOFT.COM` is shown in the **Path** field. If not, type `OFFICE.MICROSOFT.COM` c) Provide the required credentials for the Microsoft Office 365 cloud server. In the **From** field, type a full address, not just a domain name. Examples: • example.com • example.onmicrosoft.com
Alternate location on your premises	a) Click **>>** to open the **Select Alternate Server** dialog box. b) Select **Alternate Server**. c) In the **Path** field, type the IP address, the host name, or a fully qualified domain name (FQDN) of the Microsoft Exchange Server to which you want to restore data on your premises (LAN). d) Provide the required credentials. In the **From** field, type a full address, not just a domain name. Examples: • example.com • example.local

- **Restore to local disk**: Select this option to restore data to a disk location that you specify on the DS-Client computer.

  NOTE: UNC paths are not supported with this option.

- **Archive restored files to PST**: If you have selected the Restore to local disk check box, you can optionally select this option to archive Microsoft Exchange data to a PST file.

  During the restore process, a PST file will be created in the path that you specify for the **Restore to local disk** check box. If the path ends in a file name with a .pst extension, the PST file will take on that file name. If the path does not end in a .pst extension, the mailbox address of the restored items will be used as the file name of the PST file.

  NOTE: If a PST file of the same name already exists in the folder location of the path, the restore process will not overwrite the existing PST file but append to the existing file.

F1 Help: Select restore location

2. Select the required options (if available), and then click **Next**.

6.4.4.6 Specifying restore options

- Select the required restore options, and then click **Next**.

  F1 Help: Select restore options

6.4.4.7 Specifying the reason for the restore

1. On the **Fill in the restore survey** page, click the **Restore reason** box and select the reason for this restore.
2. If the **Restore classification** box appears, click and make the appropriate selection.

   This only appears if the backup set is currently in a scheduled recovery drill period. For more information see Section 6.1.3.9, “Types of Restore Licenses in Recovery Drill Period”, on page 141.

   For more information, see the F1 help for this dialog box and Section 6.2.5.6, “Specifying the reason for the restore”, on page 164.

   IMPORTANT: If you have selected **Archive restored files to PST** for the restore activity, ensure that all foreground instances of Microsoft Outlook are closed. DS-Client will access Microsoft Outlook in the background during the restore process. Do not manually stop Microsoft Outlook when it is running as a background process during restore activities. Microsoft Outlook will close after all restore activities that require archiving to a PST file are completed.

3. Click **Finish** to start the restore process.

NOTE: If you select the restore option **Archive restored files to PST** and an error occurs indicating that DS-Client cannot successfully connect to Microsoft Outlook to start the restore activity, increase the value of the advanced parameter **ExchangeOnlineOutlookConnectionTimeout**. For more information, see Section 3.1.8, “Configuring the advanced settings”, on page 33.

6.5 Cloud (Microsoft Office 365 Groups) backup sets (Windows)

This section describes how to create a Microsoft Office 365 Groups backup set and restore the backed up data.

6.5.1 About Microsoft Office 365 Groups backup sets

You can back up and restore the following objects in Office 365 Groups:

- **Groups** — Office 365 Groups (or Unified Groups).
- **Conversations** — Conversations, threads, and posts, including attachments.
- **Drive** — SharePoint team site documents (or OneDrive documents), including drive folders.
- **Events** — Calendar events.

- **Members** — List of members.
- **Notes** — Notebooks in OneNote Online, including section groups, sections, and page contents.
- **Owners** — List of owners.
- **Photo** — Photo contents.
- **Plans** — Plans, plan details, buckets, tasks, and task details.

NOTE: Backup of reference attachments is not supported.

6.5.2 Before you begin

Before creating a Microsoft Office 365 Groups backup set, you must ensure that the following requirements are met.

6.5.2.1 Configuring Microsoft Azure Active Directory permissions and credentials

This section describes how to configure the Microsoft Azure Active Directory credentials and permissions that are required to create Microsoft Office 365 backup sets. For detailed instructions, see the Microsoft Azure documentation.

NOTE: Each set of OAuth 2.0 client credentials includes a value for the Directory, Client ID, Redirect URI, and Client secret that is used by the DS-Client to access the Azure Active Directory.

To configure the Microsoft Azure Active Directory permissions and credentials:

1. Sign in to the Microsoft Azure Active Directory admin center.
2. Configure the Azure Active Directory properties as follows:
   a) Click the **Azure Active Directory** service.
   b) Under **Manage**, click **Properties**.
   c) Under **Global admin can manage Azure Subscriptions and Management Groups**, click **No**.

NOTE: Record the **Directory ID** or domain name. This is the **Directory** you must enter when creating a Microsoft Office 365 backup set.

3. Configure the directory role for the active user who will create the OAuth 2.0 client credentials for the DS-Client to access Azure AD as follows:

   a) Click the **Azure Active Directory** service.

   b) Under **Manage**, click **Users**, and then select the active user you want to configure.

   c) Under **Manage**, click **Directory** role, and then set the directory role for the active user as **Global Administrator**.

4. Register a new Microsoft Azure Active Directory web application and prepare a set of OAuth 2.0 client credentials for each new Microsoft Office 365 Groups backup set as follows:

   a) Click the **Azure Active Directory** service.

   b) Under **Manage**, click **App registrations**.

   c) Click **New application registration**.

   d) In the **Name** box, type a name for the application.

   e) In the **Application type** box, select **Web app / API**.

   f) In the **Sign-on URL** box, type `http://localhost:4413/`. This is the **Redirect URI** you must enter when creating a Microsoft Office 365 backup set.

   g) Click **Create**.

   NOTE: Record the **Application ID**. This is the **Client ID** you must enter when creating a Microsoft Office 365 backup set.

5. Configure the settings for the Microsoft Azure Active Directory web application as follows:

   a) Click **Settings**.

   b) Under **API Access**, click **Keys**, and then create and save a secret key for access to the API.

   NOTE: Record the key value. This is the **Client Secret** you must enter when creating a Microsoft Office 365 backup set.

   c) Under **API Access**, click **Required permission**, and then click **Add**.

   d) Click **Select an API**, select **Microsoft Graph**, and then click **Select**.

   e) Click **Select permissions**, and then select the following delegated permissions:

      - Have full access to user calendars

- Read and write all groups
- Read and write all users' full profiles
- Read and write all OneNote notebooks that user can access

f) Click **Grant permissions**.

6.5.2.2 Creating an OAuth 2.0 client credential configuration file

This section describes how to create a text file containing the OAuth 2.0 client credentials that can be imported when creating a Microsoft Office 365 Groups backup set to automate the process.

To create an OAuth 2.0 client credential configuration file, do one of the following:

- To use the directory ID in the properties of the Azure Active Directory, use this format:

```
directory:xxxxxxxx-xxxx-xxxx-xxxx-xxxxxxxxxxxx
client_id:xxxxxxxx-xxxx-xxxx-xxxx-xxxxxxxxxxxx
client_secret:xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
```

- To use the domain name of the Microsoft Office 365 Group, use this format:

```
directory:example.onmicrosoft.com
client_id:xxxxxxxx-xxxx-xxxx-xxxx-xxxxxxxxxxxx
client_secret:xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
```

NOTE: OAuth cloud credentials that are saved as part of the backup set might expire if the backup set is not used for an extended period. If this occurs, the credentials can be reauthorized by typing them again on the **Share** tab of the **Properties** dialog box.

6.5.2.3 Configuring permissions and credentials in Microsoft Office 365

- Ensure that the user who will sign in to Microsoft Office 365 is both an owner and a member of the group that you want to back up and restore.

6.5.2.4 Configuring network settings

- On the machine on which the DS-User application runs, ensure that the specific inbound TCP port that is specified in the sign-on URL is open.

6.5.3 Limitations

The following limitations apply to Microsoft Office 365 Groups backup sets.

General limitations:

The following functionality is not supported with Microsoft Office 365 Groups backup sets:

- Receiving notifications
- Assigning retention rules
- Migrating a backup set
- Converting a backup set
- Validating a backup set
- Changing the ownership of a backup set
- Performing an initial backup
- Restoring from disc/tape
- Copying to and restoring from a BLM Archiver
- Backing up and restoring the team site of an Office 365 Group in a Microsoft SharePoint Online portal, including the home page, site contents, and recycling bin.

Backup limitations:

The following limitations apply when backing up a Microsoft Office 365 Groups backup sets:

- Each group can contain a maximum of 5000 drive items, including folders.
- If you rename a section in OneNote Online, the section will still be recognized by the previous name during subsequent requests.
- The contents of an Office 365 Group on the Files panel in the Outlook Web App are only backed up if they belong to a supported object type.
- Some lower-level directory tree items and folders cannot be added or excluded as backup items. During the backup process, these items and folders will be added or excluded accordingly with their parent folders.

Restore limitations:

The following limitations apply when restoring a Microsoft Office 365 Groups backup sets:

- The reported size of items might differ from the actual size of items.
- Posts and events that are larger than 4 MB (including attachments) cannot be restored.

- When restoring calendar events that contain attachments, the attachments are not restored.
- Some object properties might retain their existing values even after a successful restore activity.
- You can browse through a folder structure for a specific backed up file, but cannot search for the file.
- Referenced contents (such as images) in restored objects (such as posts and pages) might not appear as the original.
- During the restore process, there might be a delay of up to 72 hours before some items appear in their respective web interfaces.
- On occasion, restored notebooks appear in the Notebooks folder of the Documents tab of the SharePoint portal rather than the OneNote Online portal.
- When restoring note pages, some HTML content and formatting might be lost. For example, page attachments, drawings, table borders, text highlighting, etc.
- When restoring conversation posts, the From field always displays the name of the user who performed the restore activity. In addition, the restored conversation posts might contain collapsed older posts.
- If you delete user accounts from an owner or member list, the associated users cannot be restored. Other entries in the owner or member list are unaffected. We recommend that you perform an on-demand backup of the affected backup sets after deleting user accounts associated with an owner or member list.

6.5.4 Creating a Microsoft Office 365 Groups backup set

This section describes how to create a Microsoft Office 365 Groups backup set.

To create a Microsoft Office 365 Groups backup set:

1. On the **Sets** menu, click **New Backup Set**. The New Backup Set Wizard appears.
2. On the **Choose the kind of backup set** page, select **Backup from the Cloud** and then click **Next**.
3. On the **Choose the Cloud Service type** page, select **Microsoft Office 365 Groups** and then click **Next**.
4. In the **Azure AD OAuth 2.0 Client Credentials Grant** dialog box, do the following:
   a) In the **Directory** box, type the directory ID of the Azure Active Directory or the domain name of the Microsoft Office 365 Group that you want to back up.
   b) In the **Client ID** box, type the application ID.

c) In the **Client secret** box, type the value that results from creating the API access key.

NOTE: To type the information in these boxes automatically, you can import a text file that contains the required OAuth 2.0 client credentials. To open the text file, click the Browse **...** button. For more information on preparing the text file, see Section 6.5.2, “Before you begin”, on page 182.

NOTE: Using a new set of OAuth 2.0 client credentials for each new Microsoft Office 365 Groups backup set helps prevent throttling. For more information, see the Microsoft documentation on Microsoft Graph throttling.

---

5. If the **Authorize Azure AD Application** dialog box appears, do the following:

   a) Sign in to Azure AD using the credentials of a user who is both an owner and a member of the Microsoft Office 365 Group that you want to back up. Otherwise, the group must be public for the backup and restore processes to be successful.

   NOTE: If prompted to stay signed in, click **No**. Otherwise, you will not be able to sign in as a different user when creating other new Microsoft Office 365 Groups backup sets.

   ---

   b) If prompted, indicate that you agree to grant the application the delegated permissions to the resources that belong to the signed-in user.

   c) Click **OK**.

6. On the **Select Users and Services for Backup** page, expand the tree in the **Users and Services List**, and do the following:

   F1 Help: Select Items for Backup Set

   a) Select the item that you want to back up, and then click **Add**.

   b) To exclude an item under another item that has been added, select the item that you want to exclude, and then click **Exclude**.

c) When you have finished specifying the backup items, and then click **Next**.

NOTE: To back up the properties of a thread, ensure that you have also added the parent conversation item to be backed up. Adding the thread backs up only the posts that belong to the thread.

IMPORTANT: Each item that you add to a Microsoft Office 365 Groups backup set is identified by a unique path. If an item that is listed in the backup set is deleted from the source server after the backup set is created, the unique path of the deleted item becomes unusable. A newly created object with an identical name in the same location is identified by a new unique path and will not be backed up by the backup set.

7. On the **Specify backup item options** page, retain the default settings unless there are specific generation or option requirements for each backup item, and then click **Next**.

   F1 Help: Set Properties - Items tab

8. On the **Specify backup set options** page, retain the default settings unless there are specific generation or option requirements for each backup item, and then click **Next**.

   F1 Help: Set Properties - Options tab

9. To assign a schedule to the backup set, do the following on the **Choose a schedule for this backup set** page:

   F1 Help: Schedule Tab

   a) Select **Scheduled**.

   b) In the **Available schedules** list, select an existing schedule or click **New** to create a new schedule to assign to this backup set. If you are creating a new schedule, see Section 4.1, “About schedules”, on page 89 for more information.

10. Click **Next**.

11. On the **Choose the name for this backup set** page, type a name for the new Microsoft Office 365 Groups backup set and then click **Finish**.

NOTE: If an error occurs with validating credentials, you must perform reauthorization. To reauthorize after being notified of the error in a popup message in the New Backup Set Wizard, close the wizard and restart the process of creating the Microsoft Office 365 Groups backup set. When prompted, type the required credentials. To reauthorize after seeing the error in the Event Log of an existing Microsoft Office 365 Groups backup set, on the **Share** tab of the **Set Properties**

dialog box, verify and ensure that the credentials that are entered for the backup set are valid. For information on the required credentials, see Section 6.5.2, “Before you begin”, on page 182.

6.5.5 Restoring a Microsoft Office 365 Groups backup set

The section describes how to restore the backed up data in a Microsoft Office 365 Groups backup set.

NOTE: Existing objects at the restore destination are updated during the restore process. To restore backed up data as new objects, delete the existing objects from the restore destination location before you start the restore process.

NOTE: If you have deleted an entire Office 365 Group from the restore destination, allow at least 24 hours for Microsoft to permanently delete the group and its data before you start the restore process. Otherwise, the group and its data might be incompletely restored.

To restore a Microsoft Office 365 Groups backup set:

1. Browse the Backup Sets tree, select the backup set to restore, and then on the **Restore** menu click **Restore Now**. The Restore Now Wizard appears.
2. On the **Select directories/files to restore** page, select the groups, conversations, conversation threads, and posts that you want to restore from the tree.

   F1 Help: Select directories / files (Restore / BLM / Delete / Validation)

   a) To filter the items that are shown by backup generation, click **Advanced**.

      F1 Help: Advanced Options

   b) To select individual items to restore:

1. Expand a group, its subfolders, conversations, or threads.
2. Select a group or the individual subfolders, conversations, threads, and posts that you want to restore.

NOTE: When you restore the list of members or owners, the restore process replaces the existing list with the restored list. Items in the existing list that are not in the restored list are removed from the restore destination after the restore process.

NOTE: To restore the properties of a thread, ensure that you have also selected the parent conversation item to be restored. Selecting the thread restores only the posts that belong to the thread.

NOTE: Some properties of a restored task will not return to their original value. For example, the task completion date will display the time at which the task was restored rather than the time the task was completed.

---

c) To see more details about an item, highlight the item and then click **Show Files**. To locate and select older generations of a file, highlight the file and then click **File Info**. For more information, see Section 6.1.3.5, “Restoring a specific generation of a file”, on page 130.

d) To review a list of the items that you have selected, click **Selection**.

F1 Help: Selection

e) To include the subdirectories of the folders you have selected, select the **Include SubDirs** check box.

f) To see the total estimated size of all the selected items, select the **Calculate amount** check box.

3. When you have specified what you want to restore, click **Next**.
4. On the **Select restore location** page, click **Next**.
5. On the **Select restore options** page, click **Next**.
6. On the **Fill in the restore survey** page, in the **Restore reason** list, select the reason for this restore activity.

   F1 Help: Select Restore Reason

7. If the backup set is currently in a scheduled Recovery Drill period, in the **Restore classification** section, make the appropriate selection. For more information see Section 6.1.3.9, “Types of Restore Licenses in Recovery Drill Period”, on page 141.
8. Click **Finish**.

6.6 Cloud (Salesforce.com) backup sets (Windows)

6.6.1 About Salesforce.com backup sets

The following sections provide information about Salesforce.com backup sets.

6.6.2 Before you begin

Before performing a backup and restore of a Backup from the Cloud (Salesforce.com) backup set, ensure that the following prerequisites are met:

- Install the **Backup from the Cloud Plug-in** on the DS-Client computer. The plug-in is on the installation DVD in the following folder:

  ```
  \Software\DS-Client\DS-Client_FullFeatured\Windows_64_bit\plug
  ins\install.exe
  ```

- The Local Storage Path must be set (see Section 12.4, “Local Storage Tool”, on page 444.)
- You must possess a valid Salesforce.com account (username, password, and ‘security token’).
- Your Salesforce product must be an edition that allows API integration: **Enterprise**, **Unlimited**, **Developer**, or **Performance**. Backup and restore is not supported for editions without API integration, such as **Starter** or **Professional**.
- The DS-Client computer must connect to the Salesforce.com site. Optionally, you can configure DS-Client to connect to Salesforce.com via a proxy server (on the **Setup** menu, click **Configuration**, and then click **Connections**).

For more information, see the Knowledge Base article in Section 15.22, “Backup from the Cloud (Salesforce.com)”, on page 593.

6.6.3 Creating a Salesforce.com backup set

The following sections describe how to create a Salesforce.com backup set.

6.6.3.1 Selecting the kind of backup set

1. On the **Sets** menu, click **New Backup Set**. The New Backup Set Wizard appears.
2. Select **Backup from the Cloud** and then click **Next**.

6.6.3.2 Specifying the cloud service type

1. Select the type of Cloud Service you want to back up.

   F1 Help: Choose the Cloud Service type

2. Select **Salesforce.com**, and then click **Next**.

6.6.3.3 Specifying the server

1. Select the Cloud Server to backup.

   The **Enter Network Credentials** dialog box appears.

   F1 Help: Specify Credentials (Windows DS-Client)

2. Type the credentials to the (Salesforce.com) Cloud Server, and then click **OK**.
3. Type the Salesforce.com username and password.
4. Select the target database for backup (Production or Sandbox).
5. Enter the security token that was sent to you by email from Salesforce.com. You can request for a security token from the Salesforce.com website (Click **Setup** > **My personal information** > **reset my security token**).
6. Click **OK**.

6.6.3.4 Specifying the backup items

On a successful logon of DS-Client to Salesforce.com, the **Choose the database(s) to backup** page appears. The Database List will contain only one database.

1. To back up this entire Salesforce.com database and tables, select the database, and then click **Add**.

   - **Exclude all system tables that are not restorable**: This feature configures the backup set to either automatically exclude or include Salesforce System Tables.

   F1 Help: Select Items for Backup Set

2. Click **Tables** to selectively include or exclude specific database tables from the backup.

   The number of tables displayed depends on the **exclude/include system tables** setting.

3. Click **Next**.

6.6.3.5 Specifying backup item options

- On the **Specify backup item options** page, retain the default settings unless there are specific generation or option requirements for each backup item, and then click **Next**.

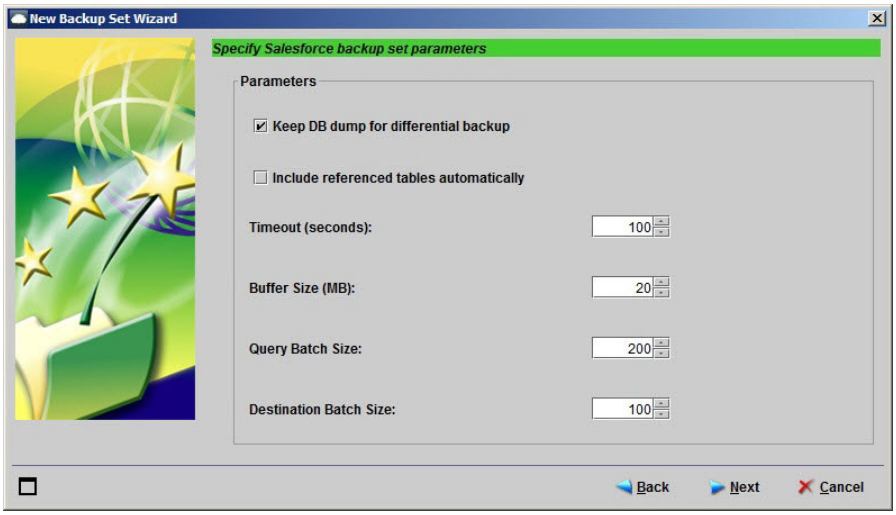
6.6.3.6 Specifying backup set options

- On the **Specify backup set options** page, retain the default settings unless there are specific generation or option requirements for each backup item, and then click **Next**.

  F1 Help: Set Properties - Options tab

6.6.3.7 Selecting the required parameters

- On the **Specify salesforce backup set parameters** page, specify the required parameters and then click **Next**.



  F1 Help: Set Properties - Backup from the Cloud (Salesforce.com) Parameters

6.6.3.8 Specifying notification options

The steps for all subsequent wizard pages are the same as for Windows File system backups.

- Follow from Section 6.2.3.8, “Specifying notification options”, on page 153 in the section for File system backups.

6.6.4 Restoring a Salesforce.com backup set at the table level

DS-Client allows you to restore data from a Backup from the Cloud (Salesforce.com) backup set both at the table level and at item level. The procedure for restoring at the table level is provided below. Steps that are similar to those for File system restores will only be briefly mentioned.

See important information on this type of restore in the Knowledge Base article in Section 15.22, “Backup from the Cloud (Salesforce.com)”, on page 593.

DS-Client also offers the ability to resume a restore process that was stopped at the uploading stage. For information, see Section 6.6.6, “Resuming a Salesforce.com data restore process”, on page 204.

6.6.4.1 Selecting the backup set

1. Browse the Backup Sets tree, select the backup set to restore, and then on the **Restore** menu click **Restore Now**.
2. On the **Select the Backup Set Restore Method** page, select the **Table Restore** option, and then click **Next**.

   F1 Help: Select the Restore Method

6.6.4.2 Selecting the item to restore

For this kind of backup set, there is only one backup item **Salesforce.fdb**.

- Select **Salesforce.fdb**, and then click **Next**.

6.6.4.3 Specifying the table(s) to restore

A list of all the tables in **Salesforce.fdb** appear in this dialog box. By default, all tables are selected. The data from each selected table will be appended to the existing table on the Cloud application server (Salesforce.com).

F1 Help: Backup Objects for ‘...’ (‘Backup from the Cloud’)

- Click **Next** to proceed to the next dialog box.

6.6.4.4 Specifying the restore destination

1. On the **Select Restore Location** page, select the restore destination.
   - **Original location –** This option is selected by default. Data will be restored to the original backup source location (i.e. the original Salesforce.com account) with the credentials used during backup.

- **Alternate location –** For Salesforce.com backup sets, an alternate location can be another Salesforce account, the original location, or a different target on the same account (e.g. from Production to Sandbox or vice versa). Type the required credentials when prompted.

F1 Help: Select database restore location (Microsoft SQL / PostgreSQL / MySQL)

2. To restore the dump file as an FDB file to a location on the DS-Client machine, select the **Restore to a local database file** check box, and then do one of the following to specify the location:
   - Click **>>**, and then in the **Select Directory** dialog box, browse to and select the location.
   - Type the path in the box.

NOTE: UNC paths are not supported with this option.

---

3. To restore the database in CSV format to a location that you specify, select the **Restore to multiple data files (CSV)** check box.

NOTE: Salesforce.com system tables are not restorable to the Salesforce.com online database. This option allows you to restore backed up Salesforce.com system tables. Each table will be a standalone CSV file in the destination folder.

---

4. Click **Next**

6.6.4.5 Specifying restore options

- On the Select Restore Options page, make the required selections, and then click **Next**.

  Examples:

  - **Restore Schemas –** If you select this option, the backed up schema(s) will be used to clear the tables and then rebuild them in the Salesforce.com database. This option is useful if the structure of any tables have changed since the backup session you are restoring.
  - **Use Bulk API –** This option minimizes the number of API call counts made by the restore process and is selected by default. When files are uploaded via Bulk API, a file size limit of 10 MB is enforced by Salesforce.com.

NOTE: Ensure that this check box is cleared if the data to be restored contains files that are larger than 10 MB.

- **Save temporary database file in local storage for resume –** To make the restore process resumable in the event that it is stopped during the uploading stage, select this option. For more information, see Section 6.6.6, “Resuming a Salesforce.com data restore process”, on page 204.

For more information on this dialog box, see the F1 help.

F1 Help: Select restore options (SQL / Microsoft Exchange / Oracle / Salesforce.com)

6.6.4.6 Specifying the reason for the restore

1. On the **Fill in the restore survey** page, click the **Restore reason** box and select the reason for this restore.
2. If the **Restore classification** box appears, click and make the appropriate selection.

   This only appears if the backup set is currently in a scheduled recovery drill period. For more information see Section 6.1.3.9, “Types of Restore Licenses in Recovery Drill Period”, on page 141.

   For more information, see the F1 help for this dialog box and Section 6.2.5.6, “Specifying the reason for the restore”, on page 164.
3. Click **Finish** to start the restore process.

6.6.5 Restoring a Salesforce.com backup set at the item level

Salesforce.com backup sets have a **Granular Restore** capability, which allows you to restore at the item level from a backed up Salesforce.com database.

NOTE: Each individual item in an item-level restore is a row from a table in a Salesforce.com database.

There are two main steps to performing a granular restore:

1. Section 6.6.5.1, “Restoring the database file”, on page 197

   In this step (**Granular Restore > Step 1. Database Restore**), DS-Client restores the Salesforce.com database at the point-in-time that contains the individual items that you want to restore. It is recommended that you restore this database file to a local disk location in the DS-Client machine.
2. Section 6.6.5.2, “Restoring Salesforce.com at the item level”, on page 200

In this step (**Granular Restore > Step 2. Items Restore**), DS-Client connects to the restored Salesforce.com database that you refer to at a local disk location. DS-Client restores individual items that you select in the database to the online Salesforce.com account.

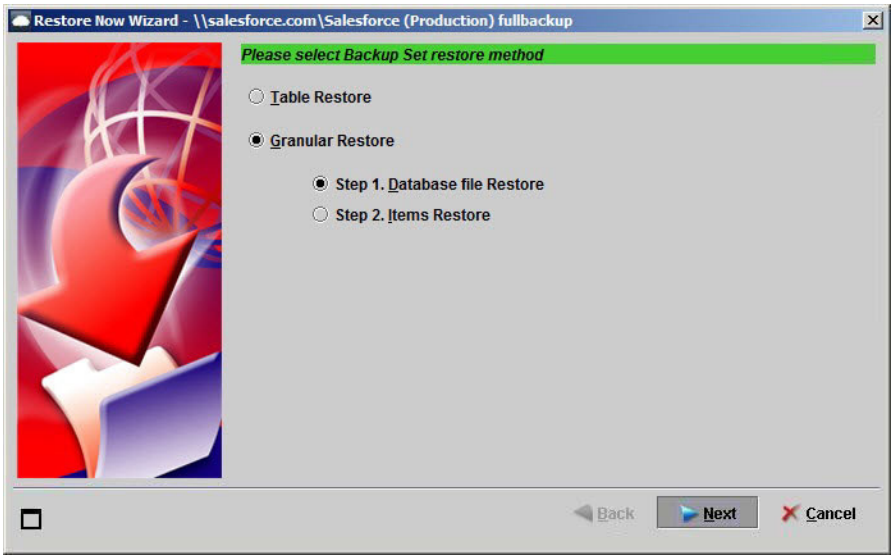
Instructions are provided below. Steps that are similar to those for File system restores will only be briefly mentioned.

See important information in the Knowledge Base article in Section 15.22, “Backup from the Cloud (Salesforce.com)”, on page 593.

NOTE: If you are restoring from a BLM Restorable Image or Disc/Tape media, you can only perform Step 1 from that media. Step 2 must always be performed from the database restored in Step 1.

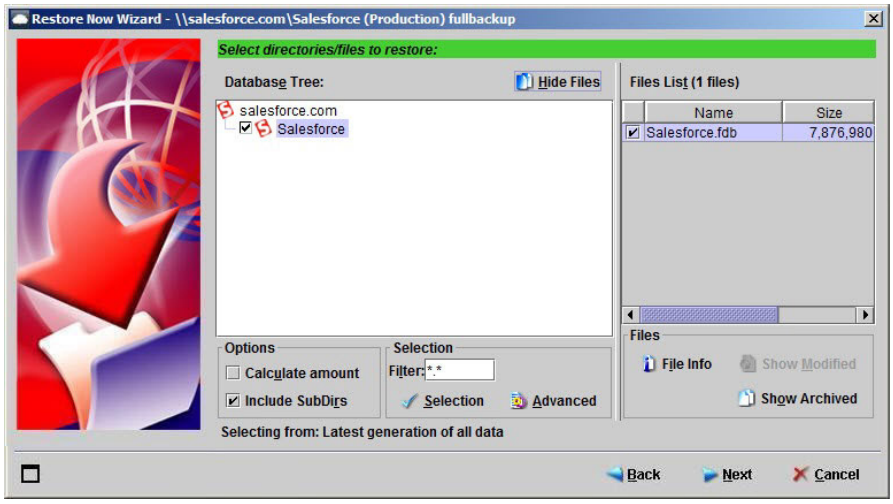
6.6.5.1 Restoring the database file

1. Browse the Backup Sets tree, select the backup set to restore, and then on the **Restore** menu click **Restore Now**.
2. On the **Select the Backup Set Restore Method** page, select **Granular Restore > Step 1. Database Restore**, and then click **Next**.



F1 Help: Select the Restore Method

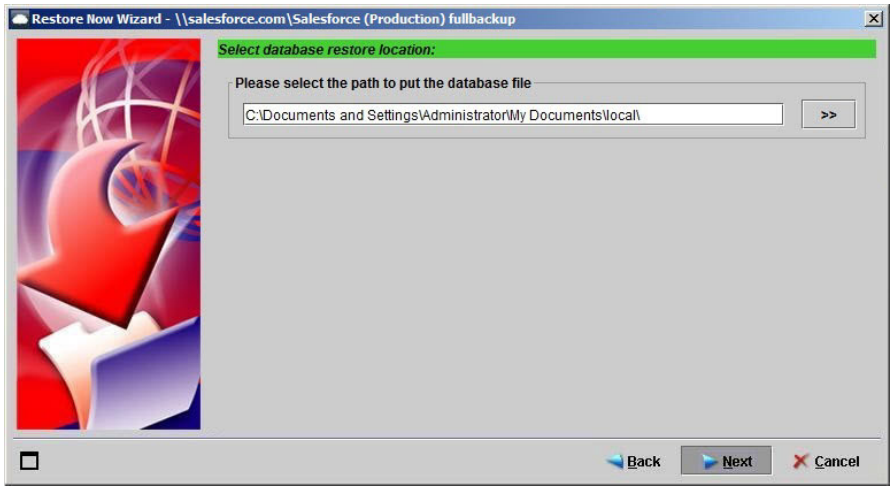
3. On the **Select directories/files to restore** page, select the Salesforce.com database to restore, and then click **Next**.



F1 Help: Select directories / files (Restore / BLM / Delete / Validation)

4. On the **Select database restore location** page, select the location to which you want to restore the Salesforce.com database file, and then click **Next**.

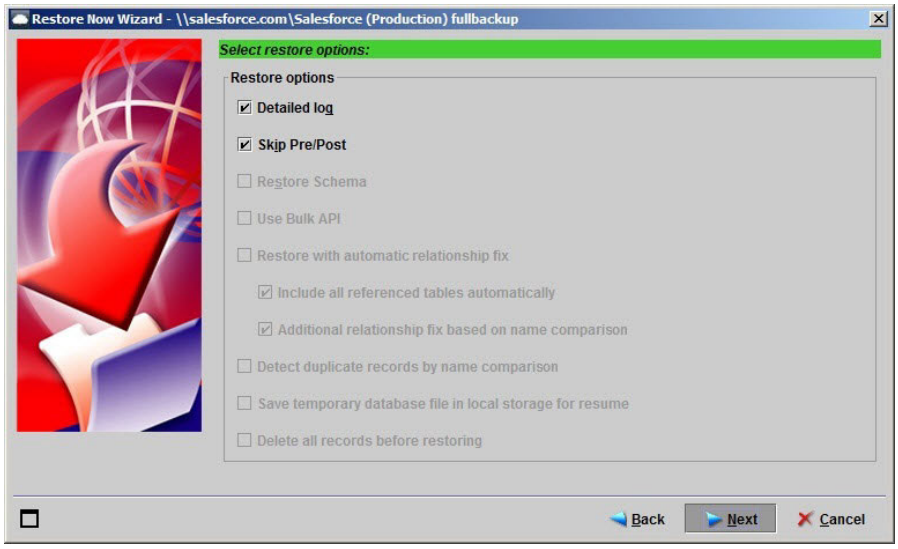
NOTE: For the next procedure, Section 6.6.5.2, “Restoring Salesforce.com at the item level”, on page 200, you will need to ensure that the Salesceforce.com database file is located on a local drive for DS-Client to access. For expedience, select a local disk location in the DS-Client machine as the restore destination for the database file.



F1 Help: Select database restore location (Microsoft SQL / PostgreSQL / MySQL)

5. Click **Next** to continue.

   It is advisable to retain the default selections in the **Select restore options** page.



   F1 Help: Select restore options (SQL / Microsoft Exchange / Oracle / Salesforce.com)

6. On the **Fill in the restore survey** page, make the following selections as required:

   - Specify the reason for this restore from the **Restore reason** drop-down list.
   - Make the appropriate selection if the **Restore classification** drop-down list appears. For important information see Section 6.1.3.9, “Types of Restore Licenses in Recovery Drill Period”, on page 141.

   For more information, see the F1 help for this dialog box and Section 6.2.5.6, “Specifying the reason for the restore”, on page 164.

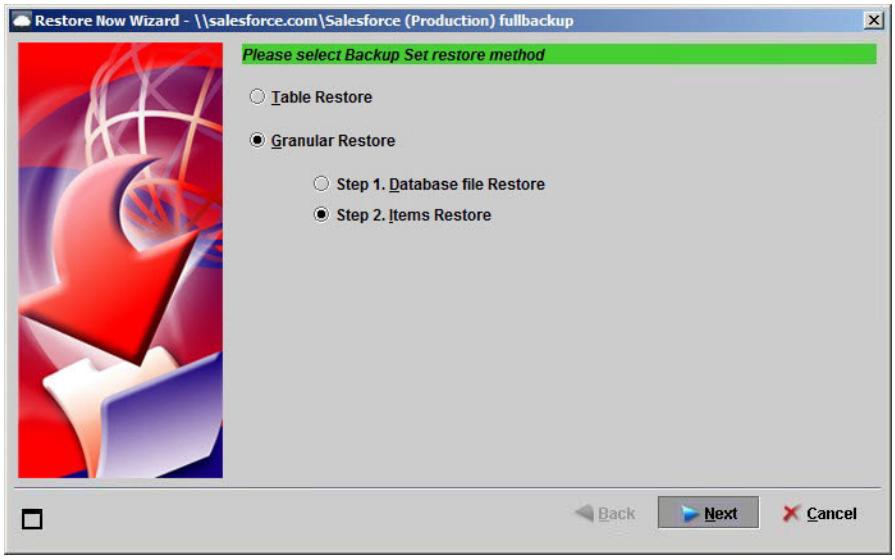
7. Click **Finish** to start the restore.

Once the Salesforce.com database has been restored to a local file, you can proceed to Section 6.6.5.2, “Restoring Salesforce.com at the item level”, on page 200.

6.6.5.2 Restoring Salesforce.com at the item level

Ensure that the Salesforce.com database file from which you plan to restore at the item level is located on a local drive in the DS-Client machine. Otherwise, DS-Client will not be able to access it.

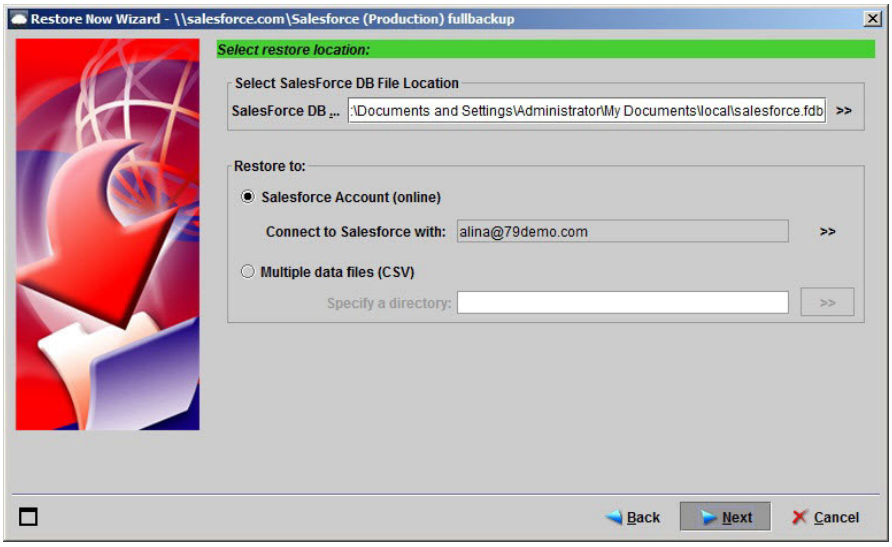
1. Browse the Backup Sets tree and select the same backup set that you restored in Section 6.6.5.1, “Restoring the database file”, on page 197.
2. Click **Restore Now**.
3. On the **Select the Backup Set Restore Method** page, select **Granular Restore** > **Step 2. Items Restore**, and then click **Next**.



F1 Help: Select the Restore Method

4. On the **Select Restore Location** page, make the required selections, and then click **Next**.
   - **Salesforce DB**: Click **>>** to browse and specify the Salesforce database file from which you want to restore at the item level. This is the file you have restored in Section 6.6.5.1, “Restoring the database file”, on page 197. The file needs to be located on a local disk in the DS-Client machine for DS-Client to access it.
   - **Connect to Salesforce with**: Click **>>** to enter the credentials for the Salesforce.com site to which you want to restore data.

   F1 Help: Specify Credentials (Windows DS-Client)



F1 Help: Select restore location

5. On the **Select tables to be restored** page, select the required tables or items to restore, and then click **Next**.

   This dialog box allows you to determine the granularity of the restore, broad or specific. You can select to restore entire tables or individual items (i.e. rows from a table).

   - To select an entire table, select the corresponding check box.
   - To select specific items (or rows from a table), follow these steps:

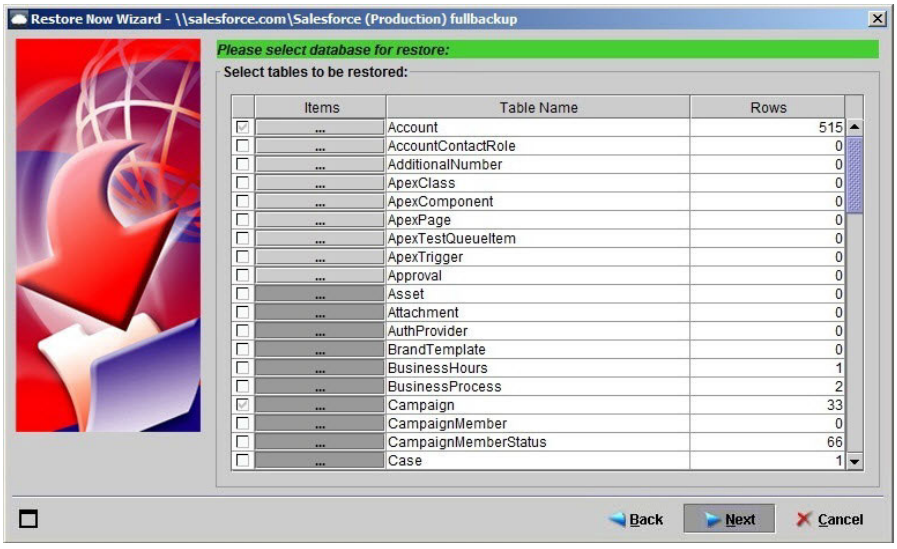
     a) Click **[...]** in the **Items** column for the corresponding table.

     The **Select Table Items** dialog box lists all backed up items from that table.

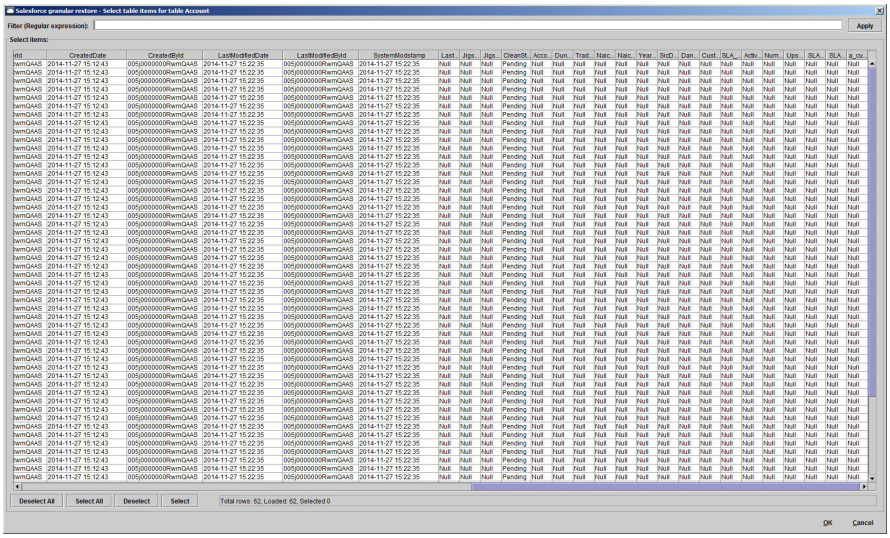
     b) Use the **Filter** to find specific items or to narrow down the items displayed.

     c) Select individual items to restore from that table, and then click **OK**.

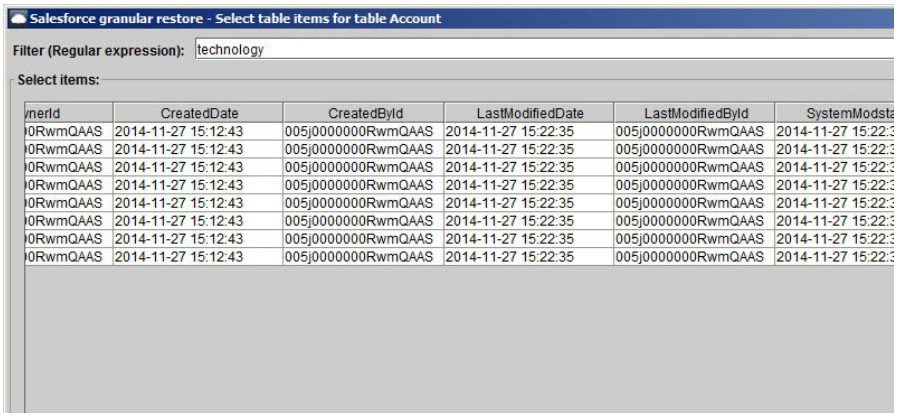
NOTE: The **Filter** offers various ways for you to locate items. (1) Type a string, a word, or a multi-word phrase to find any cell that matches the exact spelling and arrangement. (2) To search for strings or words that co-occur with variations, use a Regular Expression; for example, the regular expression `data.*inc` finds any individual cell that contains this combination: “data” and any string and “inc”. The filter searches all cells; therefore, you do not need to specify a column for the search.



F1 Help: Select Items for Backup Set



F1 Help: Backup Objects for '...' ('Backup from the Cloud')



6. On the **Select Restore Options** page, make the required selections, and then click **Next**.

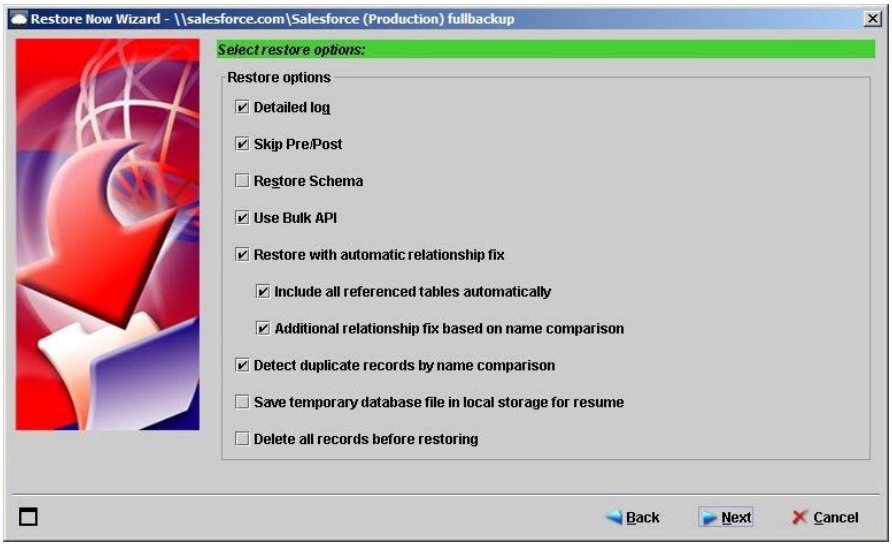
Examples:

- **Use Bulk API –** This option minimizes the number of API call counts made by the restore process and is selected by default. When files are uploaded via Bulk API, a file size limit of 10 MB is enforced by Salesforce.com.

  NOTE: Ensure that this check box is cleared if the data to be restored contains files that are larger than 10 MB.

- **Save temporary database file in local storage for resume –** To make the restore process resumable in the event that it is stopped during the uploading stage, select this option. For more information on this option, see Section 6.6.6, “Resuming a Salesforce.com data restore process”, on page 204.

For more information about this page, see the F1 help.



F1 Help: Select restore options (SQL / Microsoft Exchange / Oracle / Salesforce.com)

7. On the **Fill in the restore survey** page, make the following selections as required:

   - Specify the reason for this restore from the **Restore reason** drop-down list.
   - Make the appropriate selection if the **Restore classification** drop-down list appears. For important information see Section 6.1.3.9, “Types of Restore Licenses in Recovery Drill Period”, on page 141.

   For more information, see the F1 help for this dialog box and Section 6.2.5.6, “Specifying the reason for the restore”, on page 164.

8. Click **Finish** to start the restore.

6.6.6 Resuming a Salesforce.com data restore process

The uploading stage of a Salesforce.com restore can require an extended duration as the DS-Client uploads the restored tables and/or items to an online Salesforce.com account. Errors, network problems, or power failures can cause the uploading activities to be stopped. You might also need to stop the uploading activities for other reasons.

DS-Client offers the ability to resume the restore process of a Salesforce.com backup set that has been stopped during the uploading stage.

To make a Salesforce.com data restore process resumable:

To make a Salesforce.com data restore process resumable if it is stopped, do the following:

- Before starting a restore process (Section 6.6.5.2, “Restoring Salesforce.com at the item level”, on page 200), on the **Select Restore Options** page of the Restore Now Wizard, select the check box **Save temporary database file in local storage for resume**.
- Before stopping a Salesforce.com restore process, determine the current stage of the process by checking the **Description** in the real-time activity monitor located at the bottom section of the DS-User window.

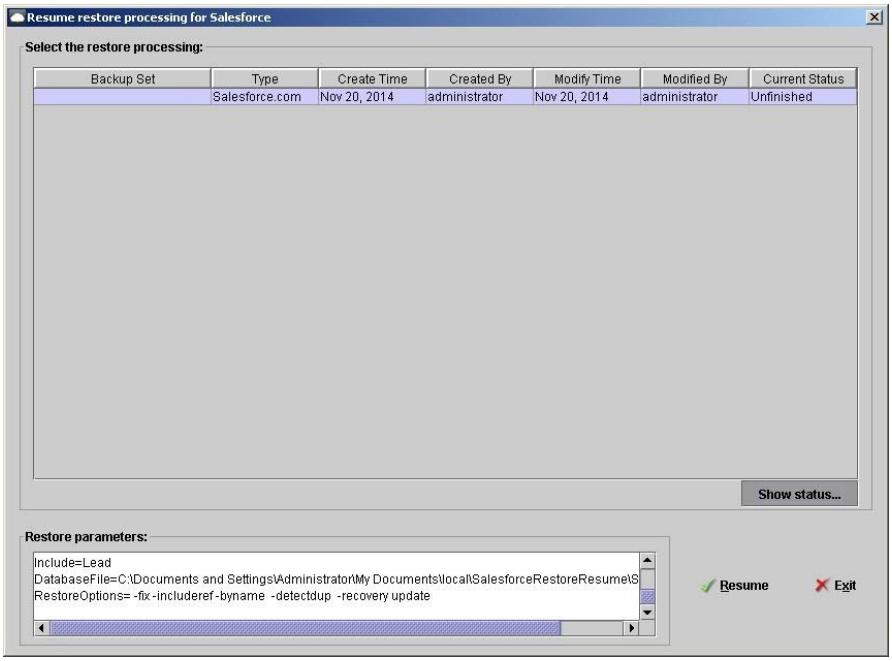
IMPORTANT: A Salesforce.com restore process can be resumed only if it is stopped during the uploading stage.

To resume a Salesforce.com data restore process:

The following provides instructions on how to a resume a Salesforce.com restore that has been stopped.

1. On the **Restore** menu, click **Resume restore**.

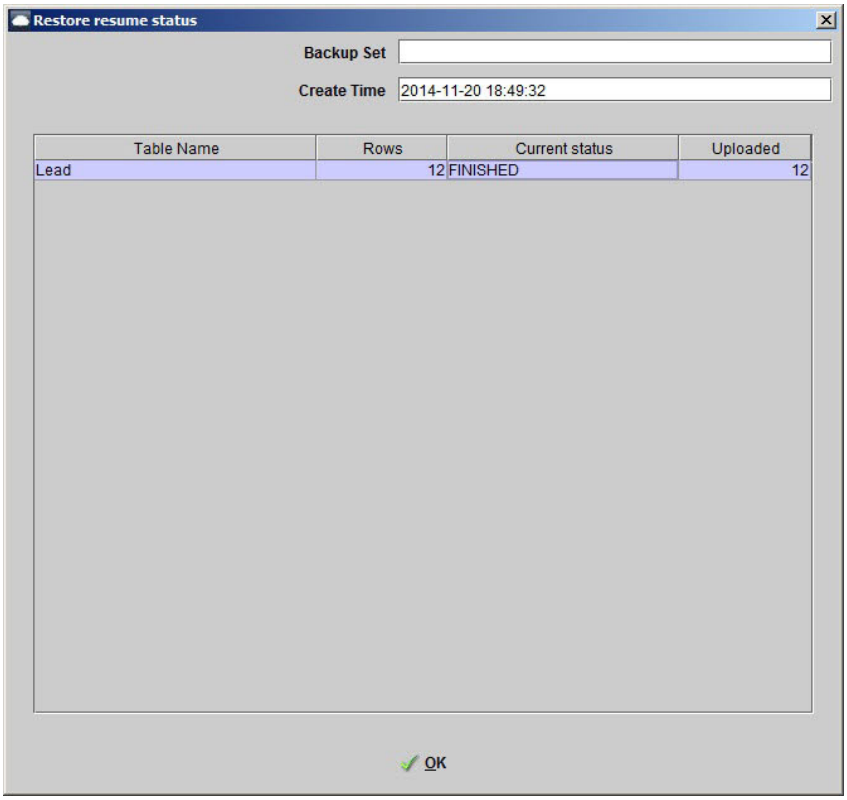
   The **Resume restore processing for Salesforce** dialog box lists all restores of Salesforce.com backup sets that can be resumed. The option **Save temporary database file in local storage for resume** was selected for all the restores that appear in this list, and a cache has been created for each of them in local storage.



F1 Help: Resume restore processing for Salesforce

a) For more information on a specific restore process, select a backup set from the list, and then click **Shows status** to open the **Restore Resume Status** dialog box.

   The **Resume restore processing for Salesforce** dialog box also displays the **Restore parameters** that DS-Client uses for each restore in the list, including a summary of the options that were selected for the restore.



F1 Help: Restore Resume Status

b) Click **OK** to return to the **Resume restore processing for Salesforce** dialog box.

2. Before resuming the restore process of a backup set, select the backup set and verify the details in the **Restore parameters** section. For example, check that the database file still exists in the location indicated by the **DatabaseFile** parameter. If you notice discrepancies, do not resume the restore; you can start a new restore with correct settings.

3. When ready to resume the restore of a backup set, select the backup set, and then click **Resume**.

6.7 Email message backup sets (Windows)

6.7.1 About Email message backup sets

Email message backup sets allows you to back up and restore email data at the individual message level. Restoring an individual message or mailbox using this backup set kind is faster than rolling back an entire database to the last backup.

Depending on the email server type, DS-Client uses two different methods to support backup and restore of email data at the individual message level.

6.7.1.1 Microsoft Exchange Server backups (EWS)

DS-Client supports the backup and recovery of email data on a Microsoft Exchange Server at the individual message level using Exchange Web Services (EWS).

NOTE: This backup set kind is handled by DS-Client in the same way as a Backup from the Cloud (Microsoft Office 365) backup set.

6.7.1.2 Microsoft Outlook backups (DS-MLR)

DS-Client supports the backup and recovery of Microsoft Outlook data using DS-MLR. DS-MLR is a Windows service that searches for email messages based on a user-defined filter, then transforms each email message into a data stream, and passes this stream to DS-Client for processing for backup to DS-System. DS-MLR treats each email object as a separate backup item.

During backup, DS-Client scans all items and backs up only the new or changed items. Changed items are processed as deltas and only the changes are sent to DS-System. Email messages are saved (along with any attachments) as individual objects on DS-System. You can perform message-level backups and restore email data at the message level to the original location or an alternate location.

IMPORTANT: The DS-MLR service must be installed and running on the same machine where the email messages are stored and DS-Recovery Tools must be enabled in DS-System by your service provider. For more information, see the *Client Software Installation Guide* and *DS-System User Guide*.

DS-MLR registry keys:

The DS-MLR installation configures various registry keys in the following registry tree of the computer where the DS-MLR is installed:

```
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\DS-Message
Level Restore\Parameters
```

The following table lists the registry keys and describes how each registry key affects the operation of DS-MLR.

Registry key	Type	Default	Description
LastRunningDSMLR	String		The version of the last dsmlr.exe that ran on the local computer.
LogConfiguration *	String		The path to the logconf_mlr.cfg file.
MaxThreadLog *	Dword	100	Maximum number of logs DS-MLR keeps for each thread.
ThreadTimeout *	Dword	0	The wait time in seconds before killing a non-responding thread.

Table 5 DS-MLR registry keys for email server types with which DS-MLR is used

NOTE: An asterisk (*) indicates that the registry key is not installed by default and can only be added manually.

6.7.2 Before you begin

Ensure the applicable requirements are met before you perform backups using Email message backup sets.

6.7.2.1 Microsoft Exchange Server requirements (EWS)

When backing up and restoring Microsoft Exchange data using EWS, the DS-Client computer minimum system requirements are as follows:

For domains with less than 25,000 items per mailbox:

- **Processor –** Intel Core i5
- **Memory –** 16 GB

For domains with more than 25,000 items per mailbox:

- **Processor –** Intel Core i7
- **Memory –** 32 GB

Before you create an Email message backup set using EWS, ensure that the applicable prerequisites are met and that Microsoft Office 365 plug-in has been installed with DS-Client. For more information, see “Section 15.24, “DS-Client

Installation: Microsoft Office 365 DS-Client plug-in required:", on page 606" and Section 15.24, "Prerequisites for backup and restore of Exchange data", on page 608.

6.7.2.2 Microsoft Outlook requirements (DS-MLR)

Ensure that the following requirements are met wherever applicable before you create an Email messages backup set to back up Microsoft Outlook data using DS-MLR:

- Ensure that Microsoft Outlook is closed during backup activities. Backup is successful only when Microsoft Outlook is closed.
- If you have configured Microsoft Outlook to use a .PST file on a remote machine, the DS-MLR service must always be installed on the computer with Microsoft Outlook.
- For Microsoft Outlook configured for Microsoft Exchange profiles, the email messages are located on the Microsoft Exchange Server. To access those email messages, the DS-MLR service account must have the Receive-As privilege on that Microsoft Exchange Server. The DS-MLR service account must be recognized on the Microsoft Exchange Server. Otherwise, DS-MLR will return an access denied error.

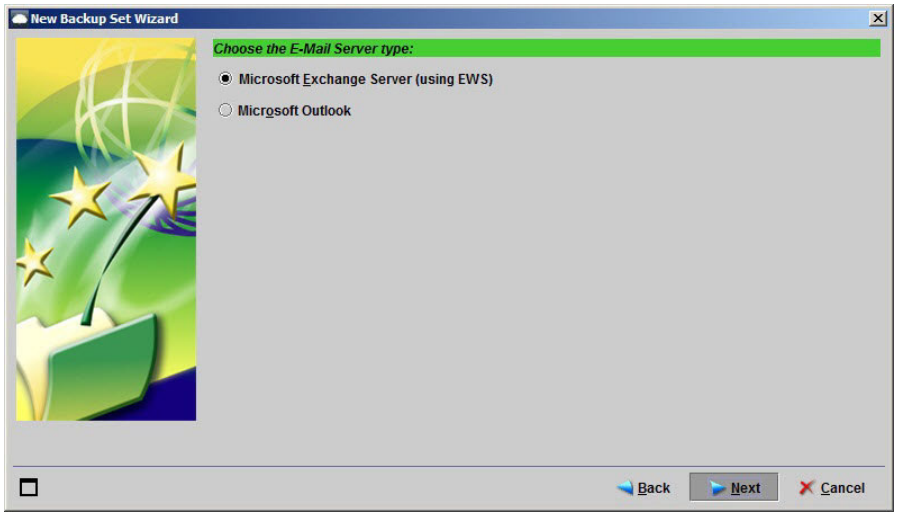
6.7.3 Creating an Email message backup set (EWS)

The following procedure provides instructions on creating an Email message backup set for Microsoft Exchange Server using EWS.

NOTE: Before creating an Email message backup set (EWS), ensure that all the required prerequisites are met. For more information, see Section 6.7.2.1, "Microsoft Exchange Server requirements (EWS)", on page 208.

---

1. On the **Sets** menu, click **New Backup Set**. The New Backup Set Wizard appears.
2. On the **Choose the kind of backup** page, select **E-Mail Messages**, and then click **Next**.
3. On the **Choose the E-Mail Server type** page, select **Microsoft Exchange Server (using EWS)**, and then click **Next**.



4. On the **Backup from Microsoft Exchange Server** page, in the **Path** field, type the IP address of the Exchange server from which data will be backed up.

   By default, your current credentials for DS-Client will be used to connect to the selected computer.

   F1 Help: Select the computer

5. Select **Ask for Network Credentials**, and then click **Next**.

6. In the **Enter Network Credentials** dialog box, provide the credentials that have the required permission and license to access the Exchange server.

   F1 Help: Specify Credentials (Windows DS-Client)

7. In the **From** field, type the complete domain name of the Exchange server. For example, if the email messages at the backup source are addressed to user@company.local, type `company.local` in this field.

   F1 Help: Specify Credentials (Windows DS-Client)

   The list of items (e.g., source, nodes, mailboxes) displayed in the next dialog box will depend on the credentials entered in this dialog box.

8. When you have provided the necessary details, click **Next**.

9. On the **Select Users and Services for Backup** page, select the mailboxes, folders, or individual items to back up.

NOTE: You can exclude a folder or individual item only when its parent mailbox or folder has already been added.

To add or exclude individual items inside a folder:

a) Expand the mailbox, select the folder (for example, Inbox), and then click **Items**.

   F1 Help: Files in Directory '...' (Select Items for Backup)

b) Select the individual email messages or entries that you want to specify, and then click **Add** or **Exclude** as needed.

c) When you have added or excluded the required items, click **Finish**.

After you click **Finish**, the items that you have just added or excluded are displayed in the **Backup Items Selected** section.

10. When you have specified what you want to back up, click **Next**.

11. On the **Specify backup item options** page, double-click the column **Max gen**, define the maximum number of generations for backup, and then click **Next**.

F1 Help: Set Properties - Items tab

12. On the **Specify backup set options** page, select the required options, and then click **Next**.

F1 Help: Set Properties - Options tab

The **Specify notification options** page appears.

The steps for all subsequent wizard pages are the same as for Windows File system backups. Continue in Section 6.2.3.8, “Specifying notification options”, on page 153 in the section for File system backups.

6.7.4 Creating an Email message backup set (DS-MLR)

The following procedures provide instructions on how to create an Email message backup set that uses DS-Recovery Tools.

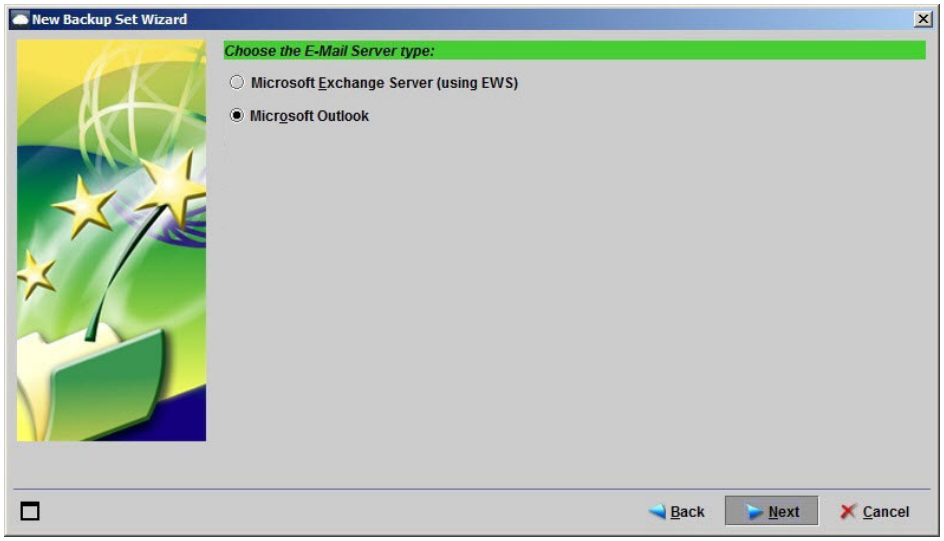
NOTE: Before creating an Email message backup set (DS-MLR), ensure that all the required prerequisites are met. For more information, see Section 6.7.2.2, “Microsoft Outlook requirements (DS-MLR)”, on page 209.

6.7.4.1 Selecting the kind of backup set

1. On the **Sets** menu, click **New Backup Set**. The New Backup Set Wizard appears.

2. On the **Choose the kind of backup** page, select **E-Mail Messages**, and then click **Next**.

6.7.4.2 Selecting the email server type

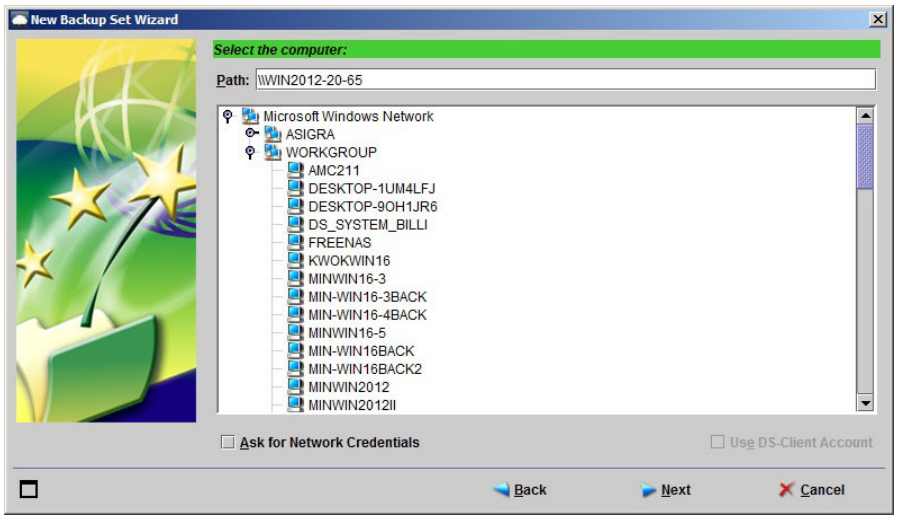


F1 Help: Choose the E-Mail Server type

- On the **Choose the E-Mail Server type** page, select **Microsoft Outlook**, and then click **Next**.

6.7.4.3 Specifying the server

1. On the **Select the computer** page, specify the server for which you are creating a backup set by doing one of the following:
   - In the **Path** field, type the computer name of the server. If the computer name cannot be resolved, type the IP address.
   - In the **Path** field, type the IP address of the server.
   - Select the server from the list.



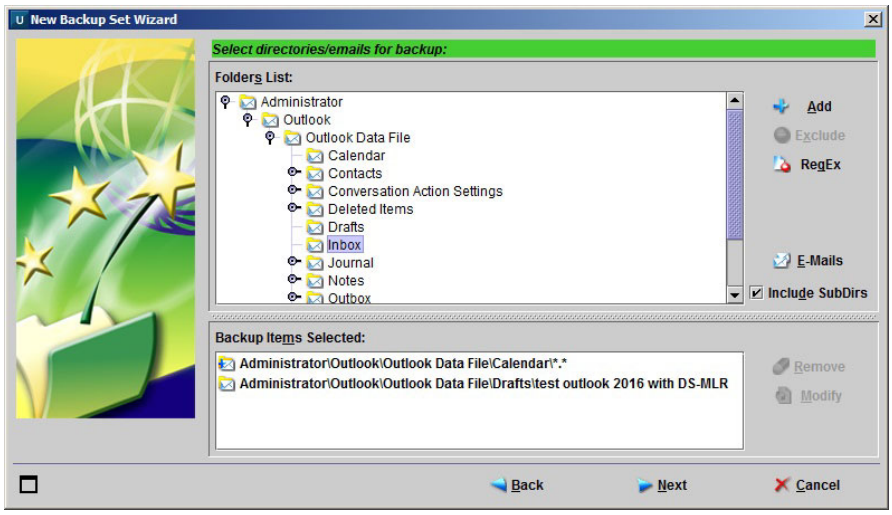
The check box **Ask for Credentials** is selected by default. If **Ask for Credentials** is not selected, the credentials currently used to log on to DS-Client will be used by DS-Client to connect to the selected server or computer.

2. When you have specified the source mail server for which you are creating a backup set, click **Next**.

3. If the check box **Ask for Credentials** is selected, the **Enter Network Credentials** dialog box appears. Provide the credentials that have the required permission and license to access the source mail server. The list of items (e.g., servers, users) displayed in the next dialog box will depend on the credentials you have entered in this step.

6.7.4.4 Selecting the directories or email messages to be backed up

On the **Select directories/emails for backup** page, you can select users, folders or objects (for example, Inbox or Calendar), or items (for example, individual email messages or entries) inside a folder or object to be backed up.



1. Specify backup items for this backup set in any of the following ways:

   - Add the items you want to back up:

     – To add an item, select the item (for example, a user or an Inbox folder), and then click **Add**.

     – To add individual items inside a folder or object, select the folder or object (for example Inbox), click **E-Mails**, select the entries or email messages that you need to back up, and then click **Add**.

   - Exclude specific objects at the folder level.

     – Example: Add a storage group, select specific users in the group, and then click **Exclude**.

  - Example: Add a mailbox, select specific folders in the mailbox (for example, the Deleted Items folder), and then click **Exclude**.

- Exclude objects at any level using a regular expression. To add a regular expression, click **RegEx**.

NOTE: You can further refine the backup items by applying message-level filters in the next dialog box.

2. When you have specified the items to back up, click **Next**.

6.7.4.5 Specifying backup item options

1. On the **Specify backup item options** page, retain the default settings unless you have specific generation or option requirements for each backup item. For more details on these options, see the online help.

   F1 Help: Set Properties - Items tab

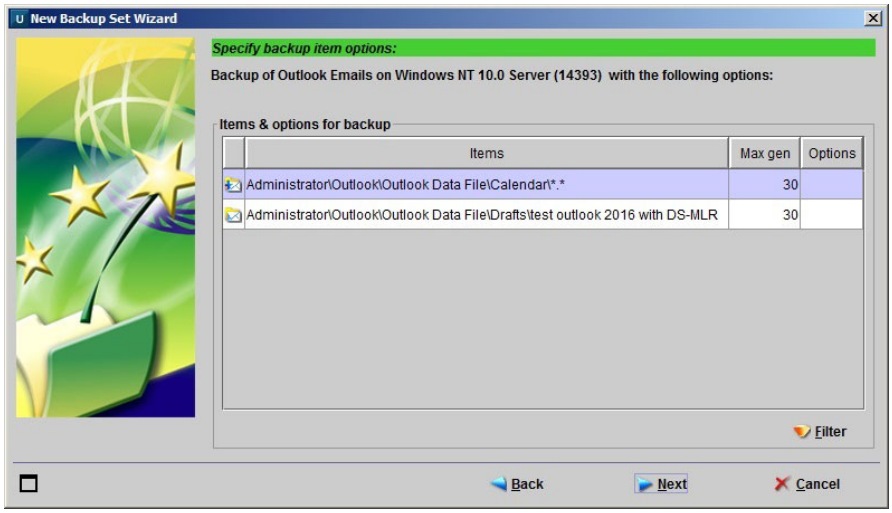
2. (Optional) To apply a filter, click **Filter**:

   - The **Select Filter** dialog box appears. You can select an existing filter or click **Add** to create a new filter.

     F1 Help: Select Filter

NOTE: When you apply a filter, only email messages or entries that match the conditions of the filter will be backed up. Multiple filters can be created and applied to the same backup set.

3. Click **Next**.



6.7.4.6 Specifying backup set options

1. On the **Specify backup set options** page, retain the default settings unless there are specific generation or option requirements for each backup item.

   F1 Help: Set Properties - Options tab

2. Click **Next**.

6.7.4.7 Specifying notification options

The steps for all subsequent wizard pages are the same as for Windows File system backups.

- Follow from Section 6.2.3.8, “Specifying notification options”, on page 153 in the section for File system backups.

6.7.5 Restoring an Email message backup set (DS-MLR)

Using DS-MLR, you can restore backed up email data at the individual item level to its original location.

Before you can restore email data to an alternate location, a DS-MLR service must be installed and already running on the destination email server.

You can manually select backed up email messages to restore or use filters to perform a selective restore.

NOTE: If you encounter restore problems when using DS-MLR, it is likely related to the DS-MLR service account configuration. For details on the requirements for the DS-MLR service account, see the *Client Software Installation Guide*.

6.7.5.1 Selecting the backup set

- Browse the Backup Sets tree, select the backup set to restore, and then on the **Restore** menu click **Restore Now**.

6.7.5.2 Specifying the items to restore

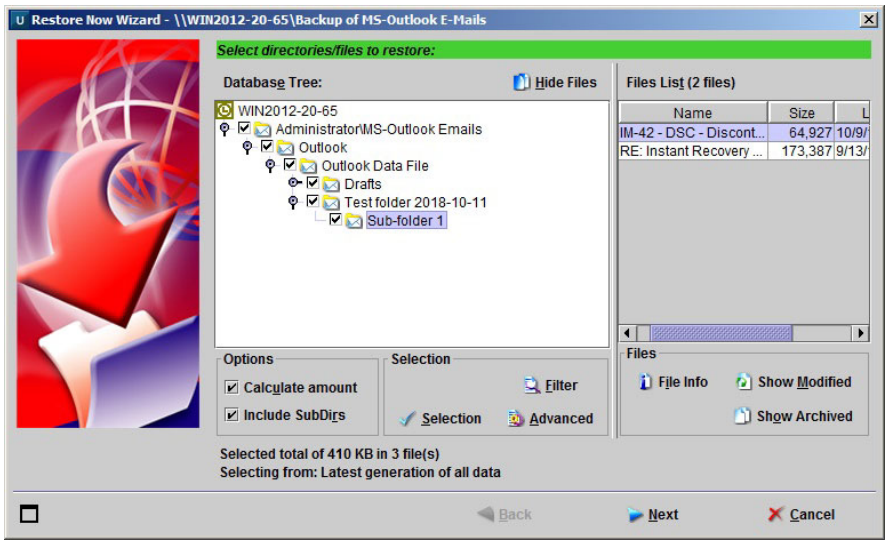
1. Browse the Database Tree and select the required items. To filter for specific emails, click **Filter**.

   - In the **Select Filter** dialog box, specify the filter conditions, and then click **OK**. You can make complex filters with AND, OR, and BRACKETS.

F1 Help: Select Filter

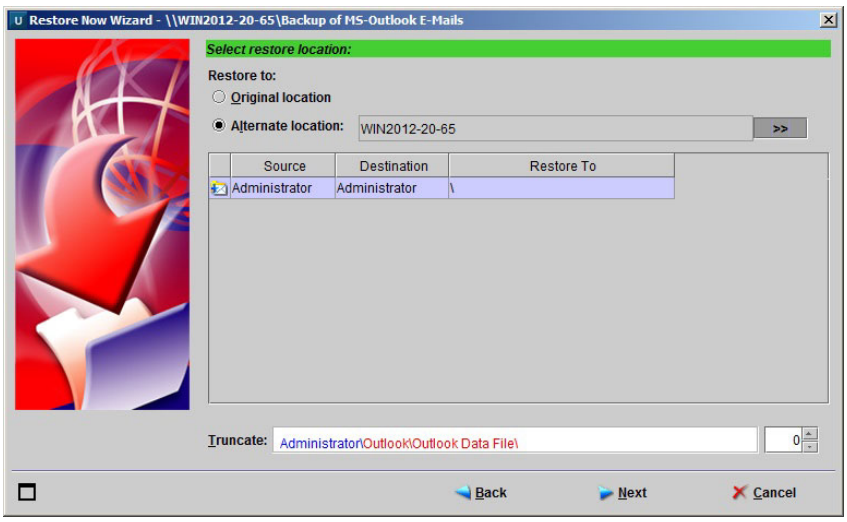
Once defined, the Restore Now Wizard will only display emails that match the filter.

2. When you have selected all required items, click **Next**.



6.7.5.3 Specifying the restore destination

- On the **Select Restore Location** page, select the restore destination, and then click **Next**.
  - **Original location –** This option is selected by default. Data will be restored to the original backup source location(s).
  - **Alternate location –** Select this option to restore data to an alternate server that you specify. Select the alternate server and the dump location and then map the **Source Mailbox** to the **Destination Mailbox**.



6.7.5.4 Specifying performance options

Special performance options on the **Select restore performance options** page are intended for large backup sets in high performance environments.

- For typical use, keep DS-Client's default settings, and then click **Next** to proceed to the next dialog box.

  More information in F1 help, see Select Restore Performance Options (Windows DS-Client).

6.7.5.5 Specifying restore options

- On the **Select Restore Options** page, make the required selections, and then click **Next**.

  For more information, see the F1 help for this page.

6.7.5.6 Specifying the reason for the restore

1. In the **Fill in the restore survey** page, click the **Restore reason** box and select the reason for this restore.
2. If the **Restore classification** box appears, click and make the appropriate selection.

   This only appears if the backup set is currently in a scheduled recovery drill period. For more information see Section 6.1.3.9, "Types of Restore Licenses in Recovery Drill Period", on page 141.

   For more information, see the F1 help for this dialog box and Section 6.2.5.6, "Specifying the reason for the restore", on page 164.
3. Click **Finish** to start the restore process.

6.8 IBM DB2 database backup sets (Linux)

6.8.1 About IBM DB2 database backup sets

The following sections provide information about IBM DB2 database backup sets.

6.8.2 Before you begin

There are some prerequisites for performing backups of DB2 Database Servers.

You must refer to the DS-Client Knowledge Base article in Section 15.9, “Backup / restore of DB2 database servers”, on page 535, especially the following sections:

- DS-Client Requirements
- DB2 Server Requirements
- General Requirements

6.8.3 Creating an IBM DB2 database backup set

The following sections describe how to create an IBM DB2 database backup set.

6.8.3.1 Selecting the kind of backup set

1. On the **Sets** menu, click **New Backup Set**. The New Backup Set Wizard appears.
2. On the **Choose the kind of backup set** page, select **DB2 Server**, and then click **Next**.

6.8.3.2 Specifying the server

1. On the **Select the computer** page, specify the server you want to back up. Use the hostname or IP address of the target DB2 Server to back up.

   It can be on a different subnet.

   The hostname or IP address must be the same as the one used in the DB2 `catalog` command.

   By default, DS-Client uses the current user’s logon credentials to connect to the selected computer.
2. If you need to specify alternate network credentials, select the **Ask for Network Credentials** check box.

By default, the **Ask for database credentials** check box is selected and you are required to supply those credentials to the DB2 database.

3. Click **Next**.
4. If you selected **Ask for Network Credentials**, the **Enter Network Credentials** dialog box appears. Type a valid user name and password for the selected computer, and then click **OK**.

IMPORTANT: The network credentials must also be valid for the network protocol you select to dump the database file. They also must have “read” and “write” privileges for the dump path you select.

---

5. In the **Enter Database Credentials** dialog box, type a valid user name and password for the database server:
   a) In the **User Name** box, type a valid database user name on the DB2 database server you want to back up.
   b) In the **Password** box, type the corresponding password.
   c) In the **Node Name** box, type the local alias of the target DB2 server node. This is the name on the DS-Client computer that is used to identify that node.
   d) In the **Port Number** box, type the TCP/IP port number of the DB2 Server Database Manager instance.
   e) In the **DB2 Client Instance** box, type the local DB2 instance name installed on the DS-Client computer.
   f) Click **OK**.

6.8.3.3 Specifying the protocol for dumping the database

To back up an active database, a copy or “dump” of the database must be made.

1. In the **Select the protocol for dumping database file** dialog box, select the method to handle the database dump.
2. Select the protocol:
   - Local File System (for DB2 Server on the DS-Client computer).
   - NFS (for remote DB2 Server)
   - UNIX-SSH (for remote DB2 Server)
3. Click **Next**.

6.8.3.4 Specifying the database dump options

To back up an active database, a copy or “dump” of the database must be made.

1. In the **Select the path for the database dump file** dialog box, select the **Dump Device** path.

   IMPORTANT: Make sure the DB2 Server username has “read and “write” privileges to this dump path.

2. Click **Next**.

6.8.3.5 Specifying the backup items

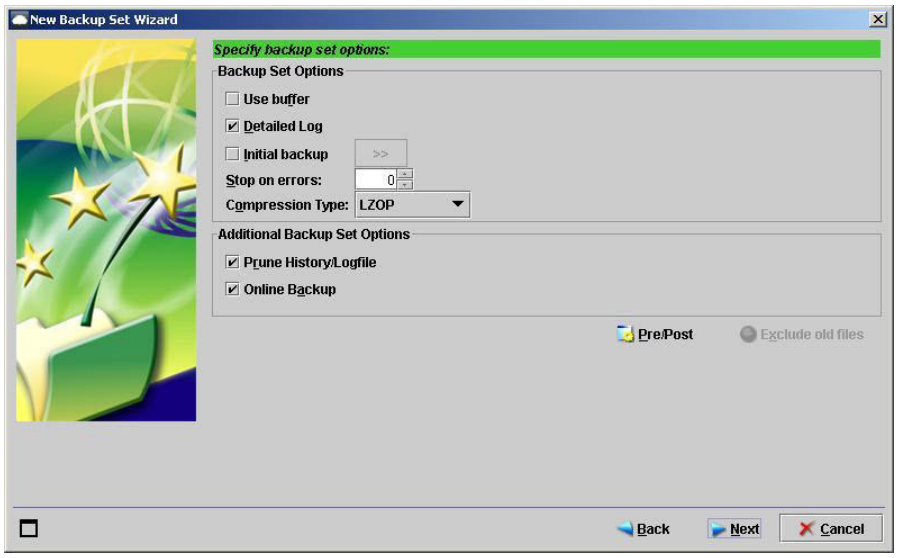
1. On the **Choose the database(s) to backup** page, browse the Database List, select the required databases, and then click **Add**.
2. Click **Next**.

6.8.3.6 Specifying backup item options

- On the **Specify backup item options** page, retain the default settings unless there are specific generation or option requirements for each backup item, and then click **Next**.

6.8.3.7 Specifying backup set options

1. On the **Specify backup set options** page, retain the default settings unless there are specific backup set requirements.



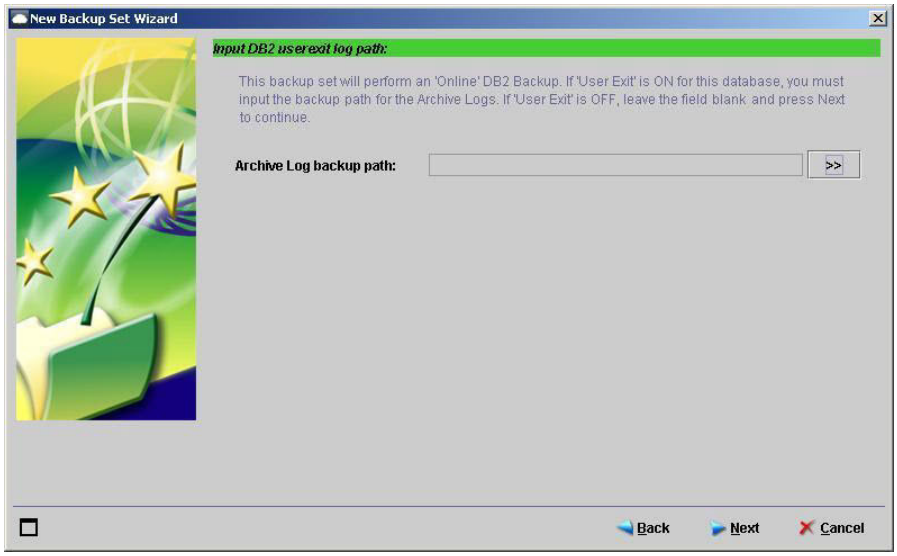
2. In the **Additional Backup Set Options** section, you can configure the following DB2 database options:
   - If you select the **Prune History / Logfile** check box, this will delete entries from the history file or log files from the active log path.
   - The behavior of the **Online Backup** setting is as follows:
     – To perform Offline DB2 backup, clear this check box. During an offline backup, applications cannot connect to the database.
     – To perform Online DB2 backup, select this check box. An online backup allows applications to connect to the database and read and write to tables during database backup. Log retain or userexit must be enabled for an online backup.
3. Click **Next**.

6.8.3.8 Specifying the DB2 'userexit' log path

This page appears only if you have selected **Online Backup** on the **Specify backup set options** page. Otherwise, follow from Section 6.2.3.8, "Specifying notification options", on page 153 in the section for File system backups.

1. Configure the applicable option:
   - If **User Exit** is OFF on the DB2 database server, you can leave this field empty.
   - If **User Exit** is ON on the DB2 database server, you must type the path for the DB2 Archive Logs.
     a) To specify the path, beside the **Archive Log backup path box,** click **[>>]**.
     b) In the **Select Directory** dialog box, specify the path where the 'User Exit' program writes the DB2 Archive Log files.

   F1 Help: New Backup Set Wizard - Input DB2 userexit log path
2. Click **Next**.



6.8.3.9 Specifying notification options

The steps for all subsequent wizard pages are the same as for Windows File system backups.

- Follow from Section 6.2.3.8, “Specifying notification options”, on page 153.

6.8.4 Restoring a IBM DB2 database backup set

There are prerequisites for restoring DB2 backups. See Section 15.9, “Backup / restore of DB2 database servers”, on page 535.

Only users with the required permissions can restore DB2 backups. The procedure for this type of restore is provided below. Steps that are similar to those for File system restores will only be briefly mentioned.

6.8.4.1 Selecting the backup set

- Browse the Backup Sets tree, select the backup set to restore, and then on the **Restore** menu click **Restore Now**.

6.8.4.2 Specifying the database(s) to restore

- On the **Select directories/files to restore** page, browse the tree, select the required databases and then click **Next**.

NOTE: To see the total size and number of files selected for restore, select the **Calculate amount** check box.

6.8.4.3 Specifying the restore destination

- On the **Specify Database Restore Location** page, select the restore destination, and then click **Next**.

6.8.4.4 Specifying restore options

- On the **Select Restore Options** page, make the required selections, and then click **Next**.

6.8.4.5 Specifying the reason for the restore

1. On the **Fill in the restore survey** page, click the **Restore reason** box and select the reason for this restore.
2. If the **Restore classification** box appears, click and make the appropriate selection.

   This only appears if the backup set is currently in a scheduled recovery drill period. For more information see Section 6.1.3.9, “Types of Restore Licenses in Recovery Drill Period”, on page 141.

   For more information, see the F1 help for this dialog box and Section 6.2.5.6, “Specifying the reason for the restore”, on page 164.
3. Click **Finish** to start the restore process.

6.9 Microsoft SharePoint Server backup sets (Windows)

6.9.1 About Microsoft SharePoint Server backup sets

This backup set permits the online item-level backup and restore of Microsoft SharePoint Server.

6.9.2 Before you begin

- This option must be enabled by your service provider from the DS-System.
- Install the DS-Recovery Tools Service on the Microsoft SharePoint computer. For detailed instructions, see the *Client Software Installation Guide*.

For more information, refer to the following Knowledge Base articles:

- Section 15.11, “Backup / restore of Microsoft SharePoint Server (DS-Recovery Tools)”, on page 540
- Section 15.12, “Backup / restore of Microsoft SharePoint Server farm configuration (DS-Recovery Tools)”, on page 542

6.9.3 Creating a Microsoft SharePoint Server backup set

The following sections describe how to create a Microsoft SharePoint Server backup set.

6.9.3.1 Selecting the kind of backup set

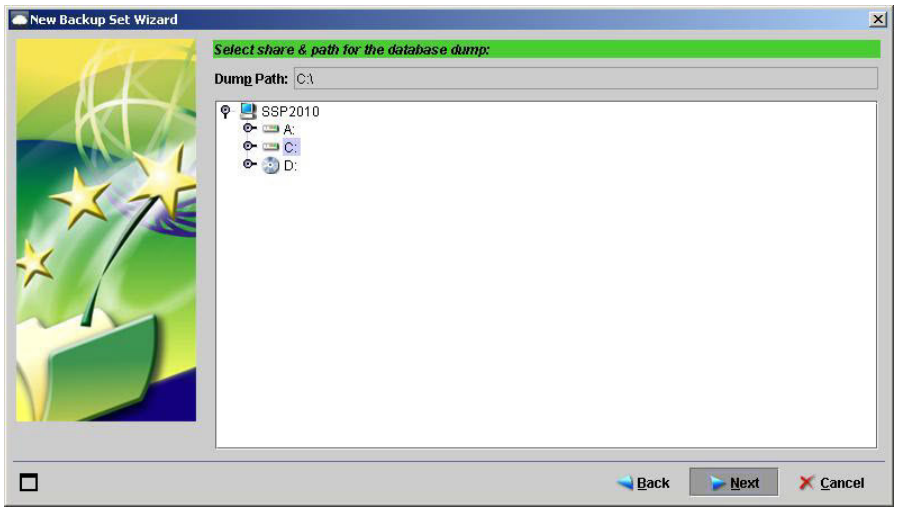
1. On the **Sets** menu, click **New Backup Set**. The New Backup Set Wizard appears.
2. On the **Choose the kind of backup set** page, select **Microsoft SharePoint Server**, and then click **Next**.

6.9.3.2 Specifying the server

1. On the **Select the computer** page, specify the server you want to back up. Browse and select the server you want to backup. If the name resolution to IP address is not functional, create the backup set by typing the IP address in the **Path** box.
2. By default, DS-Client uses the current user's logon credentials to connect to the selected computer. If you need to specify alternate network credentials, select the **Ask for Network Credentials** check box.
3. Click **Next**.
   - If you selected **Ask for Network Credentials**, the **Enter Network Credentials** dialog box appears. Type a valid user name and password for the selected computer, and then click **OK**.

6.9.3.3 Specifying the share and path for the database dump

1. On the **Select share & path for the database dump** page, specify the location where to save the database dumps of the Microsoft SQL Server component of the Microsoft SharePoint Server.

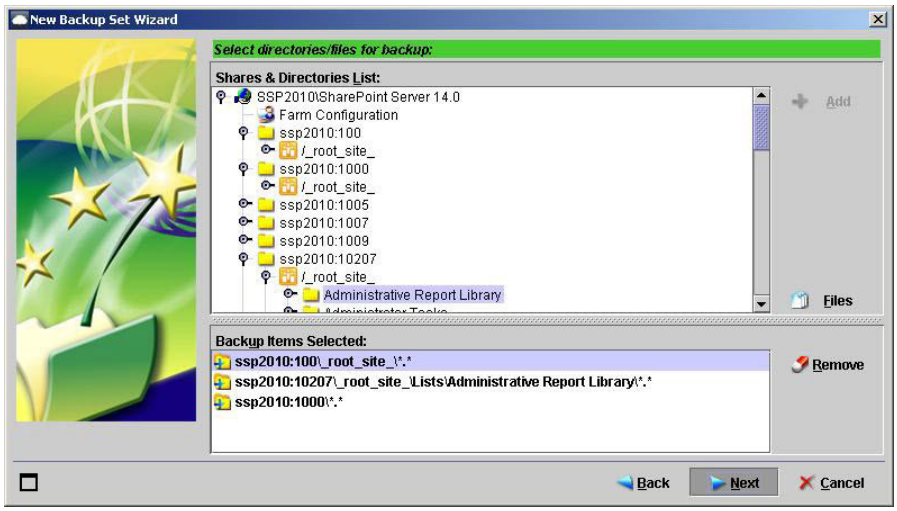


   F1 Help: Select share & path for the database / data dump
2. Select a dump location on the local computer (the backup target machine), and then click **Next**.

6.9.3.4 Selecting the backup items

- The steps for all subsequent wizard pages are the same as for Windows File system backups. Follow from Section 6.2.3.3, "Specifying the backup items", on page 147 in the section for File system backups.

  Some options will not appear for Microsoft SharePoint Server backup sets.



6.9.4 Restoring a Microsoft SharePoint Server backup set

Steps that are similar to those for File system restores will only be briefly mentioned.

6.9.4.1 Selecting the backup set

- Browse the Backup Sets tree, select the backup set to restore, and then on the **Restore** menu click **Restore Now**.

6.9.4.2 Selecting items to restore

- Browse the tree, select the required items, and then click **Next**.

6.9.4.3 Specifying the restore destination

1. In the **Select Restore Location** dialog box, select the restore destination:
   - **Original location –** This option is selected by default. Data will be restored to the original backup source location(s).
   - **Alternate location –** Select this option to restore data to an alternate server that you specify. Select the alternate server and the dump location and then click the **Destination** cell to map the source SharePoint Server to the destination SharePoint Server.
2. Click **Next**.

6.9.4.4 Specifying performance options

- On the **Select restore performance options** page, the options are intended for large backup sets in high performance environments. For typical use, keep DS-Client's default settings, and then click **Next**.

  More information in F1 help: Select Restore Performance Options (Windows DS-Client)

6.9.4.5 Specifying restore options

- On the **Select Restore Options** page, make the required selections, and then click **Next**.

6.9.4.6 Specifying the reason for the restore

1. On the **Fill in the restore survey** page, click the **Restore reason** box and select the reason for this restore.
2. If the **Restore classification** box appears, click and make the appropriate selection.

   This only appears if the backup set is currently in a scheduled recovery drill period. For more information see Section 6.1.3.9, "Types of Restore Licenses in Recovery Drill Period", on page 141.

   For more information, see the F1 help for this dialog box and Section 6.2.5.6, "Specifying the reason for the restore", on page 164.
3. Click **Finish** to start the restore process.

6.10 Microsoft SQL Server database backup sets (Windows)

6.10.1 About Microsoft SQL Server database backup sets

The following sections provide information about Microsoft SQL Server database backup sets.

The Microsoft SQL Server backup set type always performs a full database dump of the Microsoft SQL Server. After the initial backup of a SQL database, the subsequent backups send incremental forever.

DS-Client does not support a separate backup of a database's transaction log. If you want to back up the transaction log, you must back up the corresponding database with the **Backup Transaction Log** backup item option selected.

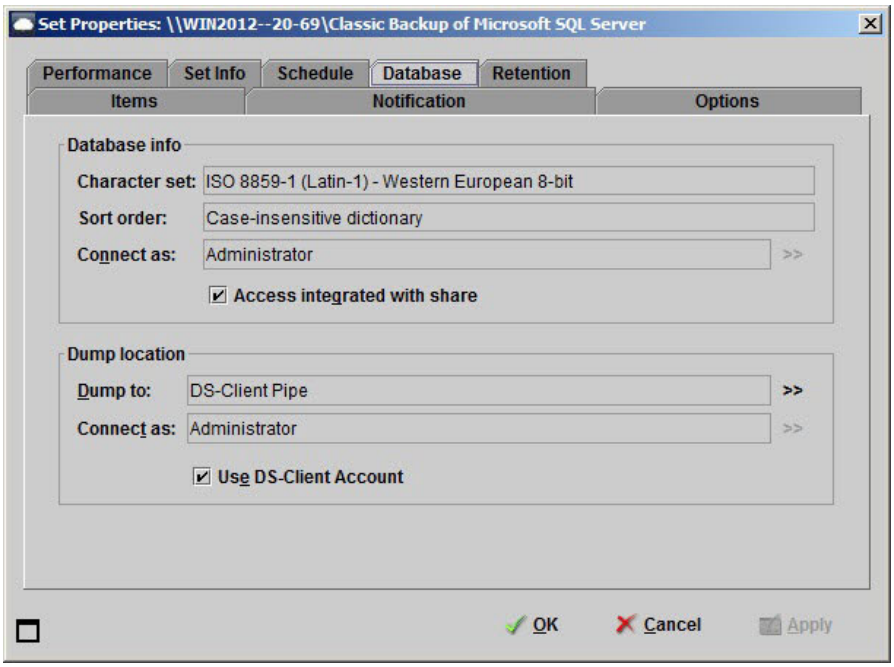
The value of separate transaction logs is that they can be restored as separate dump files (to alternate location). This method is better than restoring from a full backup only if there is a specific transaction point you want to restore to (between two full backup sessions).

6.10.1.1 Modifying database information (Microsoft SQL Servers)

1. Browse the Backup Sets tree, right-click the backup set you require, and select **Properties**.
2. In the **Backup Set Properties** dialog box, click the **Database** tab.

   If **Access integrated with share** is selected, you can edit only the credentials from the **Dump location** section. Windows authentication will be performed when DS-Client connects to the database.

NOTE: "Access integrated with share" will not work if your network is using Windows Integrated Security. (Even though you can select this option, Windows Integrated Security will ignore credentials from the **Database Info** section.)



F1 Help: Set Properties - Database tab

3. Click **OK** to save the changes.

6.10.2 Creating a Microsoft SQL Server database backup set

The steps to create a backup set are generally the same for all supported versions of Microsoft SQL Server. More specific information is available in the Knowledge Base article in Section 15.4, “Backup / restore of Microsoft SQL Server (all versions)”, on page 511.

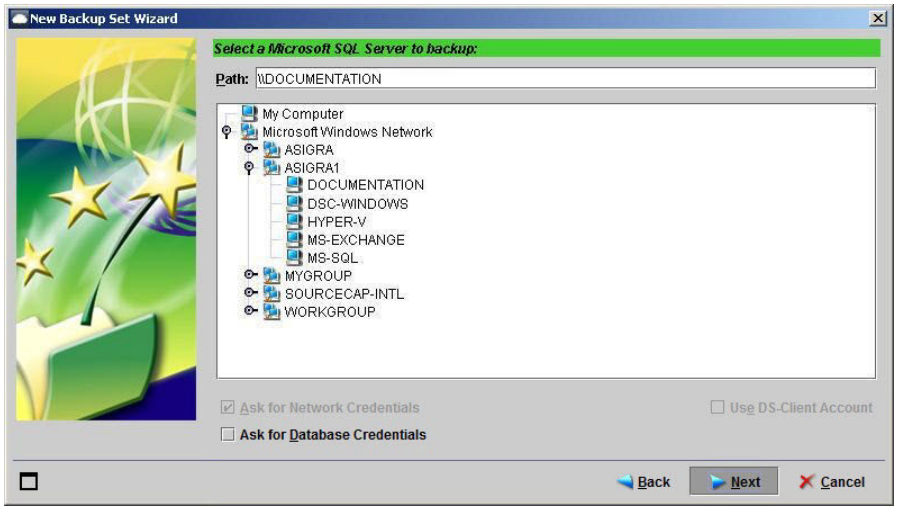
6.10.2.1 Selecting the kind of backup set

1. On the **Sets** menu, click **New Backup Set**. The New Backup Set Wizard appears.
2. On the **Choose the kind of backup set** page, select **Microsoft SQL Server**, and then click **Next**.

6.10.2.2 Specifying the server

DS-Client searches for all Microsoft SQL servers with active databases on the network.

1. On the **Select a Microsoft SQL Server** page, browse and select the server you want to backup. You can also type the server name or IP address in the **Path** box.



F1 Help: Select the computer

2. By default, DS-Client uses your current user logon to connect to the selected computer and database. To specify different credentials, select **Ask for Network Credentials** and/or **Ask for Database Credentials**.
3. Click **Next**.

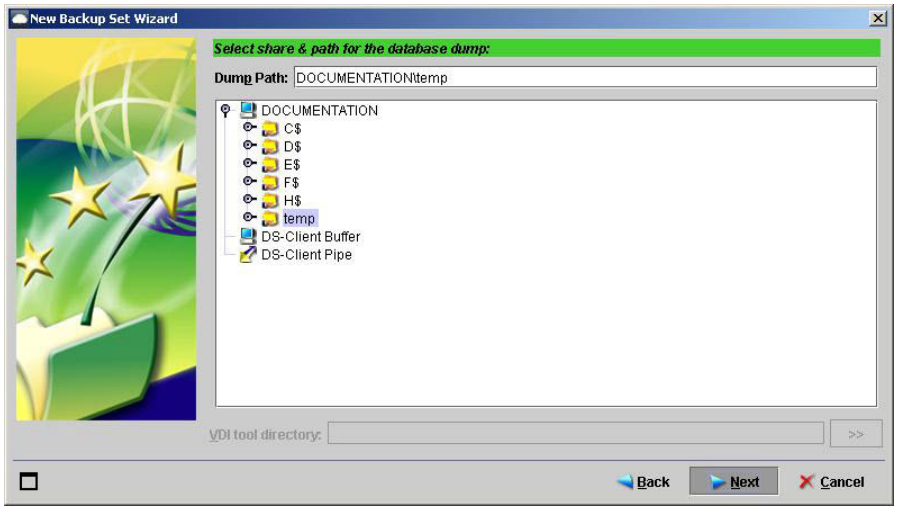
4. (Applicable if you have selected **Ask for Network Credentials**) In the **Enter Network Credentials** dialog box, type the credentials, and then click **OK**.

5. (Applicable if you have selected **Ask for Database Credentials**) In the **Enter Database Credentials** dialog box, type the database credentials, and then click **OK**.

6.10.2.3 Specifying the database dump options

To back up an active database, a “full dump”, “incremental dump”, or “differential dump” of the database must be made. On this page, select a path where to save the dump file on the computer running the Microsoft SQL server.

1. On the **Select share & path for the database dump** page, select how and where the DS-Client handles the database dump.



F1 Help: Select share & path for the database / data dump

- **Remote dump location**: To specify a different computer for the database dump, you can type a valid UNC path into the Dump Path field. Both the Microsoft SQL Server service account and the backup set user credentials must have rights to access the UNC path (read-write permissions).

2. Click **Next**.

6.10.2.4 Specifying the backup items

1. On the **Choose the database(s) to backup** page, add the items you want to back up:

   - To add all databases, select the entire instance, and then click **Add**.
   - To add a specific database to the backup set, browse the Databases List and select the database you want to include, and then click **Add**.

- You can also exclude individual databases after you have added an entire (parent) instance.

Your selection appears in the **Backup Items Selected** list.

NOTE: Multiple instances on the same server are displayed; however, you can only add from one instance per backup set.

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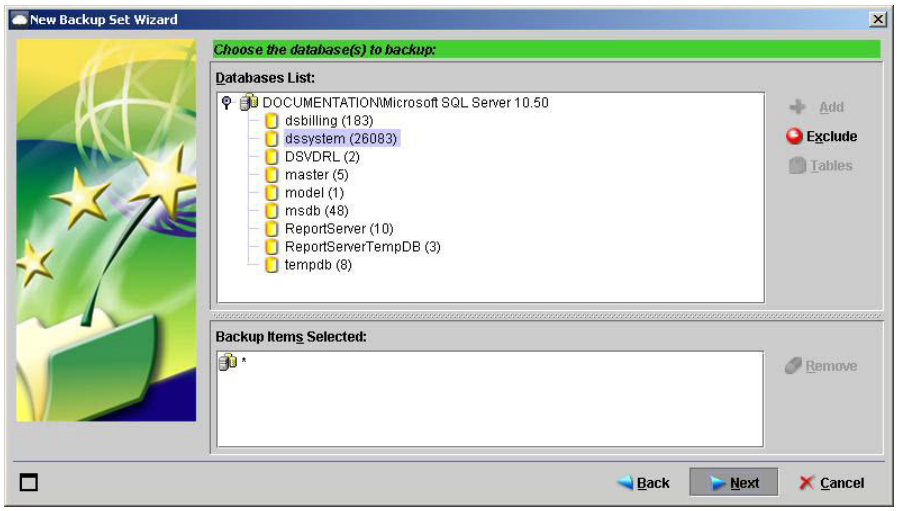
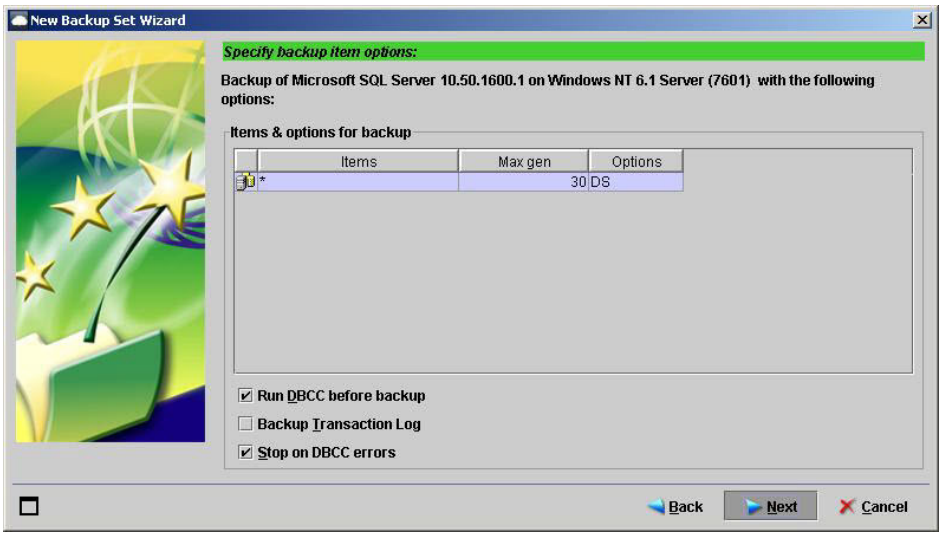
2. Click **Next**.



6.10.2.5 Specifying backup item options

On the **Specify backup item options** page, the version of the selected Microsoft SQL Server is displayed at the top.



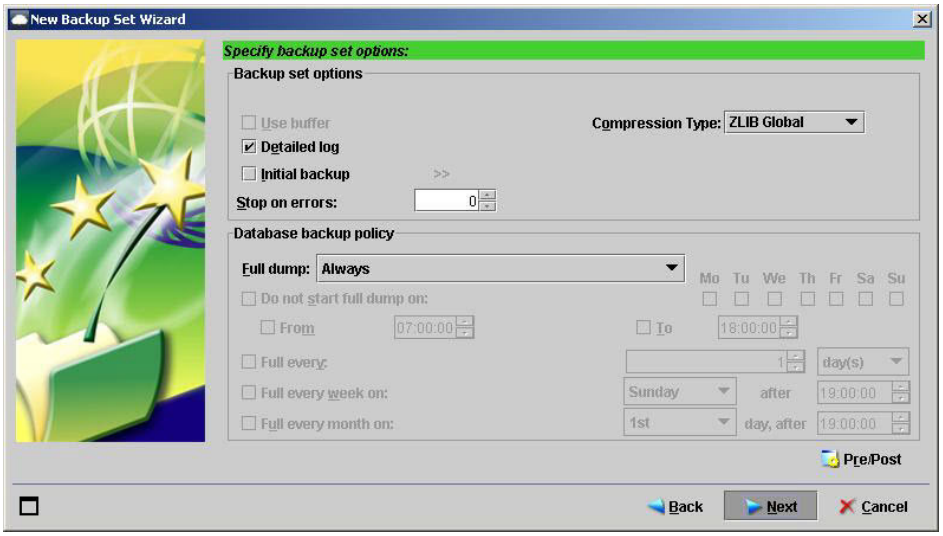
1. Retain the default settings, unless there are specific requirements for the generation or option for each backup item. For more details on these options, see the online help.

   F1 Help: Set Properties - Items tab

2. Click **Next**.

6.10.2.6 Specifying backup set options

Backup options affect the way a set is handled during the backup process.



- On the **Specify backup set options** page, select the required options, and then click **Next**.

  F1 Help: Set Properties - Options tab (Windows database backup sets)

  For more information on Database Backup Policy options, see the Knowledge Base article in Section 15.4, “Backup / restore of Microsoft SQL Server (all versions)”, on page 511.

6.10.2.7 Specifying the performance options

The steps for all subsequent wizard pages are the same as for Windows File system backups.

- Follow from Section 6.2.3.7, “Specifying performance options (Windows DS-Client)”, on page 151 in the section for File system backups.

6.10.3 Restoring a Microsoft SQL Server database backup set

Only users with the required permissions can restore Microsoft SQL Servers. The procedure for this type of restore is provided below. Steps that are similar to or same as those for File system restores will only be briefly mentioned.

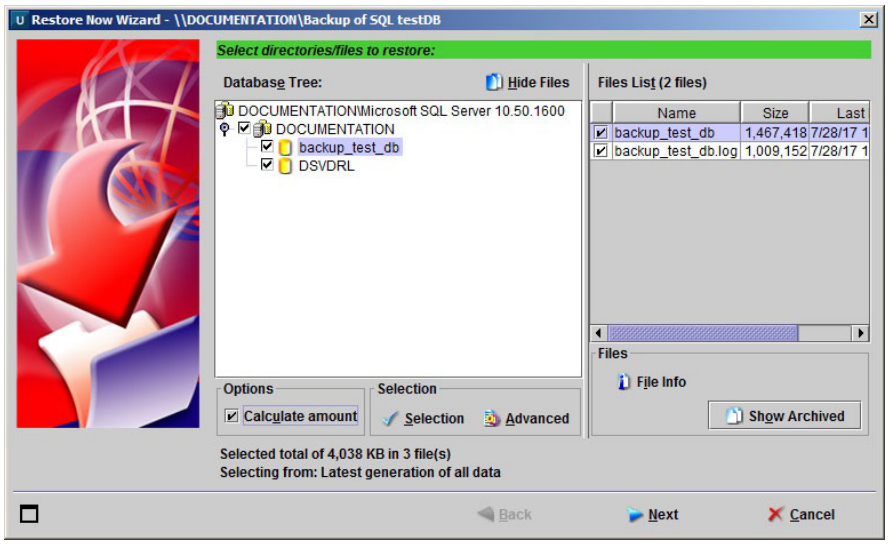
See important information on this type of restore in the Knowledge Base article in Section 15.4, “Backup / restore of Microsoft SQL Server (all versions)”, on page 511.

6.10.3.1 Selecting the backup set

- Browse the Backup Sets tree, select the backup set to restore, and then on the **Restore** menu click **Restore Now**.

6.10.3.2 Specifying the database(s)

- On the **Select directories/files to restore** page, browse the Database Tree, select the items you want to restore, and then click **Next**.



F1 Help: Set Properties - Options tab (Windows database backup sets)

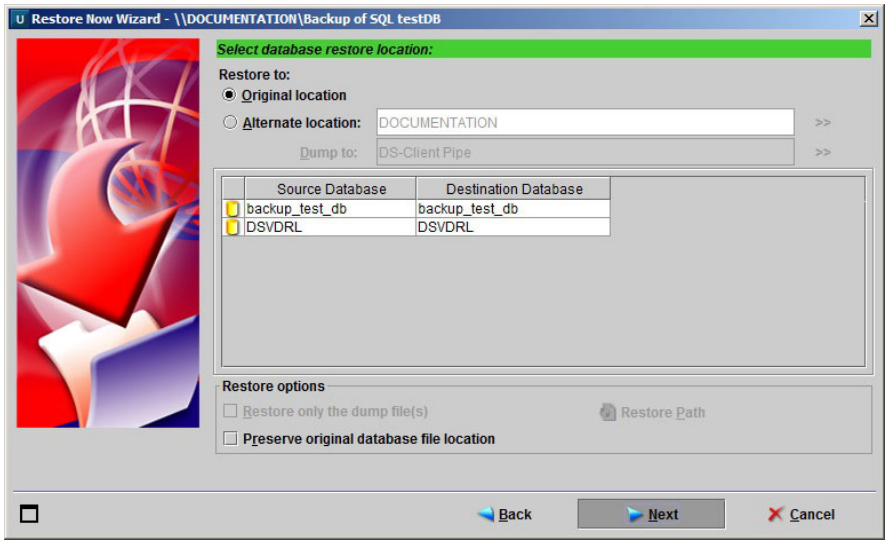
– To view and/or select individual database files, select a database, and then click **Show Files**.

– To see the total size and number of files selected, select **Calculate amount**.

6.10.3.3 Specifying the restore destination

1. On the **Select database restore location** page, select the restore destination:

   - **Original location –** This option is selected by default. DS-Client will restore data to the original backup location. Any existing files of the same name will be overwritten.
   - **Alternate location –** For information on this option, see Section 6.10.3.7, “Restoring Microsoft SQL Server data to an alternate location”, on page 235.



   F1 Help: Select database restore location (Microsoft SQL / PostgreSQL / MySQL)

2. In the **Restore options** section, select any additional restore handling options. For details on these options, see the F1 help.
3. Click **Next**.

6.10.3.4 Specifying performance options

- On the **Select restore performance options** page, the options are intended for large backup sets in high performance environments. For typical use, keep DS-Client’s default settings, and then click **Next**.

  More information in F1 help: Select Restore Performance Options (Windows DS-Client)

6.10.3.5 Specifying restore options

- On the **Select Restore Options** page, make the required selections, and then click **Next**.

  For more information, see the F1 help: Select restore options (SQL / Microsoft Exchange / Oracle / Salesforce.com)

6.10.3.6 Specifying the reason for the restore

1. On the **Fill in the restore survey** page, click the **Restore reason** box and select the reason for this restore.
2. If the **Restore classification** box appears, click and make the appropriate selection.

   This only appears if the backup set is currently in a scheduled recovery drill period. For more information see Section 6.1.3.9, “Types of Restore Licenses in Recovery Drill Period”, on page 141.

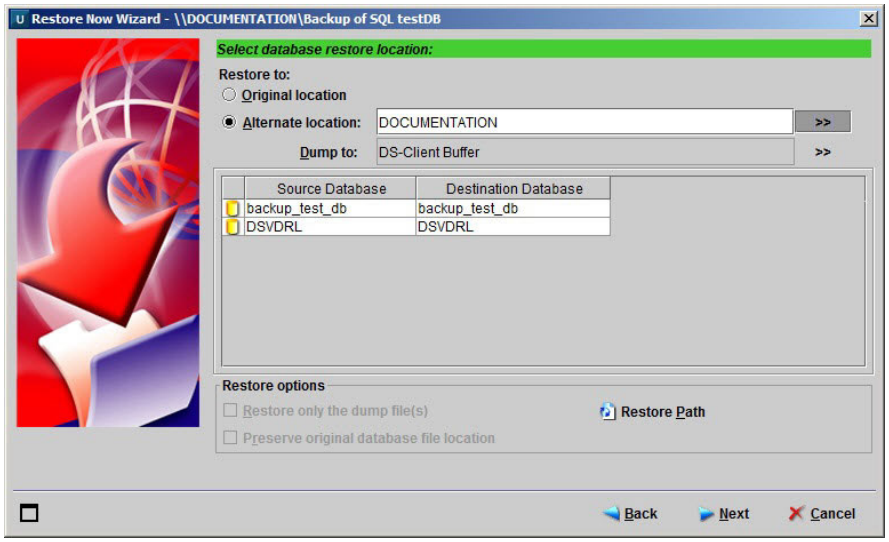
   For more information, see the F1 help for this dialog box and Section 6.2.5.6, “Specifying the reason for the restore”, on page 164.
3. Click **Finish** to start the restore process.

6.10.3.7 Restoring Microsoft SQL Server data to an alternate location

Restoring a Microsoft SQL Server backup set to an alternate location involves specifying the alternate server's location and specifying the path at the new location.

The following steps are applicable for restoring databases.

1. In the Restore Now Wizard, perform all necessary steps to specify the items to restore.
2. On the **Select Restore Location** page, select **Alternate Location**.



- To restore to a different directory on the same server, skip the remainder of this step.
- To restore to a different server on the network, do the following:

a) Beside the **Alternate location** box, click the **[>>]** button.

b) In the **Select Alternate Server** dialog box, browse and select the server where you want to restore the backed up database. You can also type the name or IP address in the **Path** box

c) By default, DS-Client uses your current user logon to connect to the selected computer and database. To specify different credentials, select **Ask for Network Credentials** and/or **Ask for Database Credentials**.

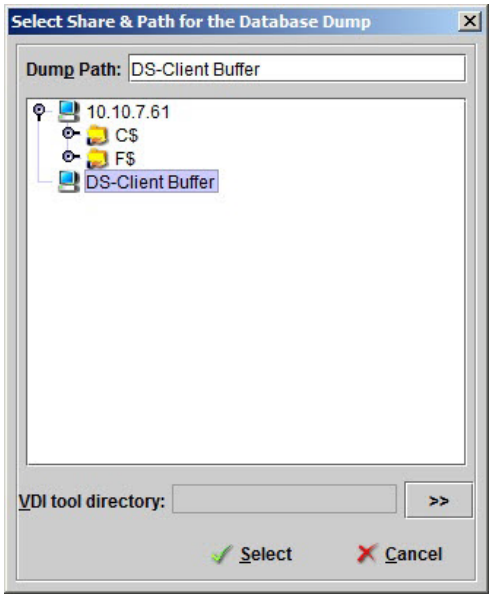
d) Click **Select**.

e) (Applicable if you have selected **Ask for Network Credentials**) In the **Enter Network Credentials** dialog box, type the credentials, and then click **OK**.

f) (Applicable if you have selected **Ask for Database Credentials**) In the **Enter Database Credentials** dialog box, type the database credentials, and then click **OK**.

If the credentials are valid, the **Alternate Location** box displays the alternate server you have selected.

3. To select the location for the database dump, beside the **Alternate location** box, click the **[>>]** button.



4. In the **Select Share & Path for the Database Dump** dialog box, browse and select the path for the database dump, and then click **Select**.

NOTE: You can select the DS-Client Buffer as an option for the database dump if none of your shares has sufficient capacity. This will save the dump to the local storage on the DS-Client computer.

---

5. For each source database, click in the **Destination Database** cell and select the name of the target database.

   The spreadsheet table contains the list of database specified for the restore and default restore information:

Source	This cell shows the title of the database (or database\table name in the case of tables).
Destination Database	This cell shows the destination database to which the backup set will be restored.

6. In the **Restore options** section, select any additional restore handling options:

Restore only the dump file(s)	Restores the dump files but does not load them as databases. This option is not available for DS-Client Pipe.
Restore Path	When restoring to an alternate location, you can specify the path for the log and data files separately. When you click this button, the **Select Restore Path** dialog box appears.
Preserve original database file location	This option only applies to restores to the original location. By default, this check box is not selected. The restored files will be placed on the default path(s) of the target instance. When this check box is selected, restored files will be placed in their original path(s). If the original path(s) do not exist, the restore will fail.

7. Click **Next**.
8. On the **Select restore performance options** page, the options are intended for large backup sets in high performance environments. For typical use, keep DS-Client's default settings, and then click **Next**.
9. On the **Select Restore Options** page, make the required selections, and then click **Next**.
10. On the **Fill in the restore survey** page, click the **Restore reason** box and select the reason for this restore.
    - If the **Restore classification** box appears, click and make the appropriate selection.
11. Click **Finish** to start the restore process.

6.11 NAS, UNIX-SSH, NFS, or Local File System backup sets (Linux or Mac)

6.11.1 About NAS, UNIX-SSH, NFS, or Local File System backup sets

The Linux DS-Client can back up the local file system, or servers visible on the LAN with NAS, UNIX-SSH, NFS.

NOTE: The Mac DS-Client can also back up the local file system, or servers visible on the LAN with UNIX-SSH and NFS but not NAS.

More information is available in the following Knowledge Base articles:

- Section 15.2, "Backup / restore of UNIX file systems", on page 507
- Section 15.5, "Backup / restore using UNIX-SSH", on page 518
- Section 15.6, "Backup / Restore of NFS", on page 520
- Section 15.21, "Backup / restore of NAS (Linux DS-Client)", on page 590

6.11.2 Creating a NAS, UNIX-SSH, NFS, or Local File System backup set

The following sections describe how to create a NAS, UNIX-SSH, NFS, or Local File System backup set.

6.11.2.1 Selecting the kind of backup set

1. On the **Sets** menu, click **New Backup Set**.
2. On the **New Backup Set Wizard** page, select **NAS, UNIX-SSH, NFS, Local File System**.
3. Click **Next**.

6.11.2.2 Specifying the backup source

F1 Help: Select the computer (Linux DS-Client)

1. On the **Select the source for this backup set** page, select from the available protocols:

Local File System	Back up the local DS-Client computer's file system. • If backing up the local DS-Client, make sure the backup items exclude (or do not contain) the postgres data folder. This will likely happen if you select "/" as the backup item (i.e. the entire "/" drive). • If the DS-Client is currently using the local Postgres, backing up the postgres data folder can cause errors during the backup.
NAS	Back up a NAS (Network Attached Storage) device. • You must type the IP of the NAS in the Path field (e.g. NAS\10.20.30.100). For more details, see the Knowledge Base article in Section 15.21, "Backup / restore of NAS (Linux DS-Client)", on page 590.
NFS	Back up using the NFS protocol.
UNIX-SSH	Back up using the UNIX-SSH protocol. **SSH Notes:** • The backup source machine must be a Unix system (Linux, Solaris, HP-UX, or AIX). • The source machine must have an OpenSSH compatible server installed and started. • The source machine must have either Perl5 (core function, 5.6 or beyond) installed, or Python (2.4) installed. [Alternatively, you can use the DIRECT option to run a specific script/binary located on the source machine.] • The SSH approach cannot scan the LAN to get an initial machine list. You must type the IP of the source machine in the Path field (e.g. UNIX-SSH\10.20.30.100). The user or administrator can also put the initial machine list into the file **hostlist_ssh** located in the installation path (usually /opt/CloudBackup/DS-Client). For more details, see the Knowledge Base article in Section 15.5, "Backup / restore using UNIX-SSH", on page 518.

2. In the **Path** box, type the IP address of the server you want to backup. Make sure to keep the protocol prefix.

3. By default, DS-Client uses the current user's logon credentials to connect to the selected computer. Depending on the protocol you choose, you have the following options for alternate credentials:

   - **Ask for local machine credentials** (Local File System, NAS, or NFS backup sets)

     Select this option to specify the local machine credentials.

   - **Ask for remote machine credentials** (UNIX-SSH backup sets)

     Select this option to specify the remote machine credentials. For UNIX-SSH backup sets, this user's default shell must be either the Bourne shell or the BASH shell.

   - **“sudo” as an alternate user** (UNIX-SSH backup sets)

     For security reasons, do not use a super user for remote logon to a source machine. Linux DS-Client is able to log on to a source machine as a regular user, and then use 'sudo' to execute a shell as an alternate user with higher access permissions.

     The regular user must have privileges to connect to the SSH server on the source machine. Both regular and alternate users must be listed in the ‘sudoers’ file on the source machine.

     The ‘sudoers’ file can be edited with ‘visudo’. (Please consult your 'sudo' documentation for further information.)

     A regular user must have privileges to run the `/usr/bin/perl` or `/usr/bin/python` command on the source machine as the alternate user. If you have Perl or Python installed in a different path, each ‘sudoers’ user must be able to run Perl or Python from that installed path.

   - **Advanced connection options** (UNIX-SSH backup sets)

     By default (if no selection is made), DS-Client runs PERL from the default path (normally `/usr/bin`). If PERL is not located in that directory, specify the exact path in this dialog box.

     In this dialog box, you can specify the type of script to use for backup of files on the source machine (PERL or PYTHON).

     With the DIRECT option, you can run a specific program from the path entered in this dialog box. (Use only if you have a specific requirement.)

4. Click **Next**.

   - A popup dialog box appears for each selected alternate credential check box. Type the credentials, and then click **OK**.

6.11.2.3 Specifying the backup items

1. On the **Select items for backup** page, browse and select items in the Shares & Directories List, and then click **Add**.

   F1 Help: Select Items for Backup (Linux DS-Client)

2. Click **Next**.

6.11.2.4 Specifying backup item options

1. On the **Specify backup item options** page, retain the default settings unless there are specific requirements for the generation or backup item option.

   F1 Help: Set Properties - Items tab (Linux DS-Client)

2. Click **Next**.

6.11.2.5 Specifying backup set options

1. On the **Specify backup set options** page, retain the default settings unless there are specific requirements. For details on these options, see the F1 help.

   F1 Help: Set Properties - Options tab (Linux DS-Client)

2. Click **Next**.

6.11.2.6 Specifying notification options

The steps for all subsequent wizard pages are the same as for Windows File system backups.

- Follow from Section 6.2.3.8, “Specifying notification options”, on page 153 in the section for File system backups.

6.12 Oracle database backup sets (Windows or Linux)

6.12.1 About Oracle database backup sets

The following sections provide information about Oracle Server backup sets.

6.12.2 Before you begin

There are some prerequisites to perform backups of Oracle database servers.

Refer the DS-Client Knowledge Base article in Section 15.7, “Backup / restore of Oracle database servers”, on page 522.

Specifically, look at the sections:

- DS-Client Requirements
- Oracle Server Requirements
- General Requirements

6.12.3 Creating an Oracle database backup set (Linux DS-Client)

The following sections describe how to create an Oracle Server backup set in Linux DS-Client.

6.12.3.1 Selecting the kind of backup set

1. On the **Sets** menu, click **New Backup Set**.
2. On the **Choose the kind of backup** page, select **Oracle Server**.
3. Click **Next**.

6.12.3.2 Specifying the server

1. On the **Select the source for this backup set** page, in the **Path** box, type the IP address of the Oracle server you want in the following format:

   `Oracle Server\<IP Address>`

   The **Ask for database credentials** option is selected by default. You will be prompted to provide database credentials.
2. Click **Next**.
3. In the **Enter Database Credentials** dialog box, type a valid user name and password for the database server.

   - Type the service name in the corresponding field. This is the name of the Oracle service database you wish to back up. The Service Name is the TNS alias that is specified in the “tnsnames.ora” file on your Oracle client.

   For Oracle 12c databases:

   - If you provide the service name defined at CDB-level, you will be able to browse the entire container database (Root and all pluggable databases).
   - If you provide the service name defined at PDB-level, you will be able to browse that specific pluggable database only.

F1 Help: Specify Credentials (Linux DS-Client)

4. When you have typed the credentials to the Oracle database server, click **OK**.

6.12.3.3 Specifying the protocol for dumping the database

To back up an active database, a copy or “dump” of the database must be made.

1. On the **Select the protocol for dumping the database file** page, select the protocol you want to use for this backup set.

   Some of these options might not appear, depending on your network configuration or the target Oracle server that is selected.

   - **Local File System** (for Oracle servers on the DS-Client computer) **–** dumps the database into the specified path on the local file system (on the DS-Client computer).
   - **NFS** (for remote Oracle servers) **–** DS-Client will read the database dump files from the database server using the NFS transmission protocol.
   - **UNIX-SSH** (for remote Oracle servers) **–** DS-Client will read the database dump files from the database server using the UNIX-SSH transmission protocol.
   - **DS-PIPE –** This is an alternative to the database dump for Oracle database server backups. This option does not consume any additional disk space. During backups, DS-Client reads from the pipe on the source database. This method is useful if your database is too big to be dumped to a file.

   F1 Help: Select the protocol for dumping database file (Linux DS-Client)

2. Click **Next**. Depending on your protocol selection, you might have to provide additional credentials.

6.12.3.4 Specifying the backup items

1. On the **Select items for backup** page, add the items you want to back up:

   - To add individual items, browse the Database List, select the required items, and then click **Add**.
   - To add the full Oracle Database, select the parent instance, and then click **Add**.
   - You can also exclude individual databases after you have already added the entire (parent) instance.

   F1 Help: Select Items for Backup (Linux DS-Client)

2. Click **Next**.

6.12.3.5 Specifying backup item options

1. On the **Specify backup item options** page, retain the default settings, unless there are specific requirements for each backup item.

   For more details on these options, see the F1 help.

   F1 Help: Set Properties - Items tab (Linux DS-Client)

2. Click **Next**.

6.12.3.6 Specifying backup set options

- On the **Specify backup set options** page, retain the default settings, unless there are specific generation or option requirements for each backup item, and then click **Next**.

  F1 Help: Set Properties - Options tab (Linux DS-Client)

6.12.3.7 Specifying notification options

The steps for all subsequent wizard pages are the same as for Windows File system backups.

- Follow from Section 6.2.3.8, “Specifying notification options”, on page 153 in the section for File system backups.

6.12.4 Creating a Oracle database backup set (Windows DS-Client)

The following sections describe how to create an Oracle Server backup set in Windows DS-Client.

6.12.4.1 Selecting the kind of backup set

1. On the **Sets** menu, click **New Backup Set**.
2. On the **Choose the kind of backup** page, select **Oracle Server**.
3. Click **Next**.

6.12.4.2 Specifying the server

1. Browse and select the server you want to backup. For Oracle on Windows, expand the Microsoft Windows network tree.
2. By default, DS-Client uses the current user's logon credentials to connect to the selected computer. If you need to specify alternate credentials, select the **Ask for Network Credentials** check box, and then click **Next**.

   The **Ask for database credentials** check box is selected by default.

Ask for network credentials	Type a valid user name and password for the selected computer. • The Network Credentials must also be valid for the Network Protocol you select to dump the database file. • The Network Credentials you specify must have read and write privileges for the dump path you select.
Ask for database credentials	(Mandatory) Type a valid user name and password for the database server. Type the Service name in the corresponding field: • This is the name of the Oracle service database you wish to back up. • The Service Name is the TNS alias that is specified in the "tnsnames.ora" file on your Oracle client. For Oracle 12c databases: • If you supply the service name defined at CDB-level, you will be able to browse the entire container database (Root and all pluggable databases). • If you supply the service name defined at PDB-level, you will be able to browse that specific pluggable database only.

3. (If applicable) In the **Enter Network Credentials** dialog box, type a valid user name and password for the selected computer, and then click **OK**.
   - The network credentials must also be valid for the network protocol you select to dump the database file.
   - The network credentials you specify must have read and write privileges for the dump path you select.
4. In the **Enter Database Credentials** dialog box, type a valid user name and password for the database server.
5. Type the service name in the corresponding field. This is the name of the Oracle service database you want to back up. The Service Name is the TNS alias that is specified in the "tnsnames.ora" file on your Oracle client.

   For Oracle 12c databases:
   - If you provide the service name defined at CDB-level, you will be able to browse the entire container database (Root and all pluggable databases).
   - If you provide the service name defined at PDB-level, you will be able to browse that specific pluggable database only.

   F1 Help: Specify Credentials (Windows DS-Client)
6. Click **OK**.

6.12.4.3 Selecting the share and path for the database dump

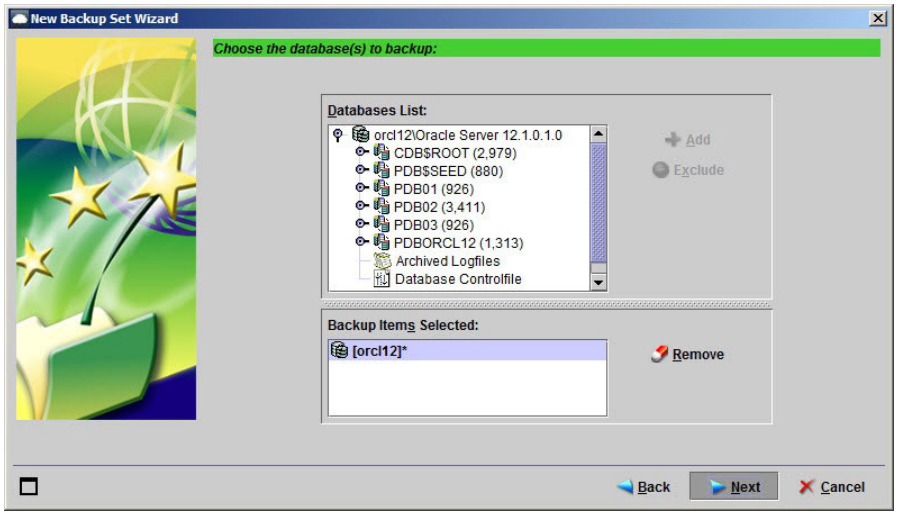
To back up an active database, a copy or “dump” of the database must be made.

1. Select a method to handle the database dump. Ensure that the Oracle Server username has read and write privileges to this dump path.
   - Dump to a path on the Oracle server
   - Dump to the DS-Client Buffer
   - Use DS-Client Pipe

   F1 Help: Select share & path for the database / data dump
2. Click **Next**.

6.12.4.4 Selecting the database(s) to be backed up

1. On the **Choose the database(s) to backup** page, add the items you want to back up:
   - To add the full Oracle Database, select the root folder, and then click **Add**.
   - To select individual items, browse the Database List, select the required items, and then click **Add**.
   - You can also exclude individual databases after you have already added the entire (parent) instance.
2. Click **Next**.



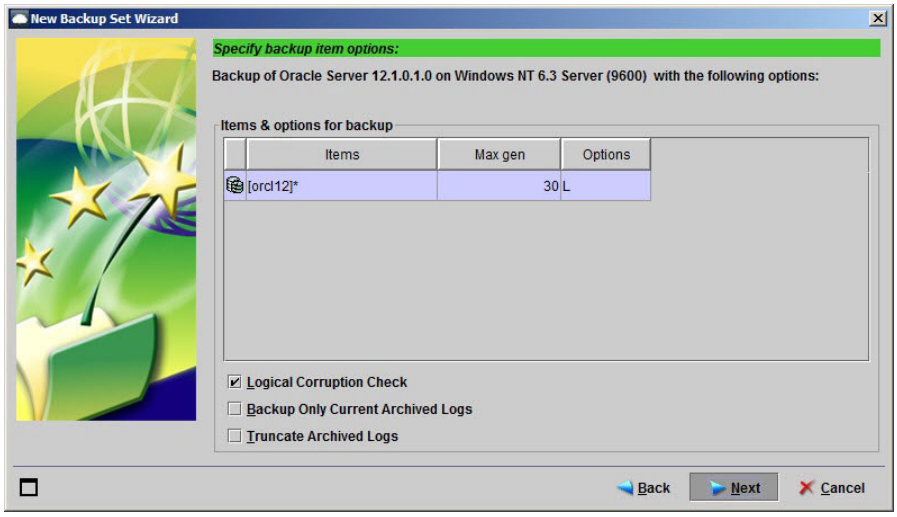
6.12.4.5 Specifying backup item options

1. On the **Specify backup item options** page, retain the default settings, unless there are specific requirements for each backup item.

   For more details on these options, see the F1 help.

   F1 Help: Set Properties - Items tab

2. Click **Next**.



6.12.4.6 Specifying backup set options

1. On the **Specify backup set options** page, retain the default settings, unless there are specific generation or option requirements for each backup item.

   F1 Help: Set Properties - Options tab

2. Click **Next**.

6.12.4.7 Specifying the performance options

The steps for all subsequent wizard pages are the same as for Windows File system backups.

- Follow from Section 6.2.3.7, “Specifying performance options (Windows DS-Client)”, on page 151 in the section for File system backups.

6.12.5 Restoring an Oracle database backup set

Before proceeding to restore Oracle Server data, ensure that you have read the following information.

There are specific requirements for the restore of Oracle Server backup sets. For important information, see in the Knowledge Base article in Section 15.7, “Backup / restore of Oracle database servers”, on page 522 regarding the following:

- Restore requirements
- Alternate location restore requirements

6.12.5.1 About restoring the whole CDB in Oracle 12c data

Restoring the whole CDB (Container Database) is similar to restoring a non-CDB or pre-12c database.

Restore of CDB with controlfile:

- The database must be in **nomount** (Started) state.
- The Database Controlfile, the Root container (CDB$ROOT), and all the Pluggable Databases (PDBs) are selected for restore.

NOTE: When restoring the whole CDB with controlfile, you must remove all the autobackup controlfiles under the directory “autobackup”. (If the flash_recovery_area is configured, the “autobackup” directory is in the “flash_recovery_area”.) Remove any old controlfiles and old archived logs.

Restore of CDB without controlfile (using the current controlfile of the Oracle server):

- The database is in **Mounted** state.
- The Root container and all the PDBs are selected for restore.

6.12.5.2 About restoring only part of the CDB in Oracle 12c data

Restore of the Root container:

- The database is in **Mounted** state.
- The Root container is selected for restore.

IMPORTANT: Restore of only the Root container (CDB$ROOT) can leave the database in a state of inconsistency between the Root and PDBs. Oracle recommends that if the Root is restored, all the PDBs should be restored as well.

Restore of PDB(s):

- The target PDB(s) must be closed (in **Mounted** state).
- The target PDB(s) are selected for the restore.

Restore of Tablespace(s):

- The target tablespace must be taken offline. (Alternatively, the PDB where the tablespace resides must be closed.)
- The target tablespace is selected for the restore.

Restore of the special pluggable database PDB$SEED:

NOTE: By default, when a CDB is started and opened, the special pluggable database PDB$SEED is in **Read Only** state, and it will remain in this state for normal database operations. If you need to restore the PDB$SEED, you must close it on the target first, before you can restore.

---

1. To close the PDB$SEED, from the SQL*Plus command line, type the following commands:

   ```
   alter session set "_oracle_script" = TRUE;
   alter pluggable database PDB$SEED close immediate
   instances=all;
   ```

2. Restore the PDB$SEED.
3. After you restore the PDB$SEED, open it in the **Read Only** mode again.
4. From the SQL*Plus command line, type the following command:

   ```
   alter pluggable database PDB$SEED open read only;
   ```

6.12.5.3 Selecting the Backup set

- Browse the Backup Sets tree, select the backup set to restore, and then on the **Restore** menu click **Restore Now**.

  The **Select directories/files to restore** page appears.

6.12.5.4 Specifying the database(s)

- On the **Select directories/files to restore** page, browse the Database Tree, select the items you want to restore, and then click **Next**.
  - To view and/or select individual files, select a database, and then click **Show Files**.
  - To see the total size and number of files selected, select **Calculate amount**.

6.12.5.5 Specifying the restore destination

1. On the **Select Database Restore Location** page, select the restore destination:
   - **Original Location –** This option is selected by default. DS-Client will restore data to the original backup location. Any existing files of the same name will be overwritten. The dump method and protocol used during backup will be used during restore to the original location.
   - **Alternate Location –** For important information on the restore requirements for this option, see the Knowledge Base article in Section 15.7, “Backup / restore of Oracle database servers”, on page 522.
2. Click **Next**.

6.12.5.6 Specifying performance options

Special performance options on the **Select restore performance options** page are intended for large backup sets in high performance environments. This dialog box only appears for Windows DS Clients.

- For typical use, keep DS-Client’s default settings, and then click **Next** to proceed to the next dialog box.

  More information is available in the F1 help for this dialog box.

  F1 Help: Select Restore Performance Options (Windows DS-Client)

6.12.5.7 Specifying restore options

- On the **Select Restore Options** page, make the required selections, and then click **Next**.

  For information, see Section 6.2.5.5, “Specifying restore options”, on page 163 and the F1 help for this dialog box.

  Additional check boxes are available under **Additional Restore Options** in Linux DS-Client.

  For more information, see the F1 help: Select restore options (SQL / Microsoft Exchange / Oracle / Salesforce.com)

6.12.5.8 Specifying the reason for the restore

1. In the **Fill in the restore survey** page, click the **Restore reason** box and select the reason for this restore.
2. If the **Restore classification** box appears, click and make the appropriate selection.

This only appears if the backup set is currently in a scheduled recovery drill period. For more information see Section 6.1.3.9, “Types of Restore Licenses in Recovery Drill Period”, on page 141.

For more information, see the F1 help for this dialog box and Section 6.2.5.6, “Specifying the reason for the restore”, on page 164.

3. Click **Finish** to start the restore process.

6.12.5.9 Restoring Oracle database data to an alternate location

For important information on the requirements for restoring Oracle Server backup sets to an alternate location, see the Knowledge Base article in Section 15.7, “Backup / restore of Oracle database servers”, on page 522.

6.13 Oracle MySQL database backup sets

6.13.1 About Oracle MySQL database backup sets

The following sections provide information about Oracle MySQL database backup sets.

6.13.2 Before you begin

Ensure that you have met the applicable requirements before performing backups of MySQL databases.

6.13.2.1 Requirements (Linux DS-Client and Mac DS-Client)

There are some prerequisites before performing backups of MySQL databases:

- **Linux DS-Client**: The **mysql** utility must be listed in the PATH environment variable of user ’root’ on the DS-Client computer.
- **Mac DS-Client**: The path to the **mysql** utility must be added to the following file on the DS-Client computer:

  `/etc/rc.common`
- DS-Client backs up MySQL Server using the MySQL utilities ‘mysqldump’ and ‘mysql’. The DS-Client’s **mysqldump** and **mysql** utilities must be compatible with the MySQL version running on the source machine (MySQL server).

For more information, refer to the following Knowledge Base article in Section 15.8, “Backup / restore of MySQL database servers”, on page 530.

6.13.2.2 Requirements (Windows DS-Client)

There are some prerequisites before you perform backups of MySQL databases:

- **Windows DS-Client**: The **mysql** utility must be listed in the PATH environment variable of the DS-Client computer. (If you need to edit this variable, stop and restart the DS-Client service after making the change.)
- DS-Client backs up MySQL Server using the MySQL utilities 'mysqldump' and 'mysql'. The DS-Client's **mysqldump** and **mysql** utilities must be compatible with the MySQL version running on the source machine (MySQL server).

For more information, refer to the following Knowledge Base article in Section 15.8, "Backup / restore of MySQL database servers", on page 530.

6.13.3 Creating an Oracle MySQL database backup set (Windows DS-Client)

The following sections describe how to create a MySQL database backup set in Windows DS-Client.

6.13.3.1 Selecting the kind of backup set

1. On the **Sets** menu, click **New Backup Set**.
2. On the **Choose the kind of backup** page, select **MySQL Server**.
3. Click **Next**.

6.13.3.2 Specifying the server

1. On the **Select a MySQL Server to backup** page, browse and select the computer you want to backup. You can also type the IP address of the computer in the **Path** box.
2. Click **Next**.
3. (Applicable if you have selected **Ask for Network Credentials**) In the **Enter Network Credentials** dialog box, type the credentials, and then click **OK**.

   F1 Help: Specify Credentials (Windows DS-Client)
4. (Applicable if you have selected **Ask for Database Credentials**) In the **Enter Database Credentials** dialog box, type the database credentials, and then click **OK**.

6.13.3.3 Specifying the database dump options

To back up an active database, a copy or “dump” of the database must be made. In this dialog box, you will be selecting the method of transmitting the dump file.

1. On the **Select share & path for the database dump** page, select a method to handle the database dump.
2. If necessary, select the dump location.
3. Click **Next**.

6.13.3.4 Specifying the backup items

1. On the **Choose the databases to backup** page, select the items you want to back up:
   - To add an entire (parent) instance, select the parent instance, and then click **Add**.
   - To add individual items, browse the Databases List, select the required items, and then click **Add**.
   - You can also exclude individual databases after you have already added the entire (parent) instance.
2. Click **Next**.

6.13.3.5 Specifying backup item options

- On the **Specify backup item options** page, retain the default settings unless there are specific generation or option requirements for each backup item, and then click **Next**.

6.13.3.6 Specifying backup set options

The steps for all subsequent wizard pages are the same as for Windows File system backups.

- Follow from Section 6.2.3.5, “Specifying backup set options”, on page 149 in the section for File system backups.

6.13.4 Creating an Oracle MySQL database backup set (Linux DS-Client)

The following sections describe how to create a MySQL database backup set in Linux DS-Client.

6.13.4.1 Selecting the kind of backup set

1. On the **Sets** menu, click **New Backup Set**.
2. On the **Choose the kind of backup** page, select **MySQL**.
3. Click **Next**.

6.13.4.2 Specifying the server

1. On the **Select the source for this backup set** page, browse and select the computer you want to backup. You can also type the IP address of the computer in the **Path** box.
2. Click **Next**.
   - (Applicable if you have selected **Ask for Database Credentials**) In the **Enter Database Credentials** dialog box, type the database credentials, and then click **OK**.

     F1 Help: Specify Credentials (Linux DS-Client)
   - (Applicable if you have selected **Database Dump Configuration**) Type the installation path of a specific MySQL database dump application that will be used for this backup set. If this is not set, DS-Client will select one automatically.

     F1 Help: Database Dump Configuration

6.13.4.3 Specifying the backup items

1. On the **Choose the database(s) to backup** page, browse the Database List, select the items to back up, and then click **Add**.
2. Click **Next**.

6.13.4.4 Specifying backup item options

- On the **Specify backup item options** page, retain the default settings unless there are specific generation or option requirements for each backup item, and then click **Next**.

6.13.4.5 Specifying backup set options

- On the **Specify backup set options** page, retain the default settings unless there are specific generation or option requirements for each backup item, and then click **Next**.

  F1 Help: Set Properties - Options tab (Linux DS-Client)

6.13.4.6 Specifying notification options

The steps for all subsequent wizard pages are the same as for Windows File system backups.

- Follow from Section 6.2.3.8, “Specifying notification options”, on page 153 in the section for File system backups.

6.13.5 Restoring an Oracle MySQL database backup set

Only users with the required permissions can restore MySQL Server backups. The procedure for this type of restore is provided below. Steps that are similar to those for File system restores will only be briefly mentioned.

6.13.5.1 Selecting the backup set

- Browse the Backup Sets tree, select the backup set to restore, and then on the **Restore** menu click **Restore Now**.

6.13.5.2 Selecting the database(s) to restore

- On the **Select directories/files to restore** page, browse the Database Tree, select the items you want to restore, and then click **Next**.
  - To view and/or select individual files, select a database, and then click **Show Files**.
  - To see the total size and number of files selected, select **Calculate amount**.

6.13.5.3 Specifying the restore destination

- On the **Select Database Restore Location** page (Windows) or **Select Restore Location** page (Linux), select the restore destination:

- **Original location –** This option is selected by default. DS-Client will restore data to the original backup location. Any existing files of the same name will be overwritten.
- **Alternate location –** Select this option to restore data to a location other than the original backup source.

6.13.5.4 Specifying restore options

- On the **Select Restore Options** page, make the required selections, and then click **Next**.

  For information, see Section 6.2.5.5, “Specifying restore options”, on page 163 and the F1 help for this page.

6.13.5.5 Specifying the reason for the restore

1. In the **Fill in the restore survey** page, click the **Restore reason** box and select the reason for this restore.
2. If the **Restore classification** box appears, click and make the appropriate selection.

   This only appears if the backup set is currently in a scheduled recovery drill period. For more information see Section 6.1.3.9, “Types of Restore Licenses in Recovery Drill Period”, on page 141.

   For more information, see the F1 help for this dialog box and Section 6.2.5.6, “Specifying the reason for the restore”, on page 164.
3. Click **Finish** to start the restore process.

6.14 Oracle-SBT database backup sets (Linux)

6.14.1 About Oracle-SBT database backup sets

This type of backup set configures the DS-Client to receive Oracle RMAN (Recovery MANAGER) data dumps via the Oracle SBT (System Backup to Tape) protocol. For more information, refer to the following Knowledge Base article in Section 15.13, “Backup / restore of Oracle-SBT”, on page 545.

6.14.2 Before you begin

Note the following before creating an Oracle-SBT backup set.

IMPORTANT: This backup set type requires manual command input from the Oracle Server itself. Only database administrators should use this backup set type.

6.14.3 Creating an Oracle-SBT database backup set

The following sections describe how to create an Oracle-SBT backup set.

6.14.3.1 Selecting the kind of backup set

1. On the **Sets** menu, click **New Backup Set**.
2. On the **Choose the kind of backup** page, select **Oracle-SBT**.
3. Click **Next**.

6.14.3.2 Specifying the server

1. On the **Select the source for this backup set** page, in the Oracle-SBT tree, select **RMAN-SBT-Data**, and then click **Next**.
2. Type the backup set access credentials required by the Oracle RMAN client.

   These credentials should be defined in the “DS-Client/Oracle-SBT parameter file” (see Section 15.13, “Backup / restore of Oracle-SBT”, on page 545).

6.14.3.3 Specifying the backup items

1. On the **Select Items for Backup** page, in the Shares & Directories List, select **data_dumps**, and then click **Add**.
2. Click **Next**.

6.14.3.4 Specifying backup item options

- On the **Specify backup item options** page, retain the default settings unless there are specific generation or option requirements for each backup item, and then click **Next**.

  For details on these options, see the F1 help for this page.

6.14.3.5 Specifying backup set options

- On the **Specify backup set options** page, retain the default settings unless there are specific generation or option requirements for each backup item, and then click **Next**.

  F1 Help: Set Properties - Options tab (Linux DS-Client)

6.14.3.6 Specifying notification options

The steps for all subsequent wizard pages are the same as for Windows File system backups.

- Follow from Section 6.2.3.8, “Specifying notification options”, on page 153 in the section for File system backups.

NOTE: Do not assign this backup set to a Retention Rule or Backup Schedule.

NOTE: This backup set type is controlled by Oracle RMAN (not from DS-User). ‘On-Demand’ and ‘Scheduled’ backups do not apply to it.

6.15 Permissions Only backup sets

6.15.1 About Permissions Only backup sets

You can use the Permissions Only backup set to back up only the permissions of the selected item. This reduces the backup time because it does not back up the actual files. You can select more than one backup item and a separate dump file is saved for each backup item.

An Online File system backup set saves its files with the current permissions and attributes. If the permissions or attributes are changed, but the content of the files remains the same, DS-Client will not detect the changes at the next backup session. In this type of backup environment, modifications to attributes like Compress, Read-Only, Hidden, Archive, and Index can be detected and backed up with a Permissions Only backup set.

NOTE: Modifications to the Encrypt attribute can be detected only by using an Online File system backup set.

6.15.2 Creating a Permissions Only backup set

The following sections describe how to create a Permissions Only backup set.

6.15.2.1 Selecting the kind of backup set

1. On the **Sets** menu, click **New Backup Set**.
2. On the **Choose the kind of backup** page, select **Permissions Only** (Windows DS-Client) or **Permissions** (Linux DS-Client).
3. Click **Next**.

6.15.2.2 Specifying the backup source

The steps for all subsequent wizard pages are the same as for File system backups.

- Follow from Section 6.2.3.2, “Specifying the backup source”, on page 145 in the section for File system backups.

6.15.3 Restoring a Permissions Only backup set

Only users with the required permissions can restore Permissions Only backups. The procedure for this type of restore is provided below. Steps that are similar to those for File system restores will only be briefly mentioned.

NOTE: When restoring a Permissions Only backup set using a Windows DS-Client, you cannot perform a granular restore of an item.

6.15.3.1 Selecting the backup set

- Browse the Backup Sets tree, select the backup set to restore, and then on the **Restore** menu click **Restore Now**.

6.15.3.2 Specifying items to restore

- On the **Select directories/files to restore** page, browse the tree, select the required permissions, and then click **Next**.

  For each path, permissions are backed up as a single file named `dump.acl`.

6.15.3.3 Specifying the restore destination

- On the **Specify Restore Location** page, select the restore destination, and then click **Next**.

6.15.3.4 Specifying restore options

- On the **Select Restore Options** page, make the required selections, and then click **Next**.

6.15.3.5 Specifying the reason for the restore

1. On the **Fill in the restore survey** page, click the **Restore reason** box and select the reason for this restore.
2. If the **Restore classification** box appears, click and make the appropriate selection.

   This only appears if the backup set is currently in a scheduled recovery drill period. For more information see Section 6.1.3.9, “Types of Restore Licenses in Recovery Drill Period”, on page 141.

   For more information, see the F1 help for this dialog box and Section 6.2.5.6, “Specifying the reason for the restore”, on page 164.
3. Click **Finish** to start the restore process.

6.16 Physical-to-Virtual (VMware vCenter) backup sets (Windows or Linux)

6.16.1 About Physical-to-Virtual (VMware vCenter) backup sets

The following sections provide information about Physical-to-Virtual VMware vCenter backup sets.

6.16.2 Before you begin

DS-Client requires connection to a Local DS-VDR Tool for the backup set type to be available. Each physical machine that is protected will be one Local DS-VDR license count.

The following prerequisites must be met before creating Physical to Virtual (VMware vCenter) backup sets:

1. Configure the Local DS-VDR Tool for the DS-Client. For more information, see Section 3.6, “Configuring the Local DS-VDR Tool”, on page 68.
2. Install the following VMware component (package) on the Local DS-VDR Tool computer: VMware vCenter Converter Standalone

   This component can be found on the vmware.com Web site.
3. Run the installation and choose the “Client-Server installation (advanced)” Setup Type.

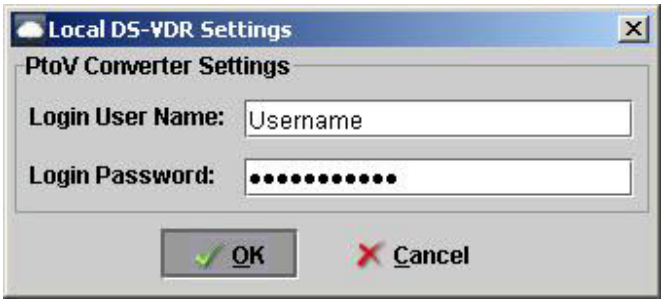
   The plug-in has three components.
4. Ensure that all three components are selected:

   - A server that must be installed on the Local DS-VDR machine.
   - A client that allows a user to monitor p2v processes.
   - An agent that is pushed (by the server component) to the actual target physical machine that is to be converted.

   (Optional) Since the Local DS-VDR Tool and VMware vCenter Converter components are on the same computer, the DS-VDR Tool should be able to access the Converter without additional credentials.

   If connection errors occur (when creating the P2V backup set), you can specify the (administrator level) credentials that will be used to access the “VMware vCenter Converter”:

   - On the **Local DS-VDR** menu, click **Local DS-VDR Settings**.



F1 Help: Local DS-VDR Settings

For more information, refer to the following Knowledge Base article in Section 15.25, “Physical-to-Virtual (VMware vCenter) backup set”, on page 617.

6.16.3 Creating a Physical-to-Virtual (VMware vCenter) backup set

The following sections describe how to create a Physical-to-Virtual VMware vCenter backup set.

6.16.3.1 Selecting the kind of backup set

1. On the **Sets** menu, click **New Backup Set**.
2. On the **Choose the kind of backup** page, select **Physical to Virtual**.
3. Click **Next**.

   In Windows DS-Clients, an additional dialog box appears for you to select the destination type.
4. Select **VMware vCenter Server**, and then click **Next**.

6.16.3.2 Selecting the server

1. In the **Select the source for this backup set** page, select the source for the backup set:
   - In Windows DS-Clients, manually type the IP address of the physical machine you want to ‘virtualize’ in the Path field.
   - In Linux DS-Clients, select the ‘Physical to Virtual’ tree.
2. In the **Path** box, type the IP address of the physical machine you want to ‘virtualize’: Physical to Virtual\IP_Address

For example: Physical to Virtual\12.34.56.111

NOTE: You can also type the IP address of a supported Windows or Linux virtual machine. In this case, the 'conversion' will be from "Virtual to Virtual".

3. Specify the credentials that will be used to connect to the selected computer.

   F1 Help: Specify Credentials (Windows DS-Client)

   F1 Help: Specify Credentials (Linux DS-Client)

4. Click **Next**.

   At this point, the DS-Client / Local DS-VDR Tool will 'push' the VMware vCenter Converter Standalone 'agent' component to the selected target computer. If the agent installation fails, the P2V conversion will not work.

6.16.3.3 Specifying the backup items

F1 Help: Select Items for Backup (Linux DS-Client)

1. On the **Select items for backup** page, select the physical machine in the Shares & Directories List, and then click **Add**.

   Items that are added appear in the **Selected Items for Backup** section.

NOTE: Each virtual machine that is configured for "Physical to Virtual" backup set counts for 1 license from the pool allocated to the DS-Client. You can verify this in Setup Menu > View Quotas: "DS-Client Local DS-VDR License".

2. Click **Next**.

6.16.3.4 Specifying backup item options

- On the **Specify backup item options** page, retain the default settings unless there are specific requirements, and then click **Next**.

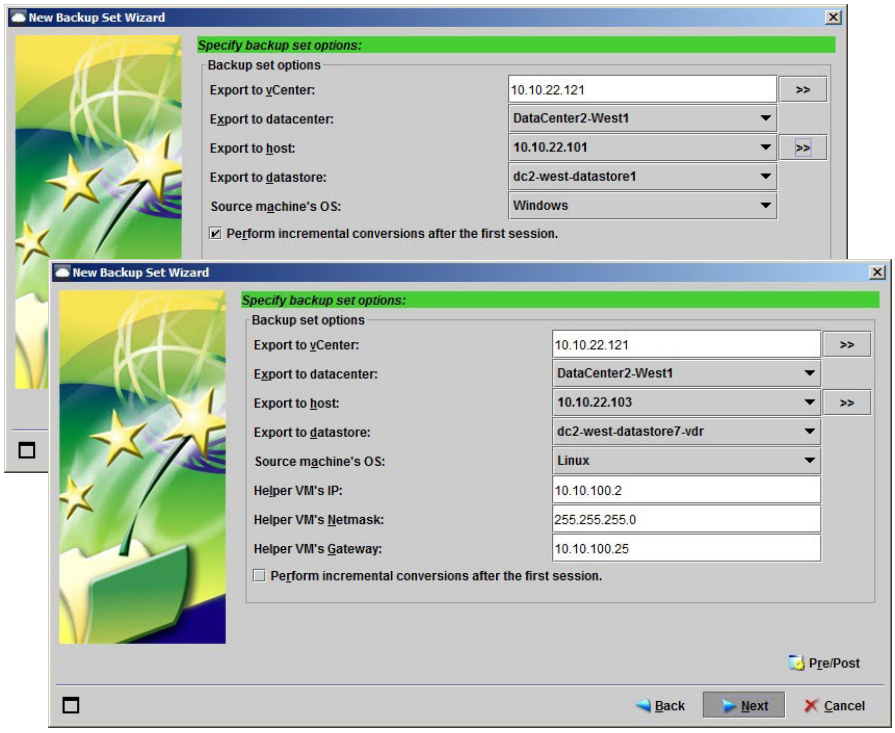
NOTE: A "Physical to Virtual" backup set does not backup data to DS-System. Each time you run a backup, a new virtual machine is created in the destination VMware vCenter Server.

F1 Help: Set Properties - Items tab

F1 Help: Set Properties - Items tab (Linux DS-Client)

6.16.3.5 Specifying backup set options

1. On the **Specify backup set options** page, retain the default settings, unless there are specific requirements.



F1 Help: Set Properties - Options tab

2. In the **Export to vCenter** (Windows DS-Client) or **Enter vCenter IP** (Linux DS-Client) box, specify the vCenter Server that will host the 'virtualized' machine which is backed up. (Type the IP address of a full vCenter Server in the vCenter box.)

   When this option is selected, the normal backup (to DS-System) options are disabled.

NOTE: You cannot use Chinese characters in the **Export to vCenter** credentials (username and password) because the VMware vCenter Converter does not support them.

---

3. On successfully connecting to a vCenter Server, sequentially specify the following (refer to the F1 help for more details):

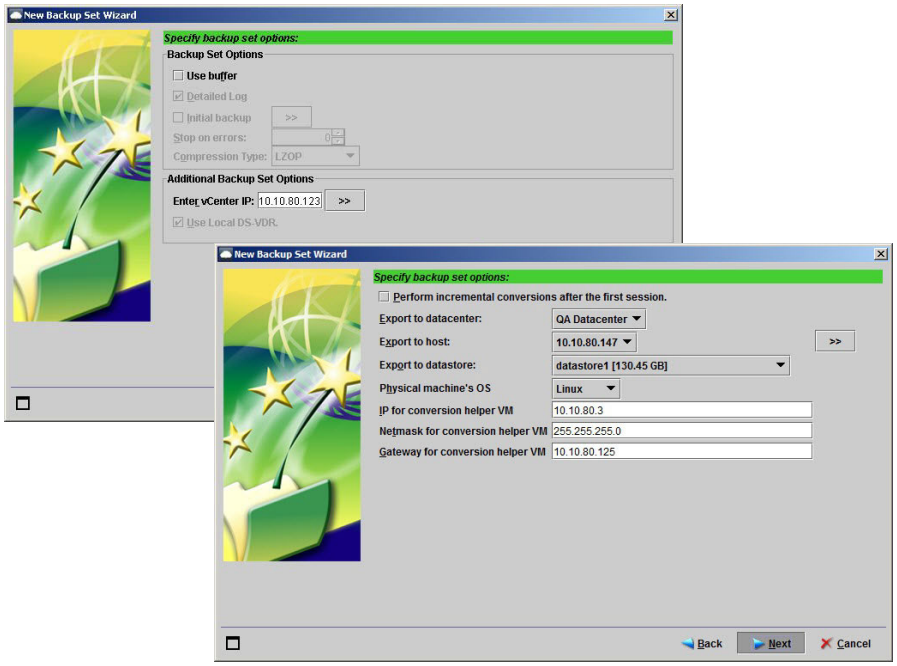
   - Datacenter
   - Host (requires credentials by clicking [>>])
   - Datastore
   - Physical Machine's OS (Windows / Linux)

- IP / Netmask / Gateway for conversion helper virtual machine (for conversion of Linux physical machines only)

4. Click **Next**.

NOTE: Linux DS-Client has an additional wizard pagel after connecting to the vCenter Server where the **Export to Datacenter**, **Export to host**, and **Export to datastore** selections are made.

Note the following Wizard difference in Linux DS-Clients:



F1 Help: Set Properties - Options tab (Linux DS-Client)

6.16.3.6 Specifying the Notification Options

The steps for all subsequent wizard pages are the same as for Windows File system backups.

- Follow from Section 6.2.3.8, “Specifying notification options”, on page 153 in the section for File system backups.

NOTE: A “Physical to Virtual” backup set does not back up data to DS-System.

6.17 PostgreSQL database backup sets (Linux or Mac)

6.17.1 About PostgreSQL database backup sets

The following sections provide information about PostgreSQL database backup sets.

6.17.2 Before you begin

There are some prerequisites for performing backups of PostgreSQL Databases:

- The **psql** and **pg_dump** utilities must be listed in the PATH environment variable of the user 'root' on the DS-Client computer.
- The DS-Client computer's **psql** and **pg_dump** utilities must be compatible with the PostgreSQL version running on the source machine (PostgreSQL server).

For more information, refer to the following Knowledge Base article in Section 15.10, "Backup / restore of PostgreSQL database servers", on page 538.

6.17.3 Creating a PostgreSQL database backup set

The following sections describe how to create a PostgreSQL database backup set.

6.17.3.1 Selecting the kind of backup set

1. On the **Sets** menu, click **New Backup Set**.
2. On the **Choose the kind of backup** page, select **PgSQL**.
3. Click **Next**.

6.17.3.2 Specifying the server

1. In the **Select the source for this backup set** dialog box, browse and select the server you want to backup.
2. By default, DS-Client uses the current user's logon credentials to connect to the selected computer. Select the applicable options:
   - To specify alternate credentials or an alternate port number if PostgreSQL instance is not running on the default port (5432), select **Ask for database credentials**.

- If you want to select a specific PostgreSQL database dump app's installation path that will be used for this backup set, click **Database Dump Configuration**.

  If nothing is specified, DS-Client will choose one automatically.

F1 Help: Select the computer (Linux DS-Client)

3. Click **Next**.

6.17.3.3 Specifying the backup items

1. On the **Choose the database(s) to backup** page, browse the Database List, select the required database(s), and then click **Add**.
2. Click **Next**.

6.17.3.4 Specifying backup item options

- On the **Specify backup item options** page, retain the default settings unless there are specific generation or option requirements for each backup item, and then click **Next**.

  For details on these options, see the F1 help for the page.

6.17.3.5 Specifying backup set options

- On the **Specify backup set options** page, retain the default settings unless there are specific generation or option requirements for each backup item, and then click **Next**.

  F1 Help: Set Properties - Options tab (Linux DS-Client)

6.17.3.6 Specifying notification options

The steps for all subsequent wizard pages are the same as for Windows File system backups.

- Follow from Section 6.2.3.8, "Specifying notification options", on page 153 in the section for File system backups.

6.17.4 Restoring a PostgreSQL database backup set

Only users with the required permissions can restore PostgreSQL backups. The procedure for this type of restore is provided below. Steps that are similar to those for File system restores will only be briefly mentioned.

6.17.4.1 Selecting the backup set

- Browse the Backup Sets tree, select the backup set to restore, and then on the **Restore** menu click **Restore Now**.

6.17.4.2 Specifying the database(s)

- On the **Select directories/files to restore** page, browse the tree, select the required databases, and then click **Next**.
  - To see the total size and number of files selected, select **Calculate amount**.

6.17.4.3 Specifying the restore destination

- On the **Specify Database Restore Location** page, select the restore destination, and then click **Next**.

6.17.4.4 Specifying restore options

- On the **Select Restore Options** page, make the required selections, and then click **Next**.

6.17.4.5 Specifying the reason for the restore

1. On the **Fill in the restore survey** page, click the **Restore reason** box and select the reason for this restore.
2. If the **Restore classification** box appears, click and make the appropriate selection.

   This only appears if the backup set is currently in a scheduled recovery drill period. For more information see Section 6.1.3.9, “Types of Restore Licenses in Recovery Drill Period”, on page 141.

   For more information, see the F1 help for this dialog box and Section 6.2.5.6, “Specifying the reason for the restore”, on page 164.
3. Click **Finish** to start the restore process.

6.18 VMware VADP backup sets (Windows or Linux)

6.18.1 About VMware VADP backup sets

A VMware VADP backup set uses the native VMware vSphere Storage APIs - Data Protection (VADP) when DS-Client performs backup and restore of the target virtual machines.

For more important information about VMware VADP backup sets, refer to the following Knowledge Base article in Section 15.14, “Backup / restore of VMware VADP backup sets”, on page 547.

6.18.2 Before you begin

Before creating a VMware VADP backup set, you must ensure that the following requirements are met as applicable:

- For application consistent backups, ensure that VMware Tools is installed on the guest operating system of the virtual machine.
- If an ESXi host is added with its DNS name to the vCenter Server, the DS-Client machine must be able to execute a name resolution for that ESXi host to back up or restore the virtual machines.
- If you plan to enable the Local DS-VDR option, you must have configured the Local DS-VDR Tool for the DS-Client. For more information, see Section 3.6, “Configuring the Local DS-VDR Tool”, on page 68.

6.18.3 Limitations for VMware VADP backup sets

The following limitations apply to VMware VADP backup sets:

- You cannot back up virtual machines that have **Fault Tolerance** turned on. For more information, see Section 15.14, “Backup of fault tolerant virtual machines”, on page 548.
- You cannot back up virtual machines with physical or virtual raw disk mapping (RDM) devices.
- Avoid running multiple clones with Local DS-VDR activities on the same virtual machine from the same or different Local DS-VDR Tools.
- Avoid scheduling or performing VMware VADP backup and VMware vSphere snapshot replication activities at the same time on the same vSphere virtual machine. Doing so can adversely affect the backup or replication process.

6.18.4 Using VMware transport libraries

This article applies to VMware VADP backup sets. The VMware transport libraries are included with DS-Client to allow VMware to take advantage of different 'transport modes' if supported by the VMware configuration.

- NBD/NBDSSL transport mode will be always be attempted if DS-Client **does not have** direct access to the VMware VMFS data store.
- HotAdd transport mode will be always be attempted if DS-Client **is running on a virtual machine** and **has** direct access to the VMware VMFS datastore over the FC / FCoE / iSCSI.
- SAN transport mode must be explicitly selected when restoring the backup set ("Use SAN with all disk types" option). It will work only if DS-Client **is running on a physical machine** and **has** direct access to the VMware VMFS datastore over the FC / FCoE / iSCSI.

For backup, DS-Client will automatically use the most efficient transport mode available.

Details

By default, DS-Client uses VADP and VDDK APIs to interact with the VMWare ESXi environment for backup and restore. The latest release (as of the revision date of this article) contains additional capabilities with the VMware transport libraries plug-in.

The following VMware Virtual Disk Transport Methods are available to speed up the backup and restore processes:

- NBD/NBDSSL (Network Block Device) transport mode
- SAN transport mode
- HotAdd transport mode

NBD/NBDSSL (Network Block Device) transport mode

The NBD/NBDSSL transport mode allows you to transfer backup and recovery data through the LAN when DS-Client is **running on a physical or virtual machine** and it **does not have direct access** to the VMware VMFS datastore through the FC / FCoE / iSCSI.

NBD/NBDSSL transport mode configuration description:

1. DS-Client runs on a physical or virtual machine.
2. Using the NBD/NBDSSL transport mode, DS-Client reads data where the .vmdk virtual disks are stored.

3. DS-Client accesses the VMFS data store and obtains the (CBT) changed blocks of the virtual machines.
4. All data is transferred over the LAN from the ESXi host to DS-Client.
5. DS-Client deduplicates, compresses and encrypts the virtual machines and sends them to DS-System.
6. DS-System stores the backed up virtual machines in the DS-System online storage.
7. For restores, the same DS-Client reads the backed up data from the DS-System Online Storage. DS-Client decompresses, decrypts and builds the virtual machine's disks from the backup data into its native '.vmdk' format.
8. DS-Client transfers the virtual machine's disks to the VMware ESXi storage through the LAN using the NBD/NBDSSL transport mode.
9. The virtual machines are now available to be turned on at any time.

SAN transport mode

The SAN (Storage Area Network) transfer mode allows you to transfer backup and recovery data through the SAN when the DS-Client is **running on a physical machine** and it **has direct access** to the VMware VMFS datastore through FC / FCoE / iSCSI.

SAN transport mode configuration description:

1. DS-Client runs on a physical machine.
2. Using the SAN transport mode, DS-Client reads data directly from the SAN storage where the .vmdk virtual disks are stored.
3. DS-Client accesses the VMFS data store and obtains the (CBT) changed blocks of the virtual machines.
4. No data is transferred through the LAN from the ESXi host to DS-Client.
5. DS-Client deduplicates, compresses and encrypts the virtual machines and sends them to DS-System.
6. DS-System stores the backed up virtual machines in the DS-System online storage at the Remote Offsite Data Center.
7. For restores, the same DS-Client reads the backed up data from the DS-System Online Storage. DS-Client decompresses, decrypts and builds the virtual machine's disks from the backup data into its native '.vmdk' format.
8. DS-Client transfers the virtual machine's disks to the VMware ESXi storage through the SAN using the SAN transport mode. No data is transferred from DS-Client to the ESXi host through the LAN.

9. The virtual machines are now available to be turned on at any time.

NOTE: When using this method, DS-Client automatically disables the CBT parameters in the virtual machine advanced settings when it is doing the restore process.

HotAdd transport mode

The HotAdd Transport Mode allows you to transfer backup and recovery data through the SAN when DS-Client is **running on a virtual machine** and it **has direct access** to the VMware VMFS data store through the FC / FCoE / iSCSI. This is supported only when the virtual machines that are being backed up are using SCSI virtual disks.

HotAdd transport mode configuration description:

1. DS-Client runs on a virtual machine.
2. Using the HotAdd transport mode, DS-Client reads data directly from the SAN storage where the .vmdk virtual disks are stored.
3. DS-Client accesses the VMFS data store and obtains the (CBT) changed blocks of the virtual machines
4. No data is transferred through the LAN from the ESXi host to DS-Client.
5. DS-Client deduplicates, compresses and encrypts the virtual machines and sends them to DS-System.
6. DS-System stores the backed up virtual machines in the DS-System online storage at the Remote Offsite Data Center.
7. For restores, the same DS-Client reads the backed up data from the DS-System Online Storage. DS-Client decompresses, decrypts and builds the virtual machine's disks from the backup data into its native '.vmdk' format.
8. DS-Client transfers the virtual machine's disks to the VMware ESXi storage through the SAN using the HotAdd transport mode. No data is transferred from the Remote DS-VDR to the ESXi host through the LAN.
9. The virtual machines are now available to be turned on at any time.

6.18.5 Creating a VMware VADP backup set

The following describes how to create a VMware VADP backup set.

1. On the **Sets** menu, click **New Backup Set**. The New Backup Set Wizard appears.
2. On the **Choose the kind of backup set** page, select **VMware VADP**, and then click **Next**.
3. On the **Select the computer** page, select the VMware VADP tree.
4. In the **Path** box, type the IP address of the VMware ESXi server or VMware vCenter Server. For Linux DS-Clients, type the path in the following format:

   ```
   VMware VADP\IP_Address
   ```

   For example:

   ```
   VMware VADP\12.34.56.111
   ```

   NOTE: When an ESXi host is managed by a vCenter Server, you must point to the IP address of the vCenter Server. You can point to the IP of an ESXi host only if the host is a standalone ESXi host that is not managed by a vCenter Server.

5. To specify credentials for the DS-Client to connect to the VMware ESXi server or VMware vCenter Server, ensure that the **Ask for Network Credentials** check box is selected.

   NOTE: If the **Ask for Network Credentials** check box is not selected, DS-Client uses your current user logon credentials to connect to the VMware ESXi server or VMware vCenter Server.

6. Click **Next**.
7. If the **Ask for Network Credentials** check box has been selected, when prompted, provide the credentials for the DS-Client to use to connect to the VMware ESXi server or VMware vCenter Server.

   F1 Help: Specify Credentials (Linux DS-Client)

   F1 Help: Specify Credentials (Windows DS-Client)

8. In the **Select directories/files for backup** page, select one or multiple virtual machines that you want to back up, and then click **Add**.

NOTE: If you plan to enable the Local DS-VDR option in this backup set, each virtual machine that you add will use up one count from the Local DS-VDR license that has been allocated to the DS-Client.

NOTE: For Windows DS-Clients, the VMware folder listings are cached when browsed for the first time in a DS-User session. To refresh the listing of the vCenter Server (for example, after the folder structure has been changed during the session), disconnect and reconnect to the DS-Client.

F1 Help: Select Items for Backup (Linux DS-Client)

9. Click **Next**.
10. In the **Specify backup item options** page, retain the default settings unless you have specific requirements for each backup item, and then click **Next**.

NOTE: If you plan to enable the Local DS-VDR option, the backup item generations (Max Gen) setting determines how many versions of a virtual machine will be exported to the vCenter Server. When this limit has been reached, the oldest exported virtual machine is overwritten at the next backup.

F1 Help: Set Properties - Items tab

F1 Help: Set Properties - Items tab (Linux DS-Client)

11. In the **Specify backup set options** page, do the following:

    F1 Help: Set Properties - Options tab

    F1 Help: Set Properties - Options tab (Linux DS-Client)

    a) Under **Backup set options**, configure the backup set options that you want to use for the backup set.

    b) Under **Additional Backup Set Options**, configure any additional backup set options that you want to use for the backup set.

    c) To enable the Local DS-VDR option, do the following:

        1. On the Windows DS-Client, select the **Use Local DS-VDR** check box. On the Linux DS-Client, select the **Use Local DS-VDR** check box, and then click **Next**.
        2. To save the virtual machine state (that is, the running programs that are loaded in the memory), select the **Backup Virtual Machine Memory** check box. If this check box is not selected, DS-Client will back up the virtual machine as if it were not running.

3. To export the actual running virtual machine and all its snapshots, select the **Backup Virtual Machine's snapshots** check box. If this check box is not selected, DS-Client will only export the actual running virtual machine without snapshots.

4. In the **Export to host** list, select the destination ESXi host on the vCenter Server to which you want to export the selected virtual machines. Then click **[>>]** to provide credentials for DS-Client to access the selected host.

5. In the **Export to datastore** list, select the datastore on the destination host to which you want to export the selected virtual machines.

d) Click **Next**.

12. In the **Specify notification options** page, specify the notification options that you need. For more instructions, see Section 6.2.3.8, "Specifying notification options", on page 153.

13. In the **Choose a retention rule for this backup set** page, specify the retention rule settings that you need. For more instructions, see Section 6.2.3.9, "Specifying a retention rule", on page 155.

14. In the **Choose a schedule for this backup set** page, select **Scheduled** and then select the schedule that you want to assign to this backup set. For more instructions, see Section 6.2.3.10, "Specifying a schedule", on page 155.

15. In the **Choose the name for this backup set** page, do the following:

    F1 Help: Choose the name for this backup set

    F1 Help: Choose the name for this backup set (Linux DS-Client)

    a) In the **Set name** box, type a name for this backup set. For more instructions, see Section 6.2.3.11, "Naming the backup set", on page 156.

    b) In the **Set type** list, specify the backup set type. For more information, see Section 6.1.1, "Backup set types", on page 112.

    c) To send a copy of the oldest generation that is about to be overwritten to the BLM Archiver, select the **BLM (Infinite Generation)** check box.

    d) To save the backup data to a specified location at the DS-Client site, do the following, select the **Save on Local Storage** check box.

    e) To cache backup data to Local Storage in the event that a backup session loses connection with the DS-System, select the **Transmission cache on Local Storage** check box.

    f) If you have selected the **Save on Local Storage** and/or **Transmission cache on Local Storage** check box, beside the **Local Storage Path** box, click **>>** and then do the following:

    F1 Help: Enter Local Storage Path

1. In the **Enter Local Storage Path** dialog box, determine whether the default location is appropriate.
2. To specify a different local storage path for this backup set, click **>>** and then select the location.
3. To save the local storage path, click **OK**.

g) To use the Multi-Tenant feature, in the **Customer** list, select a customer to assign to the backup set. For more information, see Section 12.5, “Multitenant DS-Clients”, on page 451.

NOTE: The **Customer** list is only available when the Multi-Tenant feature is enabled and configured. If you are a regular user, only the customers that have been assigned to you are displayed.

h) Click **Finish** to create the backup set.

6.18.6 Restoring a VMware VADP backup set

Steps that are similar to those for File system restores will only be briefly mentioned.

See important information for restoring VMware VADP backups in the Knowledge Base article in Section 15.14, “Backup / restore of VMware VADP backup sets”, on page 547.

6.18.6.1 Selecting the backup set

- Browse the Backup Sets tree, select the backup set to restore, and then on the **Restore** menu click **Restore Now**.

6.18.6.2 Specifying the VMware VADP restore level

- On the **Select restore level** page, select the type of VMware restore that you want to perform, and then click **Next**.
  - **VM-level Restore** - Select this option to restore an entire virtual machine. You can restore one or multiple virtual machines.

NOTE: To attempt to perform an incremental restore of the selected virtual machines, select **Attempt incremental restore**. This option only applies to the Linux DS-Client.

- **VM Disk-level Restore** (Linux DS-Client) - Select this option to restore individual virtual disks of one or multiple virtual machines.
- **File-level Restore** - Select this option to restore individual files or directories of one or multiple virtual machines.

  F1 Help: Select restore level (VMware VADP)

6.18.6.3 Specifying items to restore

- In the **Select directories/files to restore** page, do one of the following based on your selection in the previous page, and then click **Next**.
  - If you selected **VM-level Restore**, select a virtual machine. The color in which each virtual machine is displayed indicates the status of the backup generation that will be used for the restore:
    - Green indicates that the backup generation contains the expected number of virtual disks.
    - Red indicates that the backup generation does not contain the expected number of virtual disks.

    If the entire virtual machine is not available to be restored from the backup period selected, the item is unavailable for you to select. To view the backup period that has been selected, click **Advanced**.

    NOTE: Unless you click **Advanced** and specify a different generation, the status is determined based on the most recent backup generation of the virtual machine.

  - If you selected **VM Disk-level Restore** (Linux DS-Clients), browse the tree, select a virtual machine, click **Show Files** to view the *.vmdk files in each folder, and then select individual virtual disks from the list.
  - If you selected **File-level Restore**, browse the tree, select an individual directory, click **Show Files**, and select individual files from the list.

    NOTE: System DLL files are not supported with the File-level Restore option. In some instances, the size of these files might be displayed as zero.

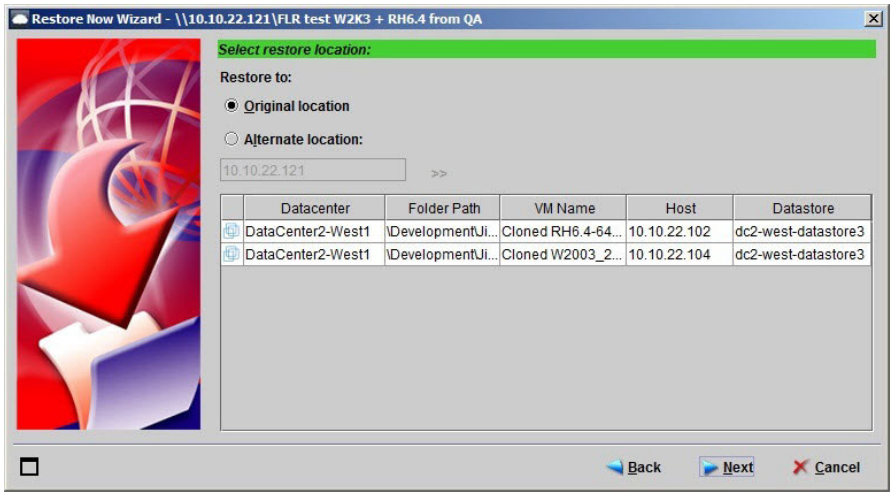
  F1 Help: Select directories / files (Restore / BLM / Delete / Validation)

6.18.6.4 Specifying the restore destination

- On the Select Restore Location page, select the restore destination, and then click **Next**.

- **Original location –** This option is selected by default. Data will be restored to the original backup source location(s).
- **Alternate location –** For more information, see Section 6.18.6.7, “Restoring VMware VADP data to an alternate location”, on page 279.

NOTE: File-level restores always restore to an alternate location. In this case, the next steps are similar to a online File system backup set. When you click **Next**, you will be directed to the **Select Restore Reason** page. (For more information, see Section 6.2.5.6, “Specifying the reason for the restore”, on page 164.)



F1 Help: Select restore location

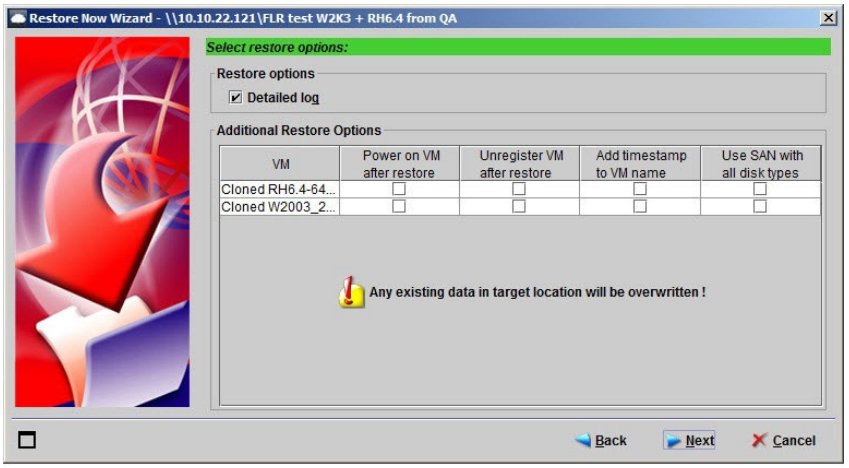
6.18.6.5 Specifying restore options

- On the **Select Restore Options** page, make the required selections, and then click **Next**.

  Depending on your restore selection, some of these additional restore options can appear:

  - **Power on VM after restore –** Starts the virtual machine if it is successfully restored.
  - **Unregister VM after restore –** After successful restore, the virtual machine will be unregistered from the vCenter Server.
  - **Add time stamp to VM name –** Appends the restore time to the end of the virtual machine’s name. For example, `SampleVM` would be restored as `SampleVM_(yyyy-mm-dd-hh:mm:ss)` when you view it from the vCenter Server.

- **Use SAN with all disk types –** If this option is selected and the configuration supports this option, DS-Client will try to restore the virtual machine using SAN transport mode. For more information, see the Knowledge Base article in Section 15.15, “VMware transport libraries”, on page 553.



F1 Help: Select restore options (VMware VADP on Windows DS-Client)

6.18.6.6 Specifying the reason for the restore

1. In the **Fill in the restore survey** page, click the **Restore reason** box and select the reason for this restore.
2. If the **Restore classification** box appears, click and make the appropriate selection.

   This only appears if the backup set is currently in a scheduled recovery drill period. For more information see Section 6.1.3.9, “Types of Restore Licenses in Recovery Drill Period”, on page 141.

   For more information, see the F1 help for this dialog box and Section 6.2.5.6, “Specifying the reason for the restore”, on page 164.
3. Click **Finish** to start the restore process.

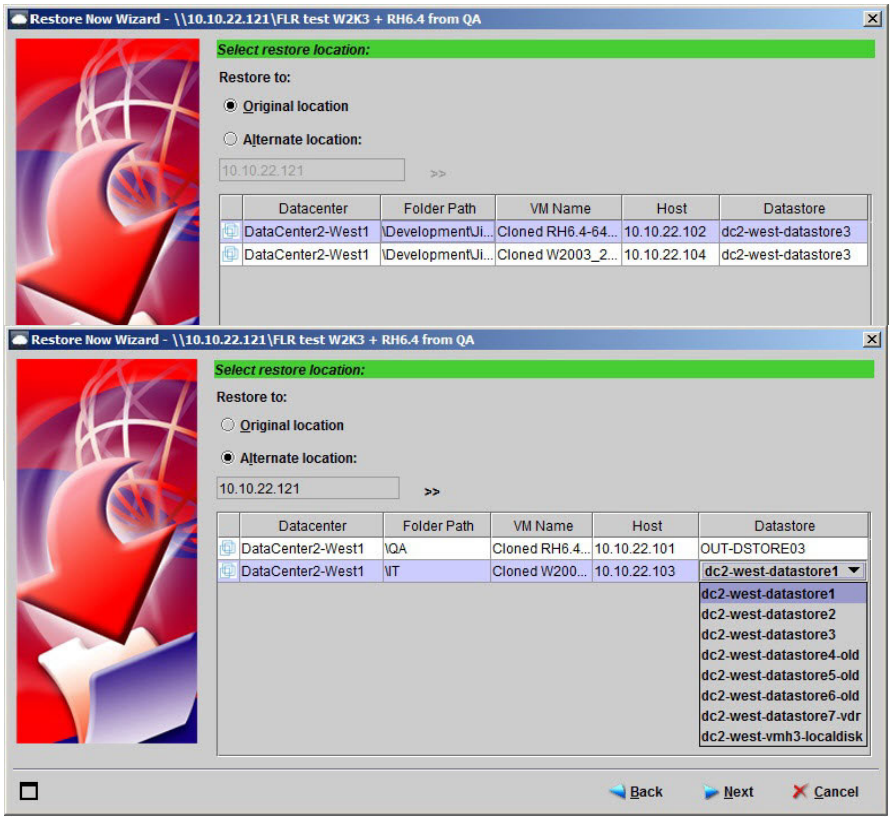
6.18.6.7 Restoring VMware VADP data to an alternate location

To select an alternate location as the restore destination for a VMware VADP backup set, follow these steps:

1. Browse the Backup Sets tree, select the backup set to restore, and then on the **Restore** menu click **Restore Now**.
2. On the **Restore Now Wizard**, perform all necessary steps to specify the items to be restored. See Section 6.2.5.2, “Selecting the items to restore”, on page 159.

3. On the **Select Restore Location** page, select **Alternate Location**.

   The **Alternate Location** options become available.



4. Click **>>** to select a different destination location.

   For Linux DS-Client, the **Select Alternate Location** dialog box appears.

   For Windows DS-Client, the **Select Alternate Server** dialog box appears.

5. Provide the applicable details to specify the destination location:

   - For Linux DS-Client:

     a) Click the VMware VADP icon to type the prefix for the path field.

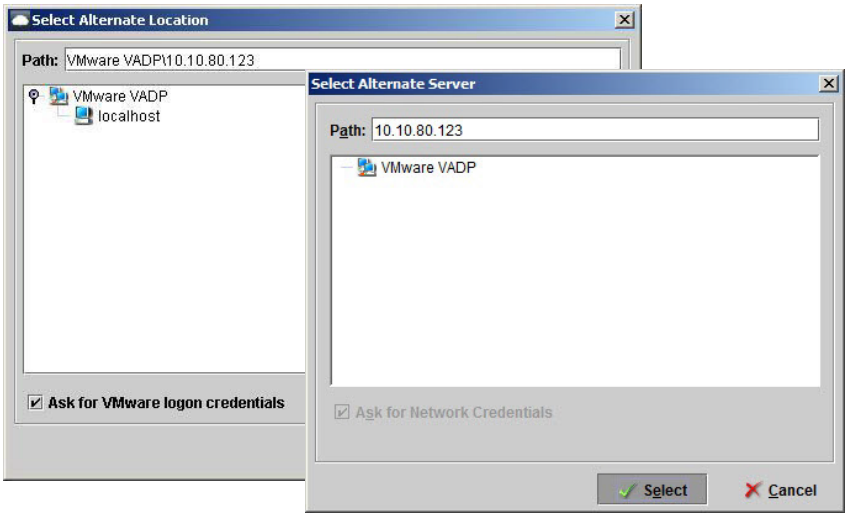
     b) In the **Path** box, type the IP address of either a VMware vCenter Server or a VMware ESXi host in the following format, and then click **Select**: VMware VADP\IP_Address

     c) When prompted, type the VMware logon credentials, and then click **OK**.

   - For Windows DS-Client:

     a) Type the IP address in the **Path** box.

     b) When prompted, type the VMware logon credentials, and then click **OK**.



6. On the **Select Restore Location** page, for each item selected for restore, select the target restore location for it:

   - VM-level Restore to an Alternate Location (Linux and Windows)

     There are various selections you can make to specify the target restore location. The availability of selections depends on the **Destination** server or host (IP address) you have specified.

     For example, if multiple Datastores are associated with the ESXi host you have specified, you will be able to select from multiple Datastores. Or if only one Host belongs to the vCenter Server that you have specified, you will be able to select from only one Host.

   - VM Disk-level Restore to an Alternate Location (Linux only)

     There are various selections you can make to specify the target restore location to which you want to append the restored disk. The availability of selections depends on the Destination server or host (IP address) you have specified.

     For example, if multiple Datastores are associated with the ESXi host that you have specified, you will be able to select from multiple Datastores.

When restoring to a vCenter Server as an Alternate Location		
What you can specify at the target restore location	**VM-level Restore (Linux & Windows)**	**VM Disk-level Restore (Linux only)**
Select a **Datacenter**	Y	Y
Specify the **Folder Path**	Y	Y
See the **VM Name** (virtual machine name)	Y	—
Rename the **VM Name** (virtual machine name), if required	Y	—
Select a **Virtual Disk**	—	Y

Select a **Host**	Y	Y
Select a **Datastore**	Y	Y

7. In the **Select Restore Location** page, click **Next** when you have specified the target restore location for all items.

   The following provides information on subsequent wizard pages:

   - **Select Restore Performance Options** page: Section 6.2.5.4, “Specifying performance options (Windows DS-Client)”, on page 162.
   - **Select Restore Options** page: Section 6.2.5.5, “Specifying restore options”, on page 163.
   - **Select Restore Reason** page: Section 6.2.5.6, “Specifying the reason for the restore”, on page 164.

8. In the **Select Restore Reason** page, click **Finish** to start the restore.

6.19 VSS-aware backup sets (Windows)

IMPORTANT: When creating a VSS-aware backup set, the source database cannot reside on an SMB remote share as this is currently not supported and can result in VSS snapshot failure.

6.19.1 About VSS-aware backup sets

VSS-aware backup sets use the target backup computer’s Microsoft VSS (Volume Shadow Copy Service) components to perform online backup. This kind of backup set is available in Windows DS-Clients only.

VSS-aware backup sets can be created for the following server types:

- Microsoft Exchange Server
- Microsoft Hyper-V Server (standalone or cluster)
- Microsoft SharePoint Server
- Microsoft SQL Server

6.19.1.1 Database backup policy for VSS-aware backup sets

The database **Incremental backup** and/or **Differential backup** options are available in the **Backup Set Options** section, if the target server supports this feature. These are the same options as for online Microsoft SQL Server backup sets. For VSS-aware backup sets, the **Database Backup Policy** options appear

for supported Microsoft SQL Servers, Microsoft Exchange Servers, and Microsoft SharePoint Servers. The Hyper-V backup policy options appear for Microsoft Hyper-V Servers (standalone and cluster).

For more information on database backup policy options, see the Knowledge Base article in Section 15.4, “Backup / restore of Microsoft SQL Server (all versions)”, on page 511.

For more information on Microsoft Hyper-V backup policy options, see the Knowledge Base article in Section 15.19, “Backup / restore of Microsoft Hyper-V Server (VSS-aware) backup sets”, on page 574.

6.19.1.2 Retention rules for VSS-aware backup sets

An additional retention category applies to VSS-aware backup sets only (Component data integration options).

Component data integration options: For an explanation, see the F1 Help for the Retention Rule Settings dialog box. (Retention Rule Wizard - Choose Retention Settings)

6.19.2 Creating a Microsoft Exchange Server (VSS-aware) backup set

This section describes how to create a Microsoft Exchange Server (VSS-aware) backup set in a standalone or database availability group (DAG) configuration.

IMPORTANT: To back up and restore a DAG, you must configure DNS on the DS-Client computer. Ensure the domain controller and all DAG nodes can be accessed through their fully qualified domain name (FDQN) from the DS-Client computer.

NOTE: DS-Client supports the migration of standalone Microsoft Exchange Server backup sets to DAG backup sets. It does not support the migration from DAG to standalone.

For more information, see the Knowledge Base article in Section 15.18, “Backup / Restore of Microsoft Exchange Server (VSS-aware) backup sets”, on page 561.

To create a Microsoft Exchange Server (VSS-aware) backup set:

1. On the **Sets** menu, click **New Backup Set**. The New Backup Set Wizard appears.
2. On the **Choose the kind of backup set** page, select **VSS-aware Backup Set** and then click **Next**.

3. On the **Select the VSS-aware backup set type** page, select **Microsoft Exchange Server**, and then click **Next**.

   F1 Help: Select the VSS-aware backup set type

4. On the **Select the computer** page, do the following:

   a) In the **Path** box, type the IP address or DNS name of the Microsoft Exchange Server. For DAG, this can be any of the mail server nodes.

   NOTE: By default, DS-Client uses your current user credentials to connect to the selected computer.

   b) To specify alternate logon credentials, select the **Ask for Network Credentials** check box.

   c) Click **Next**.

   NOTE: If you have selected **Ask for Network Credentials**, the **Enter Network Credentials** dialog box appears. Type the credentials and then click **OK**.

5. On the **Specify Database Availability Group (DAG) options** page, do one of the following:

   - If you are backing up a Microsoft Exchange Server that is not in a DAG configuration, the **Back up individual mail server node** option is selected by default. Click **Next**.
   - If you are backing up a Microsoft Exchange Server that is in a DAG configuration, wait for the DS-Client to return the DAG server information and then, do one of the following:
     - To back up only the node at the specified location, select the **Back up individual mail server node** option.
     - To back up the DAG, select the **Back up entire Database Availability Group** option, and then do one of the following:
       – To back up the active databases in the DAG, select the **Back up active databases** option, and then click **Next**.
       – To back up the passive databases in the DAG, select the **Back up passive databases** option. To reorder the backup priority, select a mail server node from the list, and then click **Move Up** or **Move Down** (the first item has the highest priority), and then click **Next**.

   F1 Help: Database Availability Group (DAG) options

6. On the **Select the components to backup** page, browse the VSS components list, select the required databases, and then click **Add**. Click **Next**.

F1 Help: Select Items for Backup Set

NOTE: To back up the entire Microsoft Exchange Server, select **Microsoft Information Store**, and then click **Add**.

7. On the **Specify backup item options** page, retain the default settings unless there are specific generation or option requirements for each backup item, and then click **Next**.

   F1 Help: Set Properties - Items tab

8. On the **Specify backup set options** page, retain the default settings unless there are specific backup set requirements, and then click **Next**.

   F1 Help: Set Properties - Options tab (Windows database backup sets)

9. On the **Specify backup set performance options** page, retain the default settings unless there are specific backup set requirements, and then click **Next**.

   F1 Help: Set Properties - Performance tab (Windows DS-Client)

10. On the **Specify notification options** page, retain the default settings unless there are specific backup set requirements, and then click **Next**.

    F1 Help: Set Properties - Notification tab

11. On the **Choose a retention rule for this backup set** page, retain the default settings unless there are specific backup set requirements, and then click **Next**.

    F1 Help: Set Properties - Retention tab

12. On the **Choose a schedule for this backup set** page, retain the default settings unless there are specific backup set requirements, and then click **Next**.

    F1 Help: Schedule Tab

13. On the **Choose the name for this backup set** page, retain the default settings unless there are specific backup set requirements, and then click **Finish**.

    F1 Help: Choose the name for this backup set

6.19.3 Creating a Microsoft Hyper-V Server or Cluster Hyper-V (VSS-aware) backup set

For more information, see the Knowledge Base article in Section 15.19, “Backup / restore of Microsoft Hyper-V Server (VSS-aware) backup sets”, on page 574.

NOTE: Avoid scheduling or performing VSS-aware backup and Microsoft Hyper-V checkpoint replication activities at the same time on the same Hyper-V virtual machine. Doing so can adversely affect the backup or replication process.

To create a Microsoft Hyper-V Server or Cluster Hyper-V (VSS-aware) backup set:

1. On the **Sets** menu, click **New Backup Set**. The New Backup Set Wizard appears.
2. On the **Choose the kind of backup set** page, select **VSS-aware Backup Set**, and then click **Next**.
3. On the **Select the VSS-aware backup set type** page, select **Microsoft Hyper-V** or **Cluster Hyper-V**.

   F1 Help: Select the VSS-aware backup set type
4. Click **Next**.
5. On the **Select the computer** page, select the computer where the backup target is located. If the name resolution to IP address is not functional, create the backup set by typing the IP address in the **Path** field.

   IMPORTANT: A Microsoft Cluster Hyper-V backup set requires the selection of Cluster Virtual Node by IP address.

   By default, DS-Client uses the current user’s logon credentials to connect to the selected computer.
6. To specify alternate logon credentials, select **Ask for Network Credentials**.
7. Click **Next**.
   a) If you have selected **Ask for Network Credentials**, the **Enter Network Credentials** dialog box appears.
   b) (If applicable) Type the credentials to the target computer, and then click **OK**.
8. On the **Select the components to backup** page, browse the VSS components list, select the required databases, and then click **Add**.

   F1 Help: Select Items for Backup Set
9. Click **Next**.

10. On the **Specify backup item options** page, retain the default settings unless there are specific generation or option requirements for each backup item, and then click **Next**.

    F1 Help: Set Properties - Items tab

11. On the **Specify backup set options** page, retain the default settings unless there are specific backup set requirements, and then click **Next**.

    F1 Help: Set Properties - Options tab (Windows database backup sets)

12. On the **Specify backup set performance options** page, retain the default settings unless there are specific backup set requirements, and then click **Next**.

    F1 Help: Set Properties - Performance tab (Windows DS-Client)

13. On the **Specify notification options** page, retain the default settings unless there are specific backup set requirements, and then click **Next**.

    F1 Help: Set Properties - Notification tab

14. On the **Choose a retention rule for this backup set** page, retain the default settings unless there are specific backup set requirements, and then click **Next**.

    F1 Help: Set Properties - Retention tab

15. On the **Choose a schedule for this backup set** page, retain the default settings unless there are specific backup set requirements, and then click **Next**.

    F1 Help: Schedule Tab

16. On the **Choose the name for this backup set** page, retain the default settings unless there are specific backup set requirements, and then click **Finish**.

    F1 Help: Choose the name for this backup set

6.19.4 Creating a Microsoft SharePoint Server (VSS-aware) backup set

For more information, see the Knowledge Base article in Section 15.20, “Backup / restore of Microsoft SharePoint Server (VSS-aware) backup sets”, on page 580.

NOTE: The VSS-aware backup set type does not support backup of Microsoft SharePoint Servers configured with RBS - Remote BLOB (Binary Large Objects) Storage. Microsoft’s VSS writers are not able to access remote BLOB data files. To backup Microsoft SharePoint Servers configured with RBS, use the ‘classic’ Microsoft SQL Server backup set type (with VDI).

To create a Microsoft SharePoint Server (VSS-aware) backup set:

1. On the **Sets** menu, click **New Backup Set**. The New Backup Set Wizard appears.
2. On the **Choose the kind of backup set** page, select **VSS-aware Backup Set**, and then click **Next**.
3. On the **Select the VSS-aware backup set type** page, select **Microsoft SharePoint Server**.

   F1 Help: Select the VSS-aware backup set type
4. Click **Next**.
5. On the **Select the computer** page, select the computer where the backup target is located. If the name resolution to IP address is not functional, create the backup set by typing the IP address in the **Path** field.

   By default, DS-Client uses the current user's logon credentials to connect to the selected computer.
6. To specify alternate logon credentials, select **Ask for Network Credentials**.
7. Click **Next**.

   a) If you have selected **Ask for Network Credentials**, the **Enter Network Credentials** dialog box appears.

   b) (If applicable) Type the credentials to the target computer, and then click **OK**.
8. On the **Select the components to backup** page, browse the VSS components list, select the required databases, and then click **Add**.

   F1 Help: Select Items for Backup Set
9. Click **Next**.
10. On the **Specify backup item options** page, retain the default settings unless there are specific generation or option requirements for each backup item, and then click **Next**.

    F1 Help: Set Properties - Items tab
11. On the **Specify backup set options** page, retain the default settings unless there are specific backup set requirements, and then click **Next**.

    F1 Help: Set Properties - Options tab (Windows database backup sets)
12. On the **Specify backup set performance options** page, retain the default settings unless there are specific backup set requirements, and then click **Next**.

    F1 Help: Set Properties - Performance tab (Windows DS-Client)
13. On the **Specify notification options** page, retain the default settings unless there are specific backup set requirements, and then click **Next**.

F1 Help: Set Properties - Notification tab

14. On the **Choose a retention rule for this backup set** page, retain the default settings unless there are specific backup set requirements, and then click **Next**.

    F1 Help: Set Properties - Retention tab

15. On the **Choose a schedule for this backup set** page, retain the default settings unless there are specific backup set requirements, and then click **Next**.

    F1 Help: Schedule Tab

16. On the **Choose the name for this backup set** page, retain the default settings unless there are specific backup set requirements, and then click **Finish**.

    F1 Help: Choose the name for this backup set

6.19.5 Creating a Microsoft SQL Server (VSS-aware) backup set

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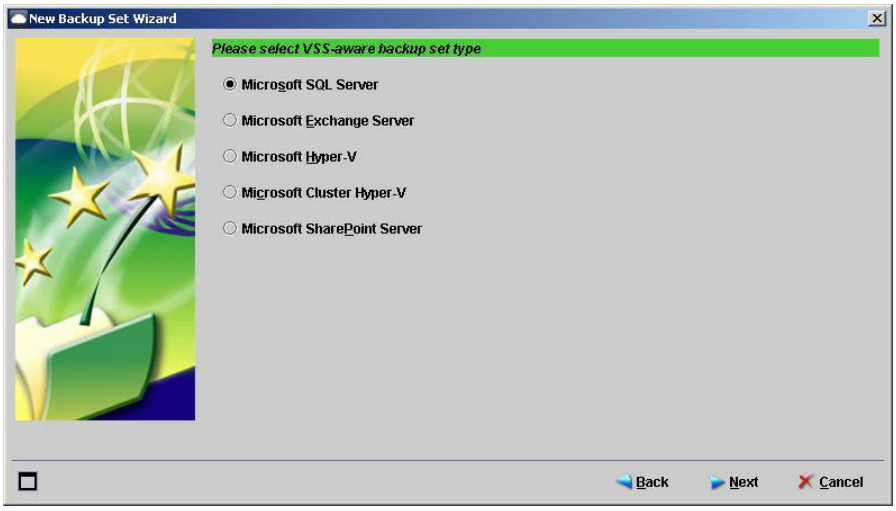
NOTE: If you plan to integrate a Microsoft SQL Server backup set with Nimble Storage, see the section on Nimble integration in the Knowledge Base article Section 15.17, “Backup / restore of Microsoft SQL Server (VSS-aware) backup sets”, on page 555.

To create a Microsoft SQL Server (VSS-aware) backup set:

1. On the **Sets** menu, click **New Backup Set**. The New Backup Set Wizard appears.
2. On the **Choose the kind of backup set** page, select **VSS-aware Backup Set**, and then click **Next**.
3. On the **Select the VSS-aware backup set type** page, select **Microsoft SQL Server**.



F1 Help: Select the VSS-aware backup set type

4. Click **Next**.
5. On the **Select the computer** page, select the computer where the backup target is located. If the name resolution to IP address is not functional, create the backup set by typing the IP address in the **Path** field.

NOTE: If the Microsoft SQL Server is running on a remote machine or the DS-Client is running in a Docker container, you might need to add the Microsoft SQL Server IP address and host name to the hosts file on the DS-Client. The default path is: `C:\Windows\System32\drivers\etc\hosts`

By default, DS-Client uses the current user's logon credentials to connect to the selected computer.

NOTE: To create a backup set of a Microsoft SQL Server Always On Availability Group, type the name or IP address of the Availability Group Listener.

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6. To specify alternate logon credentials, select **Ask for Network Credentials**.
7. Click **Next**.
   a) If you have selected **Ask for Network Credentials**, the **Enter Network Credentials** dialog box appears.
   b) (If applicable) Type the credentials to the target computer, and then click **OK**.
8. On the **Select the components to backup** page, browse the VSS components list, select the required databases, and then click **Add**.

   F1 Help: Select Items for Backup Set

9. Click **Next**.
10. On the **Specify backup item options** page, retain the default settings unless there are specific generation or option requirements for each backup item, and then click **Next**.

    F1 Help: Set Properties - Items tab
11. On the **Specify backup set options** page, retain the default settings unless there are specific backup set requirements, and then click **Next**.

    F1 Help: Set Properties - Options tab (Windows database backup sets)
12. On the **Specify backup set performance options** page, retain the default settings unless there are specific backup set requirements, and then click **Next**.

    F1 Help: Set Properties - Performance tab (Windows DS-Client)
13. On the **Specify notification options** page, retain the default settings unless there are specific backup set requirements, and then click **Next**.

    F1 Help: Set Properties - Notification tab

NOTE: A VSS-aware backup set of a Microsoft SQL Server's 'master' database does not support the 'Full+Differential' database backup policy.

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14. On the **Choose a retention rule for this backup set** page, retain the default settings unless there are specific backup set requirements, and then click **Next**.

    F1 Help: Set Properties - Retention tab
15. On the **Choose a schedule for this backup set** page, retain the default settings unless there are specific backup set requirements, and then click **Next**.

    F1 Help: Schedule Tab
16. On the **Choose the name for this backup set** page, retain the default settings unless there are specific backup set requirements, and then click **Finish**.

    F1 Help: Choose the name for this backup set

6.19.6 Restoring a VSS-aware backup set

Steps that are similar to those for File system restores will only be briefly mentioned.

See important information for restoring VSS-aware backups in these Knowledge Base articles:

- Section 15.17, "Backup / restore of Microsoft SQL Server (VSS-aware) backup sets", on page 555

- Section 15.18, “Backup / Restore of Microsoft Exchange Server (VSS-aware) backup sets”, on page 561
- Section 15.19, “Backup / restore of Microsoft Hyper-V Server (VSS-aware) backup sets”, on page 574
- Section 15.20, “Backup / restore of Microsoft SharePoint Server (VSS-aware) backup sets”, on page 580

6.19.6.1 Selecting the backup set

- Browse the Backup Sets tree and select the backup set to restore. On the **Restore** menu, click **Restore Now**.

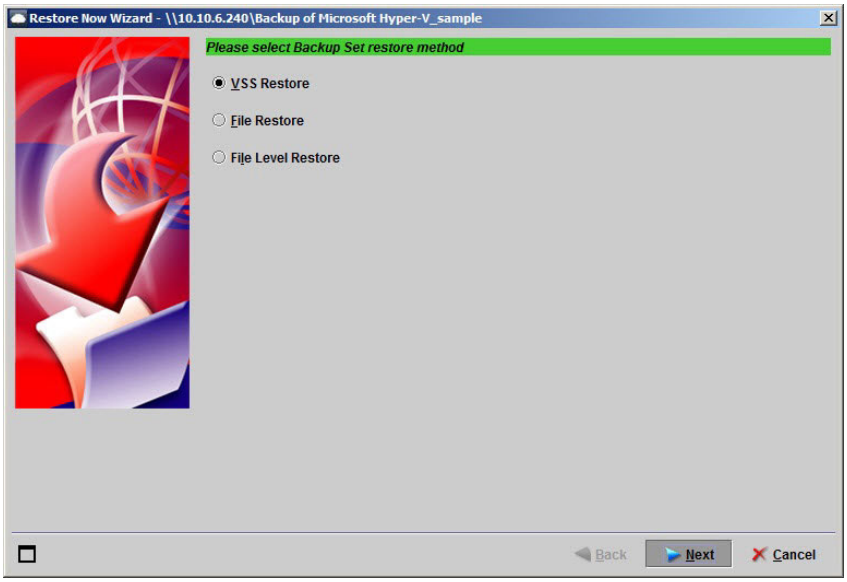
6.19.6.2 Specifying the VSS restore method

- On the **Select the restore method** page, select the required VSS restore method, and then click **Next**:
  - **VSS Restore** performs an online restore of the selected backup session to the original backup source (or alternate location) using the destination computer’s Microsoft VSS tools.
  - **Database Restore** performs an online restore of the selected backup session to the original backup source (or alternate location). This option is only available for Microsoft SQL Server (VSS-aware) backup sets.

    IMPORTANT: Before you restore a database of an Always On Availability Group, you must remove the target database from the Availability Group. After the restore, you can add the database back to the Availability Group.

  - **File Restore** allows you to selectively restore individual files from a backup session. This is a pure file restore, which is useful with the corresponding Microsoft SQL Server, Microsoft Exchange Server, or Microsoft SharePoint Server management tools.
  - **File Level Restore** is available for Microsoft Hyper-V Server and Microsoft Hyper-V Server Cluster backup sets that were backed up with the **Use FLR** option. This allows restores of individual files that were on the virtual machine’s virtual disk(s).
  - **Granular Restore** applies to Microsoft Exchange Server and Microsoft SharePoint Server.

    NOTE: When performing a granular restore of a Microsoft SharePoint Server (VSS-aware) backup set to restore items from a SharePoint site's list, checked out items are checked in during the restore process.



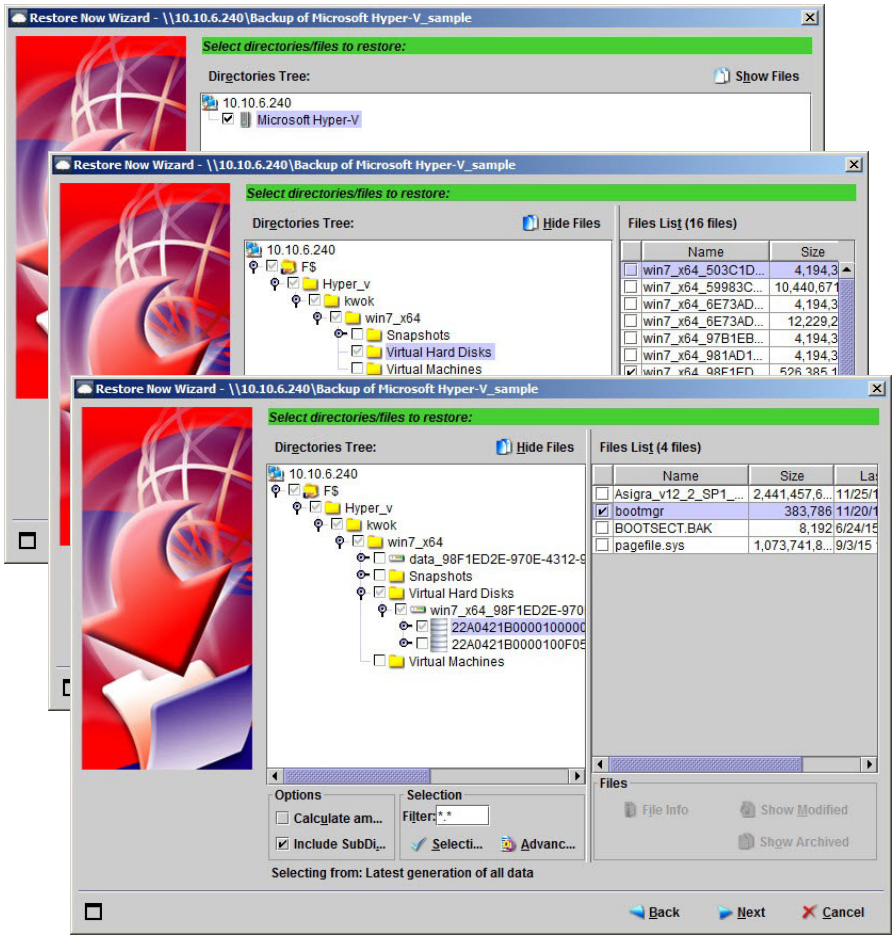
F1 Help: Select the Restore Method

6.19.6.3 Specifying items to restore

This dialog box displays options and features relevant to the VSS-aware restore method you have selected (VSS Restore, Database Restore, File Restore, Granular Restore, or File Level Restore).

- Browse the tree, select the required items, and then click **Next**. For more information see the F1 help for this dialog box.

  F1 Help: Select directories / files (Restore / BLM / Delete / Validation)



6.19.6.4 Specifying the restore destination

- On the **Select Restore Location** page, select the restore destination, and then click **Next**.
  - **Original location** — This option is selected by default. Data will be restored to the original backup source location(s).
  - **Alternate location** — For more information, see Section 6.19.6.8, “Restoring VSS-aware data to an alternate location”, on page 295.

6.19.6.5 Specifying performance options

On the **Select restore performance options** page, the special performance options are intended for large backup sets in high performance environments.

- For typical use, keep DS-Client’s default settings, and then click **Next**.

  More information in F1 help: Select Restore Performance Options (Windows DS-Client)

6.19.6.6 Specifying restore options

- On the **Select Restore Options** page, make the required selections, and then click **Next**.

  F1 Help: Select restore options (VSS-aware restores)

IMPORTANT: When performing a restore of a Microsoft Exchange Server in a DAG configuration, you must know if the backup set is configured to back up the active databases or passive databases, and chose the same method for restore.

6.19.6.7 Specifying the reason for the restore

1. On the **Fill in the restore survey** page, make the following selections as required:

   - In the **Restore reason** drop-down list, select the reason for this restore.
   - If the **Restore classification** drop-down list appears, make the appropriate selection. For important information see Section 6.1.3.9, “Types of Restore Licenses in Recovery Drill Period”, on page 141.

   For more information, see the F1 help for this dialog box and Section 6.2.5.6, “Specifying the reason for the restore”, on page 164.

   F1 Help: Select Restore Reason

2. Click **Finish** to start the restore.

6.19.6.8 Restoring VSS-aware data to an alternate location

VSS-aware backup sets are available in Windows DS-Clients. These backup sets use the Microsoft VSS (Volume Shadow Copy Service) writers on the target backup / restore computer to perform backup and restore.

You can perform an alternate location restore for the following VSS-aware backup sets:

- Microsoft SQL Server
- Microsoft Exchange Server

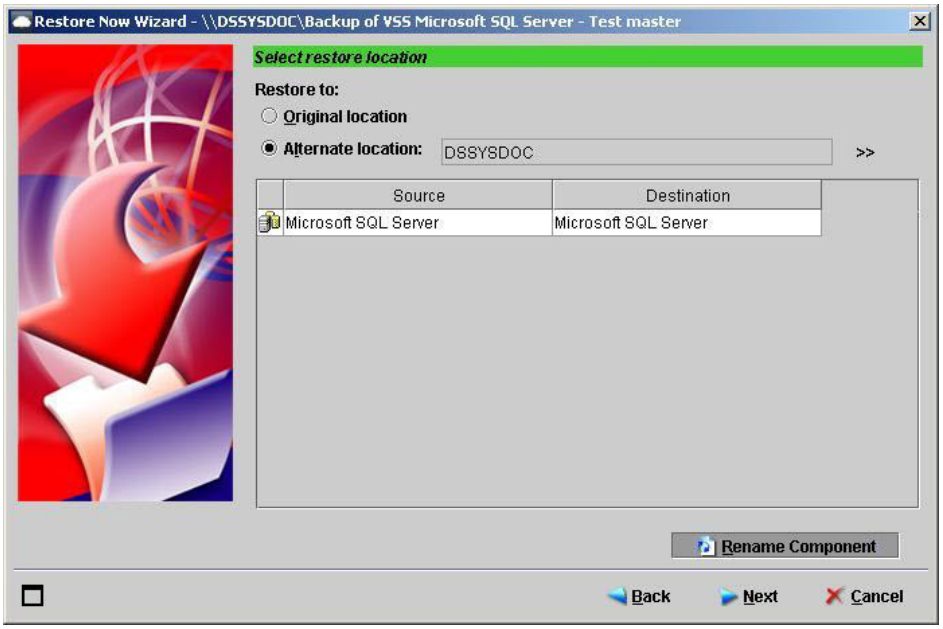
NOTE: When restoring a Microsoft SQL Server (VSS-aware) backup set to an alternate location, the destination must have the same instance name as the source.

Before restoring a VSS-aware backup set, see important information in the following KB articles:

- Section 15.17, “Backup / restore of Microsoft SQL Server (VSS-aware) backup sets”, on page 555
- Section 15.18, “Backup / Restore of Microsoft Exchange Server (VSS-aware) backup sets”, on page 561

NOTE: Alternate location restore is not supported for VSS-aware Hyper-V or VSS-aware SharePoint Server backup sets.

If you are restoring a VSS-aware backup set to an alternate location, the option **Rename Component** is available and allows you to rename individual components that are being restored, if necessary.



F1 Help: Select restore location

To select an alternate location as the restore target for a VSS-aware backup set, follow these steps:

1. Browse the Backup Sets tree, select the backup set to restore, and then on the **Restore** menu click **Restore Now**. The Restore Now Wizard appears.
2. On the **Select directories/files to restore** page, perform all necessary steps to select the items to restore. See Section 6.2.5.2, “Selecting the items to restore”, on page 159.
3. On the **Select Restore Location** page, select **Alternate Location**.

   The **Alternate Location** options become available.
4. Click **>>** to select a different target location.

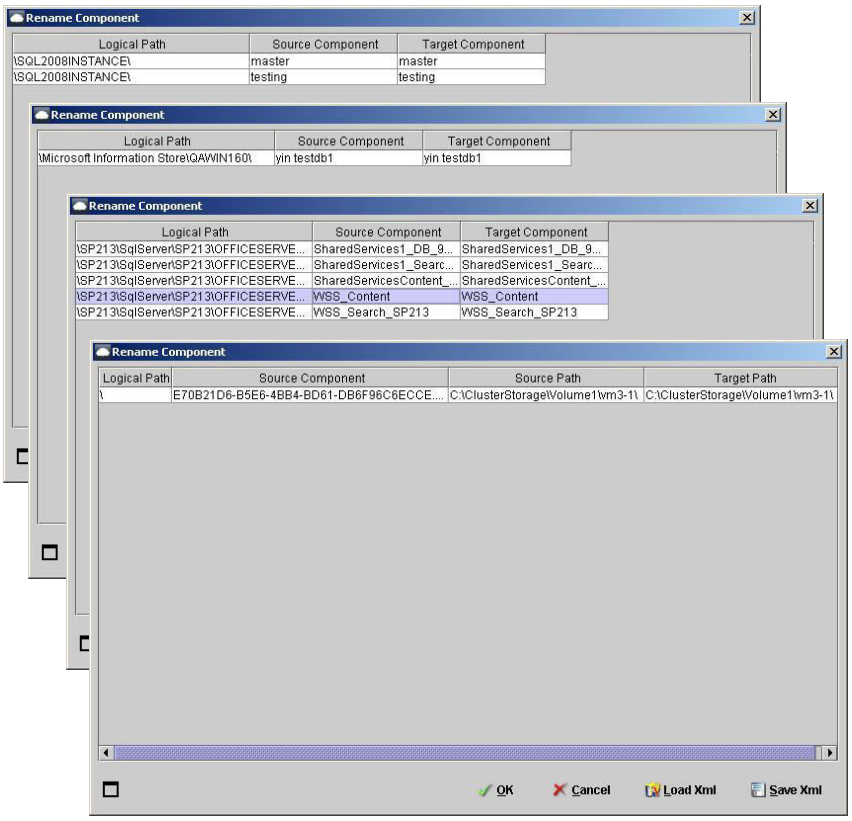
5. If required, click **Rename Component** to rename individual components that are being restored to the alternate location.

   The **Rename Component** dialog box opens.

   a) Click the **Target Component** cell of the component you want to rename.

      F1 Help: Rename Component

   b) Type the required name, and then click **OK**.



6. On the **Select Restore Location** page, click **Next**.

7. On the **Select Restore Performance Options** page, make your selections, and then click **Next**.

   - For more information about the options on this page, see Section 6.2.5.4, “Specifying performance options (Windows DS-Client)”, on page 162.

8. On the **Select Restore Options** page, make your selections, and then click **Next**.

   - For more information about the options on this page, see Section 6.2.5.5, “Specifying restore options”, on page 163.

9. On the **Select Restore Reason** page, make your selections, and then click **Finish** to start the restore.

   - For more information about the options on this page, see Section 6.2.5.6, “Specifying the reason for the restore”, on page 164.

7 Managing backup sets

This section contains instructions for working with backup sets.

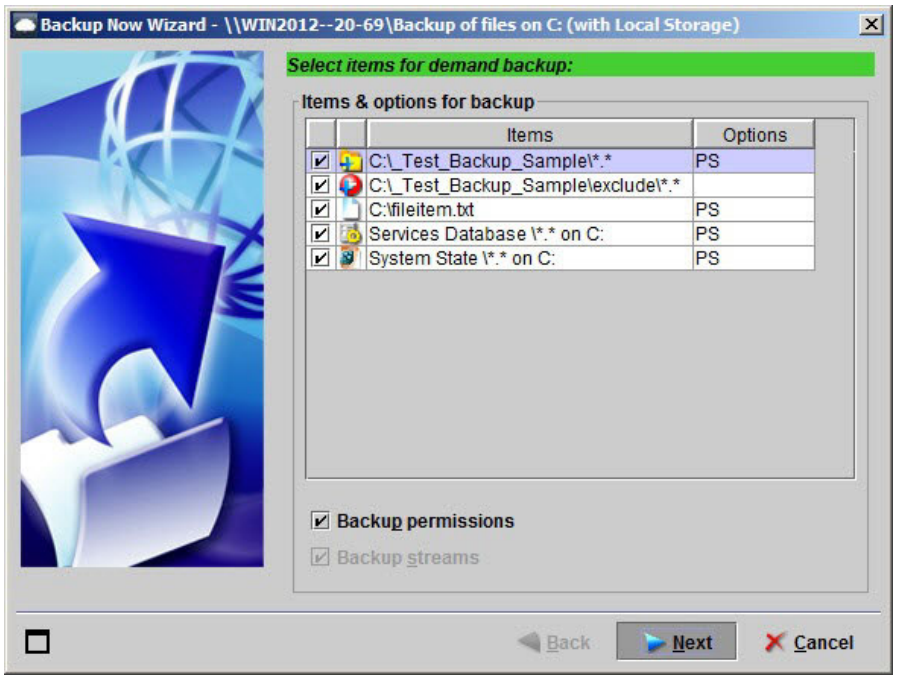
7.1 Performing an on-demand backup

The system is designed to perform unattended backups at scheduled intervals. In some instances, you might want to back up certain files on demand outside of a schedule. This section provides information on how to perform such on-demand backups.

NOTE: Another type of backup that you can perform outside of a schedule is called initial backup. For more information, see Section 12.1, “Initial backups”, on page 421 in Chapter 12, “Using premium backup and recovery services”.

You can perform on-demand backups at any time. The options available depend on the kind of backup set.

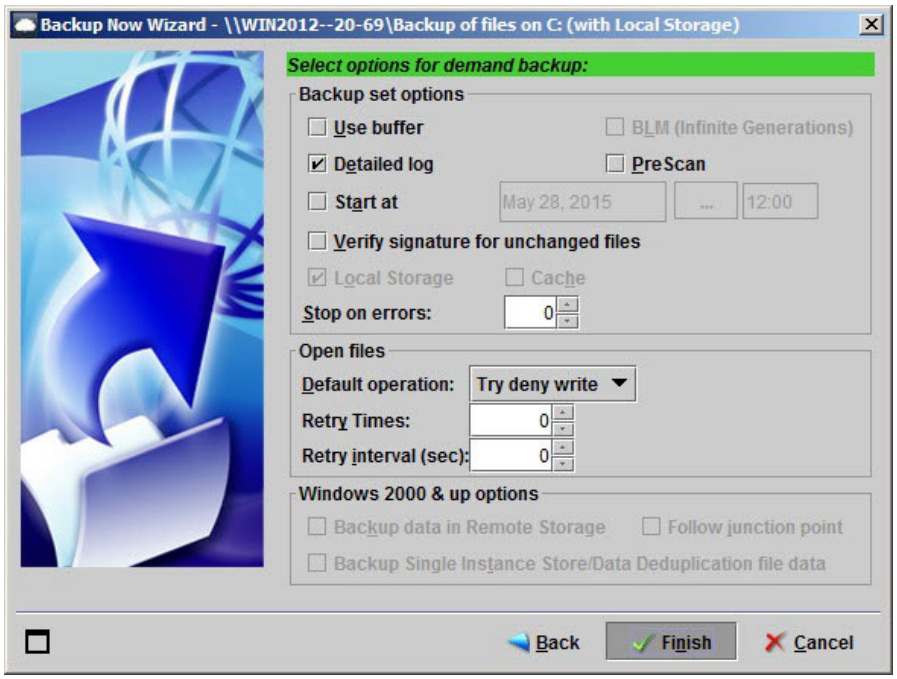
1. Browse the Backup Sets tree, select the required backup set, and on the **Backup** menu, click **Backup Now**. The Backup Now Wizard appears.
2. On the **Select items for on-demand backup** page, clear or select individual items as required for this on-demand backup session.



F1 Help: Select items for demand backup

3. To modify the options for individual selected items, select an item in the list, select or clear any options as required, and then click **Next**.

4. On the **Select options for on-demand backup** page, in the **Backup Set Options** section, select the required options for this on-demand backup session.



F1 Help: Select options for demand backup

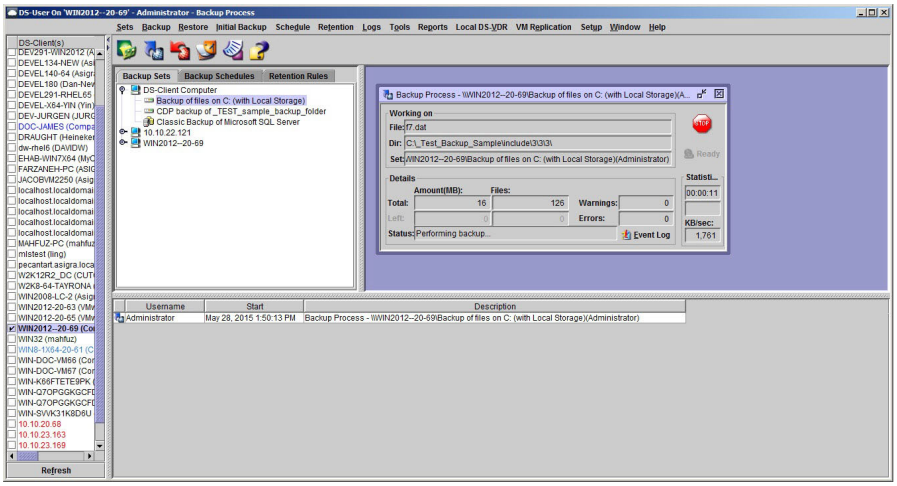
F1 Help: Select options for demand backup (Linux DS-Client)

5. In the **Open Files** section, specify how DS-Client should handle any open files encountered during backup.

NOTE: These options do not guarantee that an open file will be backed up. An error will appear in the Activity Log if files are not backed up. To back up locked files, you must use the VSS option or a VSS backup set kind.

---

6. Click **Finish** to start the backup process.



7.2 Working with instant recovery backup sets

This section provides information on how to perform an instant recovery of a backup set.

IMPORTANT: Instant recovery backup sets are currently not supported in the Management Console. You must use DS-User to back up, restore, configure, and delete instant recovery backup sets.

7.2.1 About instant recovery backup sets

You can use instant recovery backup sets to save uncompressed and unencrypted backup data in its native format to a configured storage location called the instant recovery vault.

The following kinds of backup sets can be configured for instant recovery:

- File System
- Microsoft Exchange Server (VSS-aware)
- Microsoft Hyper-V Server (VSS-aware)
- Microsoft SharePoint Server (VSS-aware)
- Microsoft SQL Server (VSS-aware)
- VMware VADP

Two backup set configurations can send backup data to the instant recovery vault:

- **Instant recovery backup set type —** This is the dedicated backup set type for instant recovery. Each time a backup is run, a new generation is stored in the instant recovery vault up to the maximum number of generations configured for the backup item.
- **Online backup set type** with the **Save in instant recovery vault option —** This configuration backs up data to both online storage and the instant recovery vault.

7.2.2 Before you begin

Before configuring a backup set for instant recovery, the DS-Client account on the DS-System must be configured with the Local Storage DS-Tool.

- If you are configuring an instant recovery backup set type, ensure both the **Local Storage** and **Local-Only** tools are enabled.
- If you are configuring an online backup set type with the instant recovery vault option, ensure the **Local Storage** tool is enabled.

To verify these settings, on the **Setup** menu, click **View Quotas**, and then click **DS-Tools**. If they are not enabled, contact your service provider.

NOTE: To perform an instant recovery of a backup set, you must have at least one generation of backup set data in the instant recovery vault.

7.2.3 Creating an instant recovery backup set

By default, the instant recovery backup data will be saved to the local storage path configured for the DS-Client. However, you can configure a different location for the instant recovery vault.

IMPORTANT: You must ensure that the instant recovery vault has sufficient capacity and is accessible by both the DS-Client service and the backup source server.

To create an instant recovery backup set:

1. Configure the backup set in the New Backup Set Wizard.
2. On the **Choose the name for this backup set** page, do one of the following:
   a) To configure a backup set that sends data only to the instant recovery vault, in the **Set Type** box, select **Instant Recovery**.

b) To configure a backup set that sends data to both the DS-System online storage and the instant recovery vault, in the **Set Type** box, select **Online**, and then select the **Save in instant recovery vault** check box.

3. To configure the location of the instant recovery vault:

   a) Beside the **Local Storage Path** box, click **>>**.

   b) In the **Path** box, specify the location of the instant recovery vault for this backup set, and then click **OK**.

NOTE: If you are using a Linux DS-Client, you must configure the ZFS storage volume that serves as the instant recovery vault. For more information, see Section 3.1.5, “Configuring the parameter settings”, on page 25.

---

4. Click **Finish**.

7.2.4 Performing an instant recovery of a File System backup set

Before performing an instant recovery of a File System backup set, consider the following:

- You must provide simple access to a share that is immediately accessible on your network.
- For Windows DS-Clients, special file system items (System State and Services Database) are not supported for instant recovery.
- For Linux DS-Clients, hard links and soft (or symbolic) links are not supported for instant recovery.

To perform an instant recovery of a File System backup set:

1. On the **Backup Sets** tab, browse and select the backup set you want to instantly recover.
2. On the **Restore** menu, click **Instant Recovery**. The Instant Recovery Wizard appears.
3. On the **Select backup session for instant recovery** page, select a backup session, and then click **Next**.

   F1 Help: Instant Recovery Wizard - Select backup session for instant recovery

4. Do one of the following:

   - If you are using a Windows DS-Client, on the **Set share name used by instant recovery** page, in the **Share name** box, type the share name that is used to connect to the instant recovery data. Users must map to this computer and this share to access the data.

F1 Help: Instant Recovery Wizard - Set share name used by instant recovery

- If you are using a Linux DS-Client, on the **Snapshot clone creation** page, in the **Snapshot clone subfolder** box, type the name of the subfolder to create on the instant recovery vault. Users must map to this computer and this folder to access the data.

  F1 Help: Instant Recovery Wizard - Snapshot clone creation (Linux DS-Client)

5. Click **Finish**. A popup Instant Recovery Status dialog box appears.

   F1 Help: Instant Recovery Status

7.2.5 Performing an instant recovery of a Microsoft Exchange Server (VSS-aware) backup set

Before performing an instant recovery of a Microsoft Exchange Server (VSS-aware) backup set, consider the following:

- The DS-Client service account must have write access to the instant recovery vault.
- The Microsoft Exchange Server must be running and configured with sufficient credentials to operate in the Windows domain of the database server so that it can accept the data from the instant recovery vault.
- The destination Microsoft Exchange Server must have the same domain name and Microsoft Exchange Server name as the backup source.
- The instant recovery vault can reside on the original Microsoft Exchange Server or a dedicated Microsoft Exchange Server. The path to the instant recovery vault must be unique to each DS-Client.

To perform an instant recovery of a Microsoft Exchange Server (VSS-aware) backup set:

1. On the **Backup Sets** tab, browse and select the backup set you want to instantly recover.
2. On the **Restore** menu, click **Instant Recovery**. The Instant Recovery Wizard appears.
3. On the **Select backup session for instant recovery** page, select a backup session, and then click **Next**.

   F1 Help: Instant Recovery Wizard - Select backup session for instant recovery

4. On the **Select backup components for instant recovery** page, select the components to restore, and then click **Next**.

   F1 Help: Instant Recovery Wizard - Select backup components for instant recovery

5. On the **Set share name used by instant recovery** page, in the **Share name** box, type the share name that is used to connect to the instant recovery data. Users must map to this computer and this share to access the data.

   F1 Help: Instant Recovery Wizard - Set share name used by instant recovery

6. Click **Finish**. A popup Instant Recovery Status dialog box appears.

   F1 Help: Instant Recovery Status

After the instant recovery share has been activated, you can use the files to recover the database and mount it to the Microsoft Exchange Server. For instructions, see the Microsoft Exchange documentation.

7.2.6 Performing an instant recovery of a Microsoft Hyper-V Server (VSS-aware) backup set

Before performing an instant recovery of a Microsoft Hyper-V Server (VSS-aware) backup set, consider the following:

- Instant recovery is only supported for Microsoft Hyper-V Server (Standalone) configurations.
- If you want to recover to a different Microsoft Hyper-V Server, ensure that the server version is the same as the original.

To perform an instant recovery of a Microsoft Hyper-V Server (VSS-aware) backup set:

1. On the **Backup Sets** tab, browse and select the backup set you want to instantly recover.
2. On the **Restore** menu, click **Instant Recovery**. The Instant Recovery Wizard appears.
3. On the **Select backup session for instant recovery** page, select a backup session, and then click **Next**.

   F1 Help: Instant Recovery Wizard - Select backup session for instant recovery

4. On the **Select backup components for instant recovery** page, select the components to restore, and then click **Next**.

   F1 Help: Instant Recovery Wizard - Select backup components for instant recovery

5. On the **Set share name used by instant recovery** page, in the **Share name** box, type the share name that is used to connect to the instant recovery data, and then click **Next**.

   F1 Help: Instant Recovery Wizard - Set share name used by instant recovery

6. On the **Specify backup set options** page, in the **Hyper-V Server** section, you can configure the Hyper-V Server where the DS-Client will mount the restored virtual machines. Skip this page if you want to perform the mount manually.

   IMPORTANT: The Microsoft Hyper-V Server must be in the same domain as the host for the instant recovery vault.

   F1 Help: Instant Recovery Wizard - Specify backup set options (Hyper-V)

7. Click **Finish**. A popup Instant Recovery Status dialog box appears.

   F1 Help: Instant Recovery Status

7.2.7 Performing an instant recovery of a Microsoft SharePoint Server (VSS-aware) backup set

Before performing an instant recovery of a Microsoft SharePoint Server (VSS-aware) backup set, consider the following:

- The DS-Client service account must have write access to the instant recovery vault.
- The credentials used to access the Microsoft SQL Server database when performing an instant recovery must have sufficient rights to create the database.
- The Microsoft SharePoint Server must be running and configured with sufficient credentials to operate in the Windows domain of the database server so that it can accept the data from the instant recovery vault.
  - If the Microsoft SQL Server and instant recovery vault reside on the same machine, the SQL Server service account must be able to access the local instant recovery folder.
  - If the Microsoft SQL Server and instant recovery vault reside on different machines and the SQL Server service account is a domain account, the SQL Server and instant recovery host machine must be on the same domain.
  - If the Microsoft SQL Server and the instant recovery vault reside on different machines and the SQL Server service account is a local account, the account must exist on the instant recovery host machine with the same credentials.

To perform an instant recovery of a Microsoft SharePoint Server (VSS-aware) backup set:

1. On the **Backup Sets** tab, browse and select the backup set you want to instantly recover.
2. On the **Restore** menu, click **Instant Recovery**. The Instant Recovery Wizard appears.
3. On the **Select backup session for instant recovery** page, select a backup session, and then click **Next**.

   F1 Help: Instant Recovery Wizard - Select backup session for instant recovery
4. On the **Select backup components for instant recovery** page, select the components to restore, and then click **Next**.

   F1 Help: Instant Recovery Wizard - Select backup components for instant recovery
5. On the **Set share name used by instant recovery** page, in the **Share name** box, type the share name that is used to connect to the instant recovery data, and then click **Next**. Users must map to this computer and this share to access the data.

   F1 Help: Instant Recovery Wizard - Set share name used by instant recovery
6. On the **Specify backup set options** page, under the **Microsoft SQL Server** section, configure the Microsoft SQL Server Instance (on the Microsoft SharePoint Server) that will attach to the instant recovery share.

   F1 Help: Instant Recovery Wizard - Specify backup set options (SharePoint and SQL)
7. Click **Finish**. A popup Instant Recovery Status dialog box appears.

   F1 Help: Instant Recovery Status

7.2.8 Performing an instant recovery of a Microsoft SQL Server (VSS-aware) backup set

Before performing an instant recovery of a Microsoft SQL Server (VSS-aware) backup set, consider the following:

- The DS-Client service account must have write access to the instant recovery vault.
- The credentials used to access the Microsoft SQL Server database when performing an instant recovery must have sufficient rights to create the database.
- The Microsoft SQL Server service account must be running and configured with sufficient credentials to operate in the Windows domain of the database server so that it can accept the data from the instant recovery vault.
    - If the Microsoft SQL Server and instant recovery vault reside on the same machine, the SQL Server service account must be able to access the local instant recovery folder.
    - If the Microsoft SQL Server and instant recovery vault reside on different machines and the SQL Server service account is a domain account, the SQL Server and instant recovery host machine must be on the same domain.
    - If the Microsoft SQL Server and the instant recovery vault reside on different machines and the SQL Server service account is a local account, the account must exist on the instant recovery host machine with the same credentials.

To perform an instant recovery of a Microsoft SQL Server (VSS-aware) backup set:

1. On the **Backup Sets** tab, browse and select the backup set you want to instantly recover.
2. On the **Restore** menu, click **Instant Recovery**. The Instant Recovery Wizard appears.
3. On the **Select backup session for instant recovery** page, select a backup session, and then click **Next**.

   F1 Help: Instant Recovery Wizard - Select backup session for instant recovery
4. On the **Select backup components for instant recovery** page, select the components to restore, and then click **Next**.

   F1 Help: Instant Recovery Wizard - Select backup components for instant recovery
5. On the **Set share name used by instant recovery** page, in the **Share name** box, type the share name that is used to connect to the instant recovery data, and then click **Next**. Users must map to this computer and this share to access the data.

F1 Help: Instant Recovery Wizard - Set share name used by instant recovery

6. On the **Specify backup set options** page, under the **Microsoft SQL Server** section, configure the Microsoft SQL Server Instance that will attach to the instant recovery share.

   F1 Help: Instant Recovery Wizard - Specify backup set options (SharePoint and SQL)

7. Click **Finish**. A popup Instant Recovery Status dialog box appears.

   F1 Help: Instant Recovery Status

7.2.9 Performing an instant recovery of a VMware VADP backup set

Before performing an instant recovery of a VMware VADP backup set, consider the following:

- NFS must be installed on the instant recovery vault.
- The vCenter host must have name resolution to the instant recovery vault. To do this, add the instant recovery vault computer name and IP address to the `HOSTS` file of the vCenter host computer.

To perform an instant recovery of a VMware VADP backup set:

1. On the **Backup Sets** tab, browse and select the backup set you want to instantly recover.
2. On the **Restore** menu, click **Instant Recovery**. The Instant Recovery Wizard appears.
3. On the **Select backup session for instant recovery** page, select a backup session, and then click **Next**.

   F1 Help: Instant Recovery Wizard - Select backup session for instant recovery

4. On the **Select backup components for instant recovery** page, select the components to restore, and then click **Next**.

   F1 Help: Instant Recovery Wizard - Select backup components for instant recovery (VMware VADP)

5. Do one of the following:

   - If you are using a Windows DS-Client, on the **Set NFS share name used by instant recovery** page, in the **NFS share name** box, type the share name that is used to connect to the instant recovery data, and then click **Next**. DS-Client will automatically mount this share to the selected vCenter using the IP address and credentials supplied in this wizard.

     F1 Help: Instant Recovery Wizard - Set share name used by instant recovery

- If you are using a Linux DS-Client, on the **Snapshot clone creation** page, in the **Snapshot clone subfolder** box, type the name of the subfolder to create on the instant recovery vault. DS-Client will automatically mount this path to the selected vCenter using the IP address and credentials supplied in this wizard.

  F1 Help: Instant Recovery Wizard - Snapshot clone creation (Linux DS-Client)

6. On the **Specify backup set options** page, under the **VMware vCenter** section, configure the vCenter that mounts the instant recovery NFS share (Windows) or Snapshot clone subfolder (Linux).

   F1 Help: Instant Recovery Wizard - Specify backup set options (VMware VADP)

7. Click **Finish**. A popup Instant Recovery Status dialog box appears.

   F1 Help: Instant Recovery Status

7.2.10 Performing a session-level delete

You can perform a session-level delete to remove instant recovery data from backup sessions stored in the instant recovery vault.

To perform a session-level delete:

1. On the **Backup Sets** tab, browse and select the backup set containing the instant recovery data that you want to delete.
2. On the **Sets** menu, point to **Delete**, and then click **Session Level Delete**.
3. In the **Instant Recovery Delete Wizard**, select the backup session that you want to delete from the instant recovery vault.

   F1 Help: Instant Recovery Delete Wizard - Select instant recovery backup session for deletion

4. Click **Finish**.

7.2.11 Performing a machine-level delete

You can perform a machine-level delete to remove virtual machines that have been recovered in the instant recovery vault for VMware VADP backup sets.

To perform a machine-level delete:

1. On the **Backup Sets** tab, browse and select the VMware VADP backup set containing the virtual machines that you want to delete.
2. On the **Sets** menu, point to **Delete**, and then click **Machine Level Delete**.

3. In the Instant Recovery Virtual Machine Delete Wizard, select the virtual machines that you want to delete from the instant recovery vault.

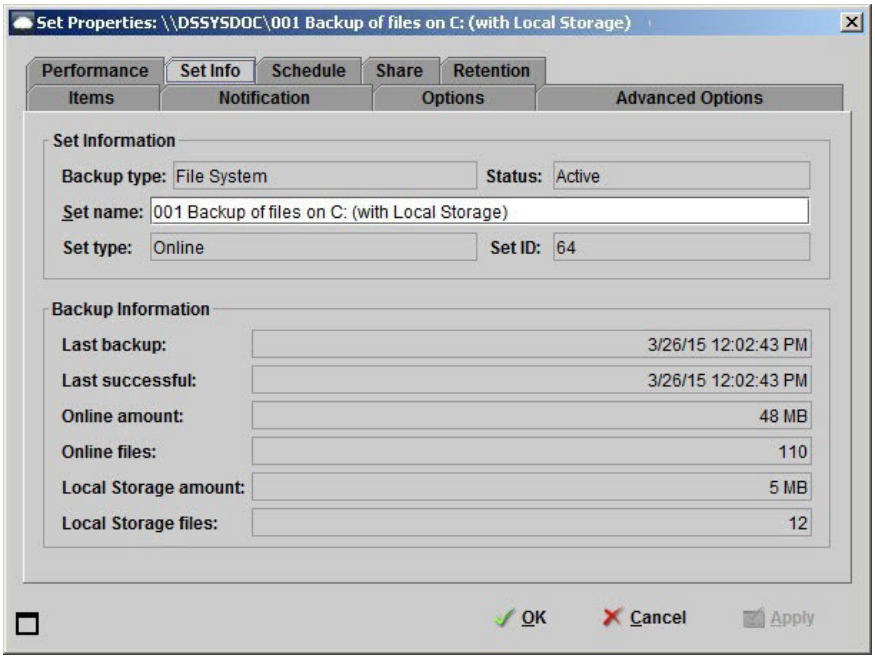
   F1 Help: Instant Recovery Virtual Machine Delete Wizard - Select the virtual machine (VMware VADP)

4. Click **Finish**.

IMPORTANT: If you want to delete a VMware VADP backup set that is configured for instant recovery, you must first perform a machine-level delete of all its instant recovery virtual machines.

7.3 Renaming a backup set

1. Browse the Backup Sets tree, select the required backup set, and on the **Sets** menu, point to **Backup Sets**, and then click **Properties**.
2. In the **Backup Set Properties** dialog box, click the **Set Info** tab.
3. In the **Set name** field, change the name of the backup set as desired.



4. Click **OK** to save the change.

   The set reappears in the Backup Sets tree with its new name.

7.4 Synchronizing a backup set

Each backup set has a backup log table in the DS-Client database that contains the following details:

- What is backed up.
- Attributes of what is backed up (date, time, size).
- Master/delta generations (file or block signatures).

For various reasons, such as an interrupted backup session or lost connection before confirmation, the backup log can fall out of synchronization with the DS-System online storage. If this occurs, a Normal synchronization is automatically run during the next Weekly Admin process or scheduled backup.

You can perform the following types of backup set synchronizations:

- **Normal**: Compares the DS-Client database backup log with the DS-System's online storage, and updates where required.
- **Check only** (on-demand only): Performs a check of only the synchronization between the DS-Client's backup log and the DS-System online storage. This only identifies if inconsistencies exist, however no corrective action is taken.
- **DS-System based** (on-demand only): Updates the entire DS-Client database backup log with the DS-System online storage.

By default, scheduled Weekly Admin performs synchronization only on backup sets marked 'Out of Sync'. To have it perform synchronization on all backup sets, configure the **AdminSkipSync** parameter in the DS-Client advanced configuration (see Section 3.1.8, "Configuring the advanced settings", on page 33).

To synchronize a backup set on-demand:

1. Browse the Backup Sets tree and select the backup set you want.
2. On the **Sets** menu, click **Backup Sets**, and then **Synchronize**.

   F1 Help: Select Synchronization Options
3. In the **Select Synchronization Options** dialog box, select the synchronization method, and then click **Synchronize**.
4. Check the Activity Log and Event log for the synchronization process for any errors.

7.5 Activating or suspending a backup set

You can indefinitely suspend the scheduled backup activities of a backup set by suspending the backup set. You can also activate a suspended backup set.

A backup set is active by default. When a backup set is active, DS-Client will perform on the backup set all the scheduled tasks of the schedule to which the backup set is assigned. The name of an active backup set is displayed in black on the **Backup Sets** tab.

When a backup set is suspended, DS-Client will not perform on the backup set any of the scheduled tasks of the schedule to which the backup set is assigned. The name of a suspended backup set is displayed in gray on the **Backup Sets** tab.

To suspend a backup set:

1. In the **Backup Sets** tab, browse the tree and select the backup set.
2. On the **Sets** menu, point to **Backup Sets**, and then click **Suspend**.

To activate a backup set:

1. In the **Backup Sets** tab, browse the tree and select the suspended backup set.
2. On the **Sets** menu, point to **Backup Sets**, and then click **Activate**.

7.6 Migrating a backup set

Migration allows you to continue using a backup set and its accumulated backup data if the physical location of the backup source files or the source computer's name, IP address, or operating system is changed.

Migration is also part of the process of recovering an orphaned backup set. For more information, see Section 7.10, "Recovering an orphaned backup set", on page 319.

When migrating a backup set, consider the following:

- You cannot migrate a backup set containing special backup items like Windows System State and Services Database to a different operating system. To migrate a backup set containing these items, you must delete all generations of the special backup items and remove them from the backup set's **Backup Items Selected** list.
- When migrating items from one file system to another, verify the backup set item options (such as permissions and streams) are compatible on the new file system.
- If you perform a bare metal restore from a migrated backup set, ensure you only restore operating system files from the same backup session (if applicable). Otherwise, you might restore a combination of incompatible files from different versions of the operating system.

- If you move data to another server and keep the same path format for the data, the DS-Client continues to backup data incrementally for a migrated backup set. For example, if you move data from `e$\data` to `e$\data` or `c$\data` on the new server, the DS-Client processes incremental backups for those files.
- If you move data to another server but do not keep the same path format for the data, the DS-Client performs an initial backup. For example, if you move data from `e$\data` to `e$\newlocation\data` or `c$\newlocation\data` on the new server, the DS-Client sends new masters of files after migration.

To migrate a backup set:

1. Browse the Backup Sets tree and select the backup set.
2. On the **Sets** menu, point to **Backup Sets**, and then click **Migrate**.
3. On the **Select the computer** page, browse and select the new network or node path to which you want to migrate the backup set, and then click **Next**.

NOTE: The selected path is the new backup source location.

---

4. If the option **Ask for network credentials** is selected, in the **Enter Network Credentials** dialog box, specify the user name, password, and (if applicable) the source server from which to connect to the selected network or node, and then click **OK**.
5. On the **Match the source/destination shares** page, for each existing location in the **Source** column, specify the share from which data should be backed up in the **Destination** column, and then click **Next**.

NOTE: If the physical location of the source data has changed, the share that you select in the **Destination** column is the new location of the source item.

F1 Help: Migrate Shares

- For each share selected for backup (or backed up), you should select the destination share on the computer to which you are migrating. The DS-Client service restricts the migration to a one-to-one match (i.e. you cannot select the same destination share for two different source shares).

6. In the **Select directories/files for backup** page, ensure that the new path that has been assigned to each backup item is correct, add more items if required, and then click **Next**. To correct the path, click **Back** to return to the previous page.

7. In the **Specify backup item options** page, select the required options.

NOTE: The backup item options that are available depend on the network to which you are migrating the backup set and can differ from the options that were previously available for the backup set.

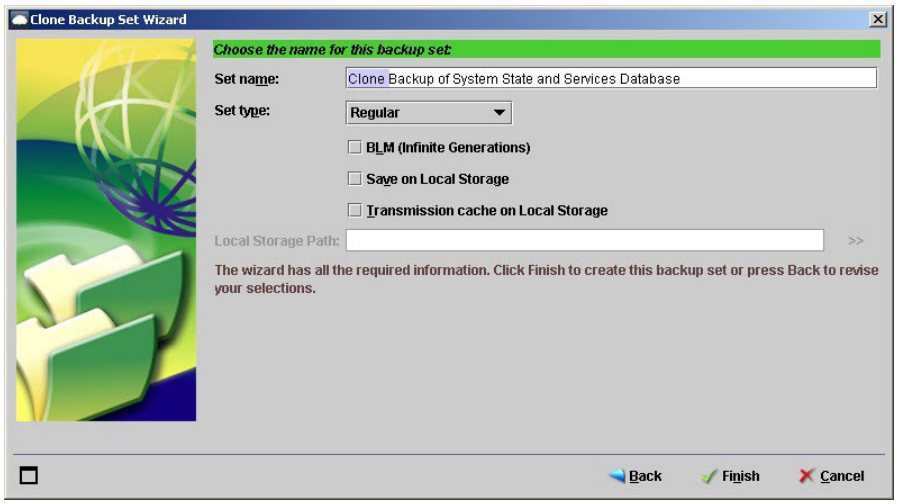
8. Click **Finish**.
9. Synchronize the backup set (see Section 7.4, “Synchronizing a backup set”, on page 312.)

7.7 Cloning a backup set

Use this feature to duplicate an existing backup set with all its backup items and options, except the retention rule, schedule, and name of the backup set. This feature is only available in FullFeatured DS-Client (Windows, Mac, Linux).

1. Browse the Backup Sets tree, select the required backup set, and on the **Sets** menu, point to **Backup Sets**, and then click **Clone**.
2. In the Clone Backup Set Wizard, select a retention rule if required, and then click **Next**.

   For more information, see Chapter 5, “Working with retention rules”.
3. On the **Choose a schedule for this backup set** page, select a schedule if required, and then click **Next**.
4. On the **Choose the name for the backup set** page, type a name for the cloned backup set, select a set type, and then click **Finish**.



7.8 Converting a backup set

You can convert an existing Local-Only backup set into an Online backup set. Conversion will perform the following:

- All the backup data in the Local-Only path will be copied to DS-System.
- The backup set type will be changed from Local-Only to Online.
- In the backup set's properties, in the Options tab, the option **Save** beside **Use Local Storage** will be selected. This means that the backup set will continue to save a copy of data locally in the corresponding **Local Storage Path**.
- The number of generations that remain in Local Storage will depend on the retention settings of the backup set. (See Section 12.4, "Local Storage Tool", on page 444.)

NOTE: The conversion process from Local-Only to Online is irreversible once the data has been completely copied to DS-System online storage.

To convert a local-only backup set to an online backup set:

1. Browse the Backup Sets tree and select the Local-Only backup set you want.
2. On the **Sets** menu, point to **Backup Sets**, and then click **Convert**.
3. In the confirmation dialog box, click **Yes** to proceed.

   If the conversion is interrupted, the backup set will not be able to back up new data until the conversion process is either completed or canceled.

7.9 Validating a backup set

The validation process verifies the restorability of online data. To avoid transmitting large amounts of data, DS-Client sends the encryption keys (private key and account key) to DS-System where it performs the data validation. Although the keys are sent in encrypted format to DS-System and immediately discarded once validation is complete, you must accept, acknowledge, and agree to send the encryption keys.

NOTE: You must be a DS-Client administrator to schedule validation or perform it on demand.

For each file generation, DS-System:

1. Checks the file header, delta linking, and library linking.
2. Tries to validate the data by performing a virtual restore. The data is decrypted and decompressed to generate the original file signature. If it fails due to a decryption or decompression problem, the validation fails.
3. Compares the validation signature with the original one. If they do not match, the validation fails.

For validation failures:

- If a file originally did not have a signature that is needed for validation, a warning appears.
- If the validation fails due to networking issues, validation will skip the file and report the corresponding errors in both the DS-System and DS-Client event logs.
- If a file corruption is detected (including if the digital signatures do not match), the file and all files that depend on it are moved to the DS-System trash. DS-System marks the corresponding backup set as "out of sync" and a corresponding error appears in both the DS-System and DS-Client event logs.

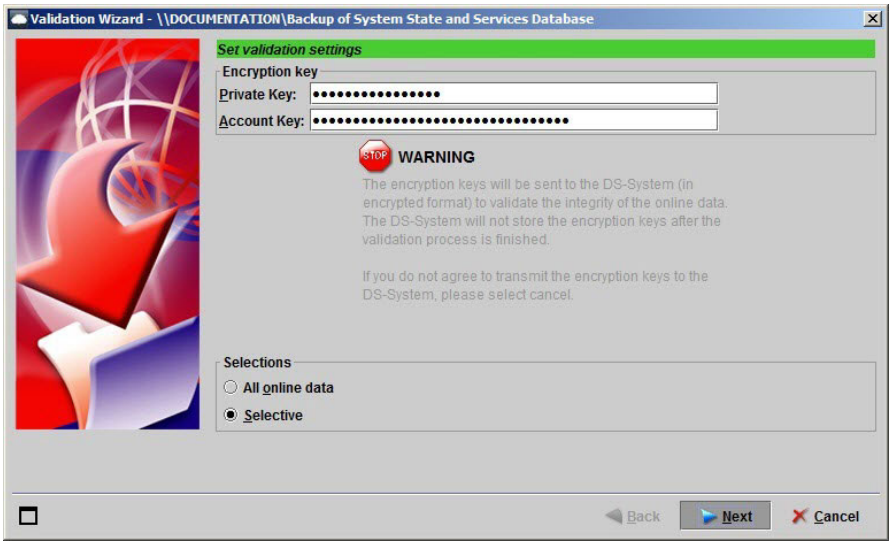
The validation process is disk I/O intensive on the DS-System side because the digital signature of each file must be checked. The process is almost the same as an actual restore, except the data is deleted after comparing the signatures. It is recommended that you schedule the validation process at less resource-intensive times.

The scheduled validation also has the option to resume from the point of interruption of the previous scheduled validation process. To determine the interruption point, the files are processed in sequence based the share ID, directory ID, file ID and generation. On demand validations do not have the resume mechanism.

NOTE: Validation is not available for statistical backup sets, since there is no data on DS-System to validate.

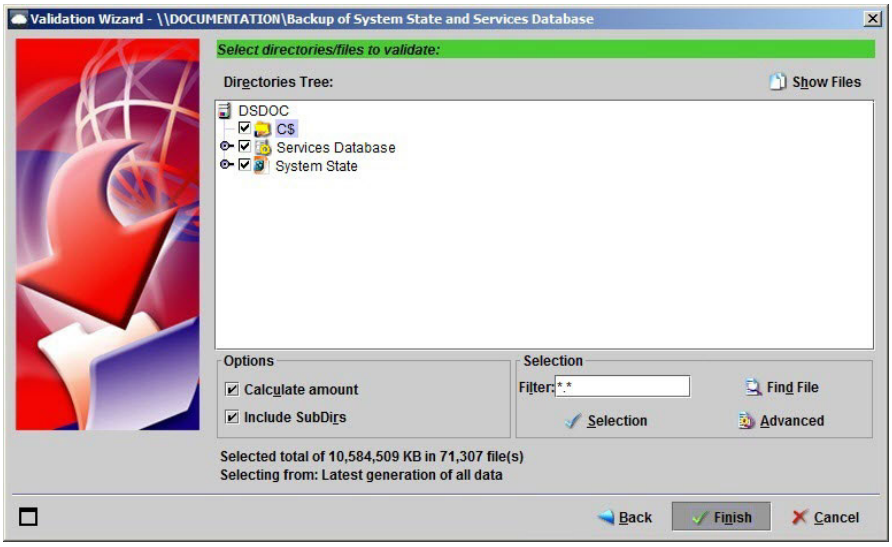
To perform validation on demand:

1. Browse the Backup Sets tree and select the backup set you want to validate.
2. On the **Restore** menu, click **Validation**. The Validation Wizard appears.



F1 Help: Validation Wizard - Set Validation Settings

3. On the **Set validation settings** page, type the DS-Client encryption keys.
4. In the **Selections** section, choose the type of validation you want to perform:
   - **All online data —** This option validates all generations of all data in this backup set.
   - **Selective —** This option allows you to specify the files to validate.
5. Click **Next**:.
6. In the **Select directories/files to validate** page, select the items you want.



NOTE: All items are selected if **All online data** was selected in the previous page.

7. Click **Finish** to start the validation.

NOTE: For information on how to schedule the validation process, see Chapter 4, "Working with schedules".

7.10 Recovering an orphaned backup set

A backup set becomes orphaned when the settings of the backup set are lost from the DS-Client database while the backup data still exists in the DS-System. This can occur when the DS-Client database is deleted, overwritten with an older version, or damaged.

Orphaned backup sets are detected during Daily Admin or Weekly Admin activities. For every backup set that is found to be orphaned, the Event Log displays this message: `Backup Set not found in Backup Log.`

You must recover an orphaned backup set before you can perform backup and restore activities on the backup set.

To recover an orphaned backup set:

1. On the **Setup** menu, click **System Activities**.
2. In the **System Activities Administration** dialog box, beside **Repair DS-Client Database**, click **Repair**.

3. In the **Repair DS-Client** dialog box, select **Orphaned backup sets**, and then click **OK**.
4. In the **Backup Set Recovery** dialog box, select the backup set that you want to recover.

   F1 Help: Backup Set Recovery

   NOTE: Orphaned Microsoft Office 365 backup sets are displayed under a blank server name in the selection tree in the and in the **Backup Sets** tree. The name of the backup set will be recovered after migration.

5. If you are prompted to provide information on the orphaned backup set, click **Set Info**. In the **Recovery Info** dialog box, do the following:

   F1 Help: Recovery Info

   a) In the **Owner** box, select the owner of the backup set. By default, the user account that you have used to log on to the DS-Client is the owner of the recovered backup set.

   b) In the **Network provider** box, select the network provider for the backup set.

   c) Click **Save**.
6. In the **Backup Set Recovery** dialog box, click **Recover**. The backup set is recreated in the DS-Client database and synchronized.

   NOTE: You can now perform restore activities on the recovered backup set to an alternate location.

7. If you want to perform restore activities on the recovered backup set to the original location, you must manually reconfigure the backup set properties as follows:

   a) On the **Backup Sets** tab, select the recovered backup set. On the **Sets** menu, point to **Backup Sets**, and then click **Properties**.

   b) In the **Set Properties** dialog box, on the **Share** tab (Windows) or **Connection Options** tab (Linux), specify the credentials to access the backup source, and then click **Apply**.
8. If you want to perform backup activities on the recovered backup set, you must do one of the following:

   - Migrate the backup set (see Section 7.6, “Migrating a backup set”, on page 313) and then activate the backup set (see Section 7.5, “Activating or suspending a backup set”, on page 313).
   - Manually reconfigure the backup set properties as follows:

a) On the **Backup Sets** tab, select the recovered backup set. On the **Sets** menu, point to **Backup Sets**, and then click **Properties**.

b) In the **Set Properties** dialog box, on the **Share** tab (Windows) or **Connection Options** tab (Linux), specify the credentials to access the backup source, and then click **Apply**.

c) On the **Items** tab, click **Edit**, specify the items to back up, and then click **Apply**.

d) To assign a schedule to the backup set, on the **Schedule** tab, select **Scheduled**, select the schedule in the **Available schedules** list, and then click **Apply**.

e) To assign a retention rule to the backup set, on the **Retention** tab, select **Use a specific retention rule**, select the retention rule in the list, and then click **Apply**.

f) Click **OK**.

g) Activate the backup set (see Section 7.5, “Activating or suspending a backup set”, on page 313).

7.11 Recovering the DS-Client database

If you replace the DS-Client computer, you must recover the DS-Client database to the new machine. By default, it is backed up with the Daily Admin. For more information, see Section 3.1.5, “Configuring the parameter settings”, on page 25.

NOTE: If you do not have a DS-Client database backup, you must recover each backup set that is on the DS-System individually to recreate the database. You will not be able to recover the backup schedules or any of the logs. Do not create any new backup sets until you finish reconstructing the DS-Client database to the point it can synchronize successfully with DS-System. For more information, see Section 7.4, “Synchronizing a backup set”, on page 312.

To recover the DS-Client database:

1. Assemble the hardware required for the replacement DS-Client computer.
2. Install the same operating system version as the old DS-Client and recreate the user accounts (including the DS-Client service account).
3. Reinstall the DS-Client software.
4. Start the DS-Client service and connect with DS-User.
5. Verify the DS-Client database patch level:
   a) On the **Help** menu, click **About DS-User**, and then click **DS-Client Info**.
   b) In the **DS-Client Version Info** dialog box, check the **Database Build** value. You need to compare this value with the one that appears after recovering the database.
6. On the **Setup** menu, click **System Activities**.
7. Click **Repair**. The **Repair DS-Client** dialog box appears.

   F1 Help: Repair DS-Client
8. Select either **DS-Client & delta databases** or **DS-Client database**, and then click **OK**. A recovery message appears instructing you to restart the DS-Client service.

   NOTE: The delta database contains delta information for all files. If this database is not recovered, the next backup requires DS-Client to send a new master (full file). This can significantly increase the time for the next backup.

   ---
9. To activate the recovered database, stop and restart the DS-Client service.

   The recovered database contains data up to the time of its last backup. On startup, DS-Client checks if the database build number is compatible with the executable. If it is not, the DS-Client service stops or runs in a suspended

mode that prevents connection or activity. If this occurs, check the operating system event log for details. Apply the missing patches up to the same database build number that you verified at the beginning of this procedure.

For Grid DS-Clients, any node that has a lower software version than what is compatible with the current database build is auto-upgraded immediately after the DS-Client service starts.

10. Run a Weekly Admin process:

    a) On the **Setup** menu, click **System Activities**.

    b) In the **System Activities Administration** dialog box, beside **Last Weekly Admin** run on, click **Run Now**.

11. Check to event log to ensure that no data exists on the DS-System that is not in the DS-Client database. If more data exists, you must synchronize the affected backup sets before any further backup or restore activities can be performed. For more information, see Section 7.4, “Synchronizing a backup set”, on page 312.

NOTE: If the recovered DS-Client database data is missing backup sets, you must recover the orphaned backup sets. For more information, see Section 7.10, “Recovering an orphaned backup set”, on page 319.)

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12. Change the ownership of the backup sets. For more information, see Section 7.12, “Changing the ownership of a backup set”, on page 324.

NOTE: In the **Select User** dialog box, if you see two users with the same name it is because the DS-Client searches by Security ID (SID). Select the lower one because the current user is closest to the bottom of the list.

---

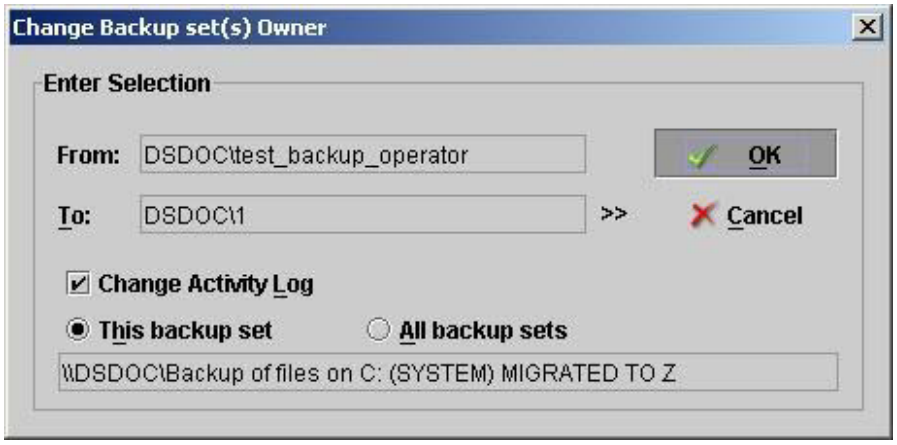
13. Verify the DS-Client’s database patch levels again. (On the **Help** menu, click **About DS-User**, and then click **DS-Client Info**.)

IMPORTANT: When you recover a DS-Client database, any configuration changes made after the last database backup must be manually reapplied.

7.12 Changing the ownership of a backup set

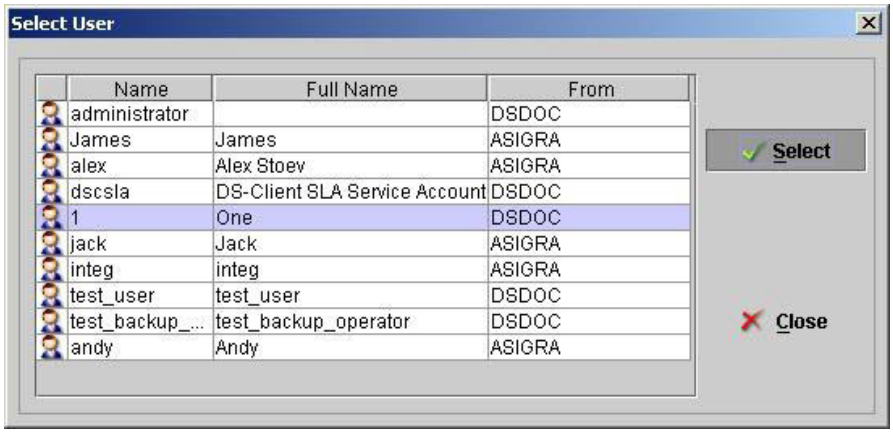
The owner of a backup set is the user who creates it. Administrators can change the ownership of a backup set.

1. Browse the Backup Sets tree and select the required backup set.
2. On the **Sets** menu, point to **Backup Sets**, and then click **Change Owner**.



F1 Help: Change Backup Set(s) Owner

3. In the **Change Backup Set(s) Owner** dialog box, click the **[>>]** button.



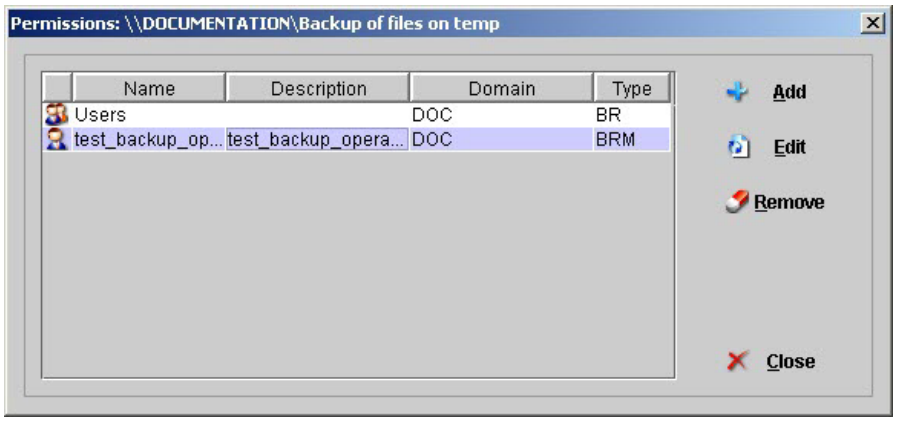
F1 Help: Select Group / User

4. In the **Select Group / User** dialog box, select the new owner for the backup set, and then click **Select**.
5. Click **OK**.

7.13 Changing the permissions of a backup set

By default, only the administrator and the owner of the backup set have permissions to view, change, back up, restore, and delete a backup set or the items in it. Backup operators can change a schedule or perform on-demand backups. You can add or modify a user's permissions to a backup set.

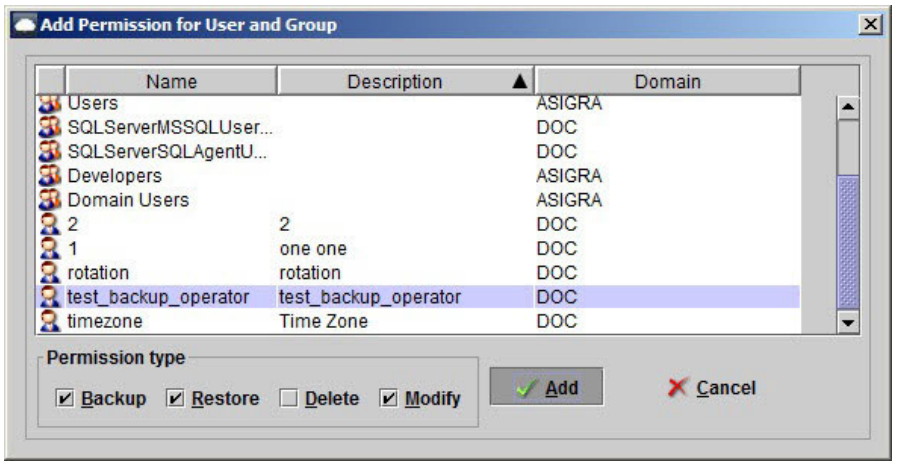
1. Browse the Backup Sets tree and select the required backup set.
2. On the **Sets** menu, point to **Backup Sets**, and then click **Permissions**.



F1 Help: Permissions

The **Permissions** dialog box appears, displaying a list of users with permissions to the backup set apart from the owner or administrator.

3. To add permissions for a user or group, click **Add**.
4. In the **Add Permission for Users and Groups** dialog box, users and groups only appear if they currently exist in the DS-Client database; they are added to the DS-Client database when they have logged on to DS-Client at least once.



F1 Help: Add / Edit Permissions for a User or Group

5. Select the user or group you will define permissions for.

6. In the **Permission Type** section, select or clear the required permission, and then click **Add**.

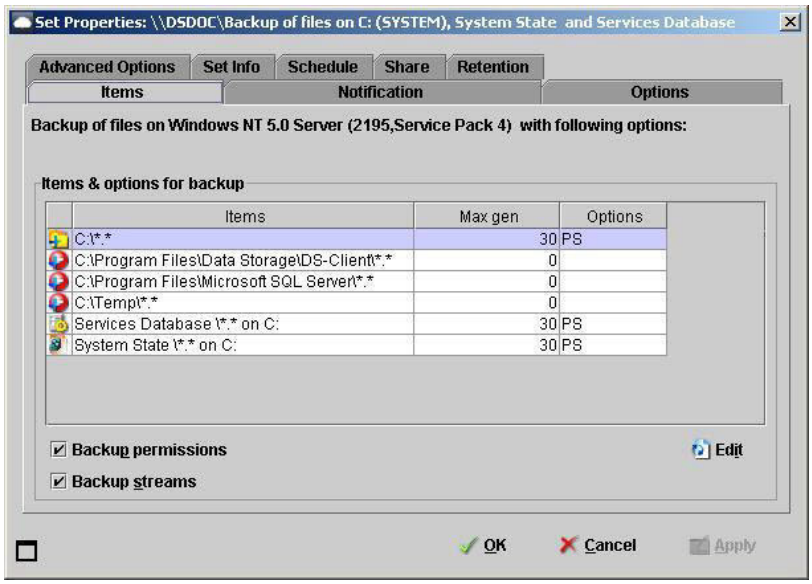
   The Permissions dialog box is automatically updated.

7.14 Configuring the properties of a backup set

In the Backup Set Properties dialog box you can modify some properties of a backup set after it has been created. Backup options define the way a backup set is handled during the backup process. Some options are specific to the type of server that is being backed up.

1. Browse the Backup Sets tree and select the required backup set.
2. On the **Sets** menu, point to **Backup Sets**, and then click **Properties**.

   The Backup Set Properties dialog box appears on the Items tab.



F1 Help: Set Properties - Items tab

F1 Help: Set Properties - Items tab (Linux DS-Client)

Use the various tabs to modify the backup set. For details on the options, see the online help.

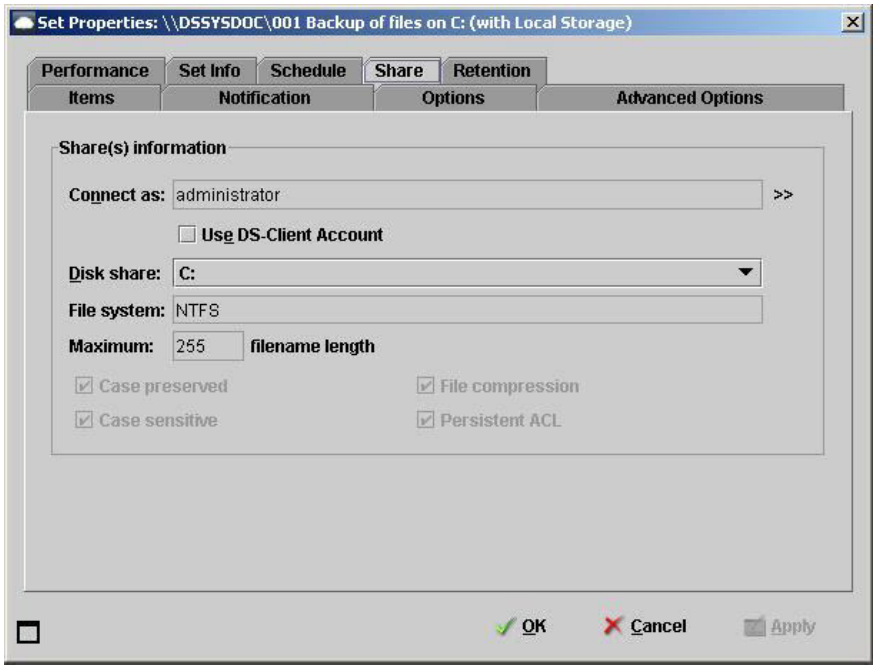
Properties tab	Function
Items	Use to change the selected set's backup items and backup item options.
Retention	Use to change the backup set's retention rules.
Options	Use to change backup set options.
Notification	Use to change the set's notification options.
Schedule	Use to change the set's schedule.

Properties tab	Function
Set Info	Shows information about the backup set. Use to change the set name. If the Multi-Tenant feature is enabled and configured, you can select a customer to which to assign the backup set.
Share	Use to view and edit information about the selected backup share.
Connection	Use to view and edit credentials used for connection to the backup source or dump for certain kinds of backup sets (Appears instead of Share Tab).
Database	Use to view and edit credentials used for database backup sets (Appears instead of Share Tab).
Advanced Options	Use to change the backup set's Advanced Options (Windows DS-Client only).

7.14.1 Modifying share access properties

In some situations you might have to change the user name and password associated with a backup set (for example, when you are creating a backup set for a user with limited LAN access rights). These credentials are used to connect to items of a backup set that are on the LAN.

1. Browse the Backup Sets tree and select the required backup set.
2. On the **Sets** menu, point to **Backup Sets**, and then click **Properties**.
3. In the **Backup Set Properties** dialog box, click **Share**.



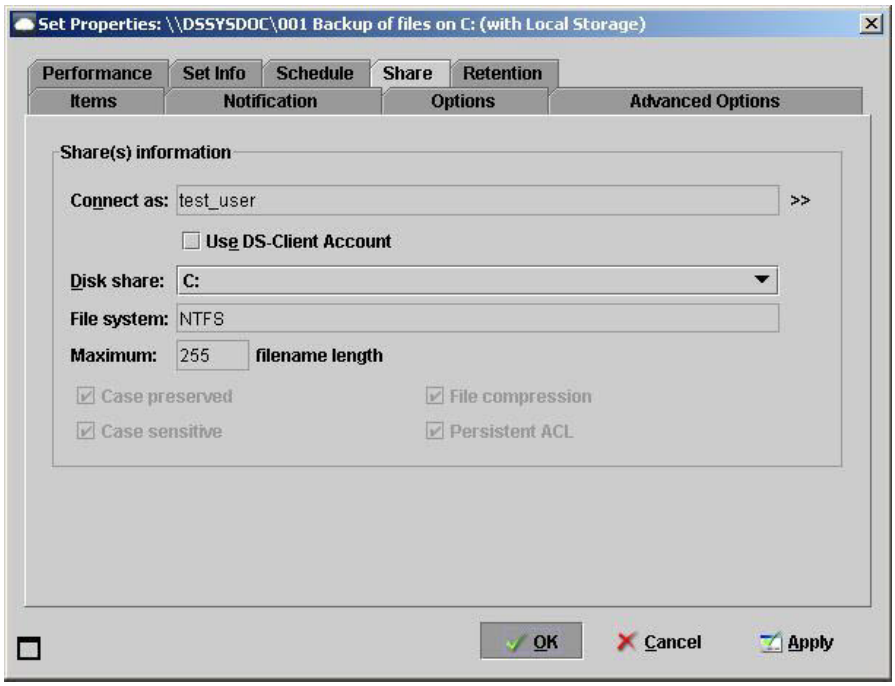
F1 Help: Set Properties - Share tab

F1 Help: Set Properties - Share tab (Linux DS-Client)

4. Beside the **Connect as** box, click the **[>>]** button.
5. In the **Modify Network Credentials** dialog box, do the following:
   a) Type a new user name and/or a new password to be associated with this backup set.
   b) In the **From** list, select the machine where DS-Client will verify user information.
   c) Click **OK** to save your changes.

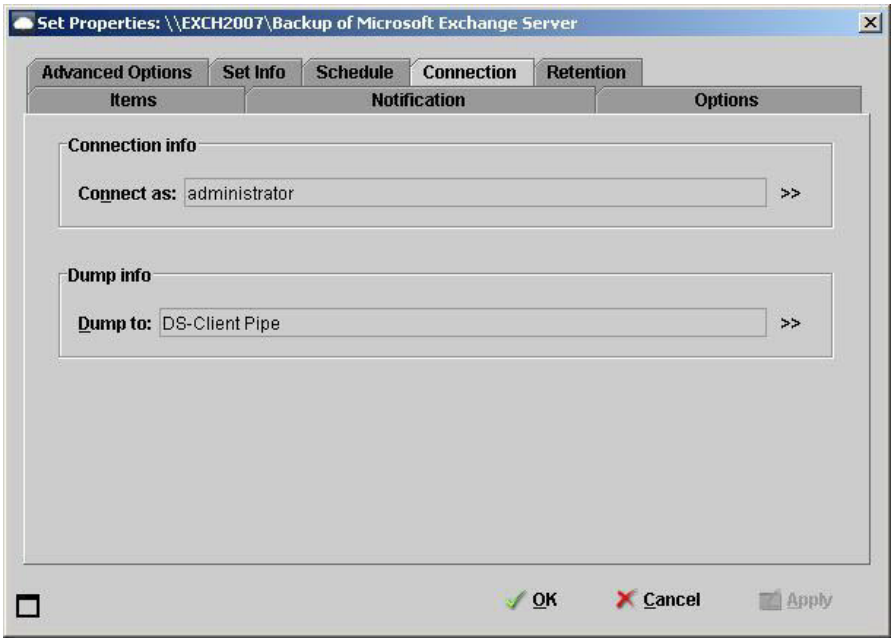
NOTE: For Windows DS-Clients, if the share is on the local DS-Client computer and you are logged on to DS-User as an administrator, you can use the DS-Client Account (the user name and password used by the DS-Client service).

6. In the **Backup Set Properties** dialog box, click **OK** to save the changes.



7.14.2 Modifying connection information (Microsoft Exchange Server)

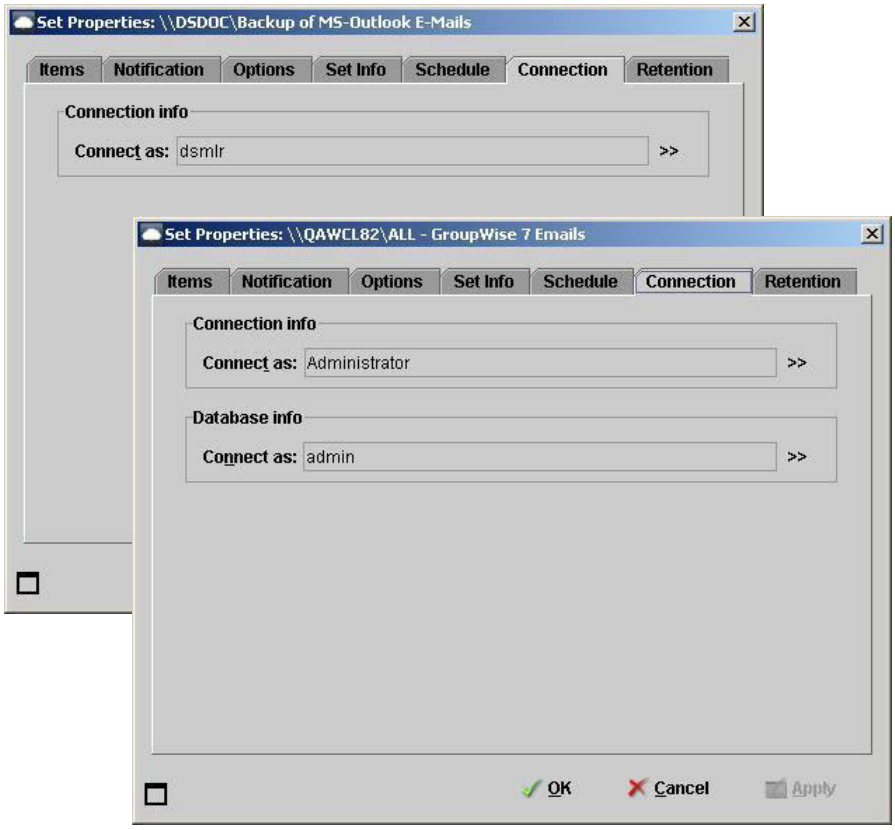
1. Browse the Backup Sets tree and select the required backup set.
2. On the **Sets** menu, point to **Backup Sets**, and then click **Properties**.
3. In the **Backup Set Properties** dialog box, click **Connection**.
4. Configure the required information, and then click **OK**.



F1 Help: Set Properties - Connection tab

7.14.3 Modifying connection information (Email message backup sets)

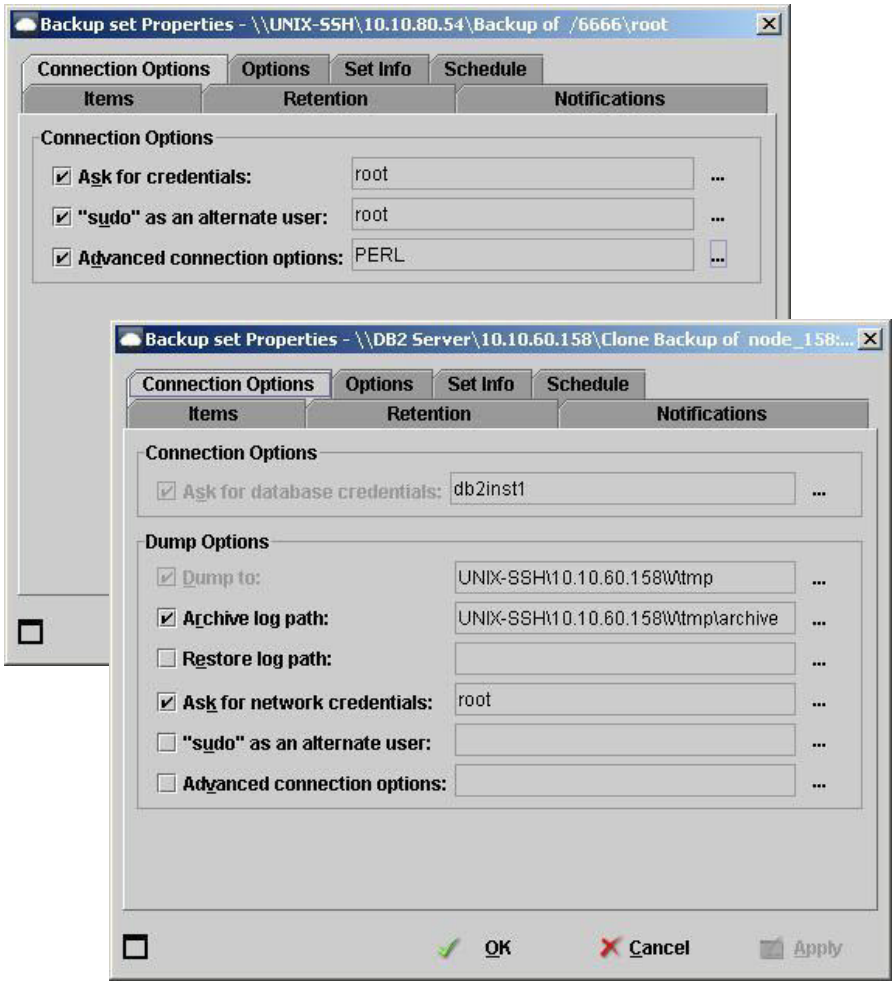
1. Browse the Backup Sets tree and select the required backup set.
2. On the **Sets** menu, point to **Backup Sets**, and then click **Properties**.
3. In the **Backup Set Properties** dialog box, click **Connection**.
4. Click **>>** and modify the credentials used by the backup set.
5. Click **OK** to save the changes.



F1 Help: Set Properties - Connections tab (Email message backup sets)

7.14.4 Modifying connection options (Linux DS-Client)

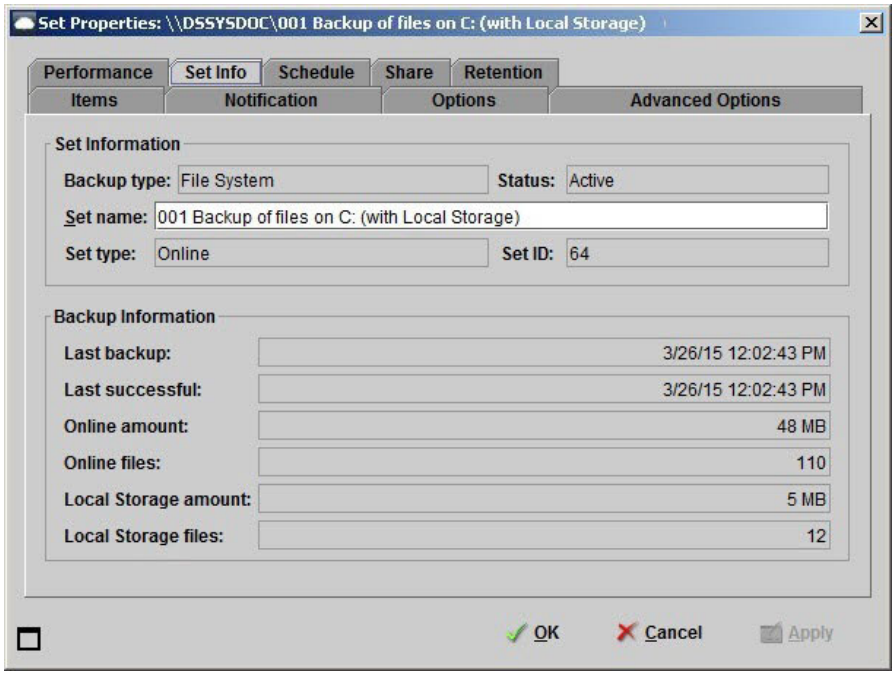
1. Browse the Backup Sets tree and select the required backup set.
2. On the **Sets** menu, point to **Backup Sets**, and then click **Properties**.
3. In the **Backup Set Properties** dialog box, click **Connection Options**.
4. Click the **Connection Options** tab. The number of available options depends on the kind of backup set and whether the data source is local or remote. For details on these options, see the online help for the dialog box.
5. Configure the required information, and then click **OK**.



F1 Help: Set Properties - Connection Options tab (Linux DS-Client)

7.14.5 Modifying a backup set name

1. Browse the Backup Sets tree and select the required backup set.
2. On the **Sets** menu, point to **Backup Sets**, and then click **Properties**.
3. In the **Backup Set Properties** dialog box, click **Set Info**.



F1 Help: Set Properties - Set Info tab

4. In the **Set Name** box, type a new name.
5. Click **OK** or **Apply**.

7.15 Deleting backup sets and backup set data

IMPORTANT: The system does not automatically delete backup sets or backup set data. This process must be performed by an authorized user. Apply caution when performing this process because data cannot be recovered after it has been deleted.

This section describes how to delete backup sets and remove backed up files or file generations that are stored in the DS-System online storage.

Delete type	Description
Selective Delete	Allows you to delete data that you specify from a single backup set.
Assisted Delete	Allows you to delete data that has been removed from source for multiple backup sets.
Remove Backup Set	Delete all files of a single backup set or remove a single backup set from DS-Client.

NOTE: If two-factor authentication is enabled on the DS-Client, you can delete backup sets and backed up files or file generations only if you are an authorized user listed in the two-factor authentication settings for the DS-Client. For more information on two-factor authentication, see Section 3.5, “Configuring the two-factor authentication settings”, on page 66.

The basic delete methods simply remove a generation from online storage. However, when the delete is combined with some other features, there are some additional considerations:

- Remove a backup set — This deletes all online data of a backup set and also removes the backup set itself.
- Selective delete — This is the simplest delete method. You browse backup sets with the Delete Wizard and pick the specific files to delete.
- Assisted delete — This is a faster method to remove obsolete data from multiple backup sets. It only selects backup data that was removed from the backup source and was detected by DS-Client.
- Generation recycling (passive delete) — All backup items must have a maximum number of online generations. For backup data that does not change often, you can have only 1 generation online even after several backups. However, data that changes often will have multiple generations. Once a file reaches its maximum number of generations, the oldest generation gets overwritten by the next backup. To prevent loss of these old generations, configure the backup set with the **BLM (Infinite Generations)** option, which moves the old generation to BLM Archiver.
- Delete because of retention — Any data that is not retained when a retention rule is enforced will be deleted.

The following options can affect deletes or delete behavior:

- Move to BLM (Archiving) — If BLM Archiving is available, every delete situation will have the **Move to BLM** option.
  - If the backup set is configured with the **BLM (Infinite Generations)** option, the Move to BLM is always selected. If DS-System cannot move the deleted data to BLM, the delete will fail.
- DS-System delete lock (from service provider) — If your service provider has applied a **Delete Lock** to your customer account or to this specific DS-Client, the following will occur:
  - You will see a warning message in the Activity Log when a delete activity is performed.
  - If possible, DS-System will move the deleted data to BLM.
  - The delete will fail if DS-System cannot move the deleted data to BLM. If the delete was a passive delete (e.g. generation recycling), the maximum generation configuration will be overruled and the surplus generations will accumulate online.
- BLM delete lock (from service provider) — If your service provider has applied a **Delete Lock** to your customer account or to this specific DS-Client on the BLM Archiver, the following will occur:
  - You will not be able to **Confirm Destruction** of any destruction requests.
  - You will see an error in the BLM Activity Log when a data destruction confirmation activity is performed.

NOTE: BLM is only accessible to end-users via a DS-NOC web site.

- Deleting a VMware VADP backup set with Local DS-VDR enabled — Before deleting a VMware VADP backup set with the Local DS-VDR option enabled, you must ensure that the DS-Client is connected to its Local DS-VDR Tool. For more information, see Section 3.6, “Configuring the Local DS-VDR Tool”, on page 68.

7.15.1 Performing a selective delete

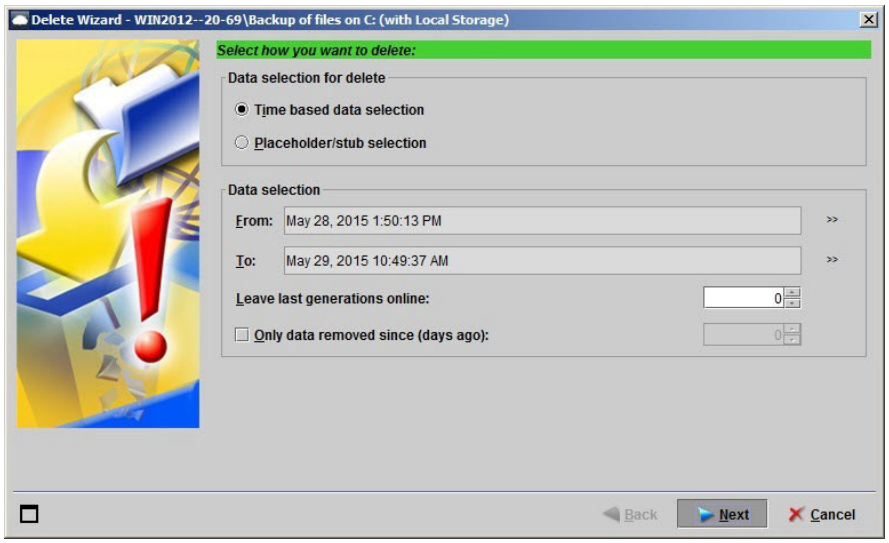
You can delete specific files from a backup set and the DS-System online storage. The backup set will continue to exist and scheduled backups will continue to run.

To perform a selective delete:

1. Browse the Backup Sets tree and select the required backup set.
2. On the **Sets** menu, point to **Delete**, and then click **Selective Delete**.

The Delete Wizard appears. Options in this first page allow you to narrow down the display of files and directories from which to select for deletion. For details on these options, see the online help for the page.

3. In the section **Data selection for delete**, select the method by which data is to be selected for deletion. The default is **Time-based data selection**. You can use the option **Placeholder/stub selection** if the data source is managed by a recognized HSM system.

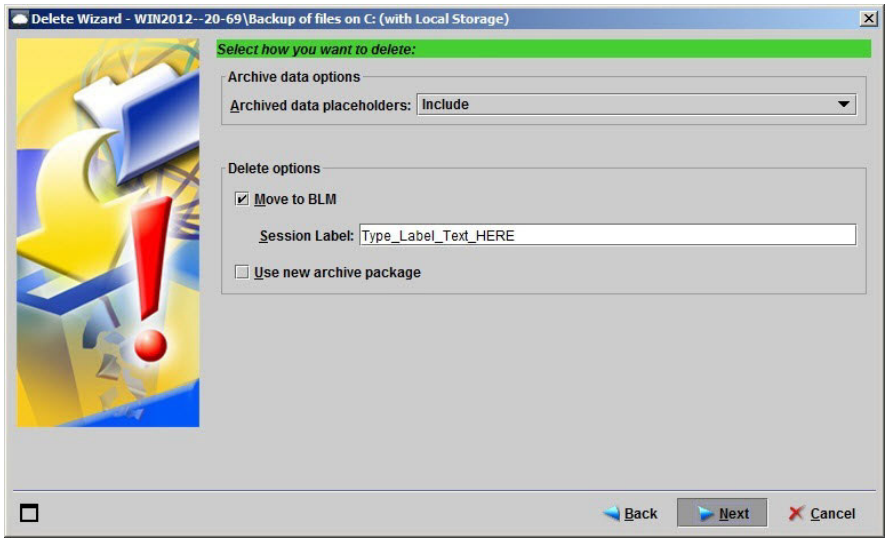


F1 Help: Select how you want to delete

4. Select the period from which backup data is to be deleted.

5. If required, customize the delete using these options **Leave last generations online** and **Only data removed since (days ago)**, and then click **Next**. For details on these options, see the online help for the page.

The next **Select how you want to delete** page displays more delete options.



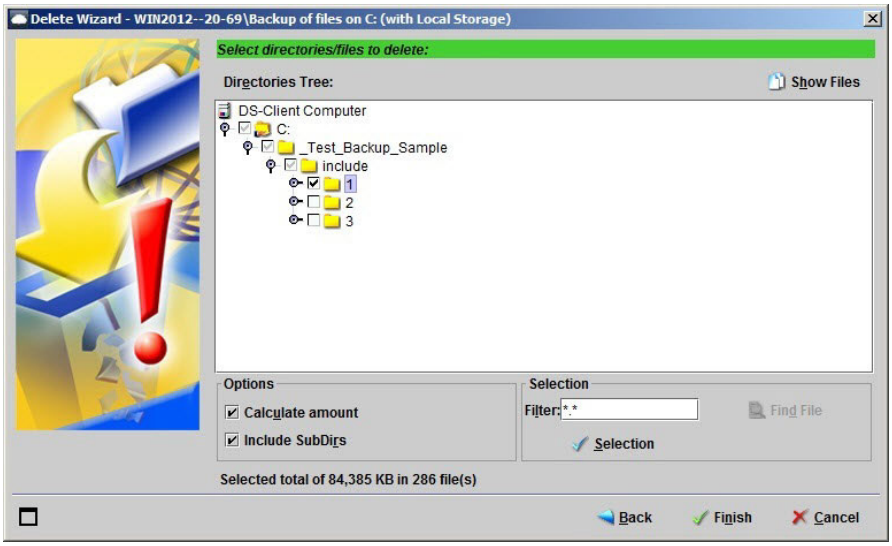
F1 Help: Select how you want to delete (Delete Options)

6. Select the options that you require:

   - **Archived data placeholders –** These options relate to displaying generations that have already been 'pushed' to BLM from online storage. Select what you want to display in the next dialog box of the Delete Wizard (include archived files, exclude archived files, or show only archived files).
   - **Move to BLM –** Select if you want to send a copy of all files selected for deletion to BLM.

7. Click **Next**.

   The **Select directories/files to delete** page appears. The contents of the tree are determined by the options specified in previous pages.



   F1 Help: Select directories / files (Restore / BLM / Delete / Validation)

8. Browse the **Directories Tree** and select the directories you want to delete. For details on various options, see the online help for the page.

9. Click **Finish** to start the delete process.

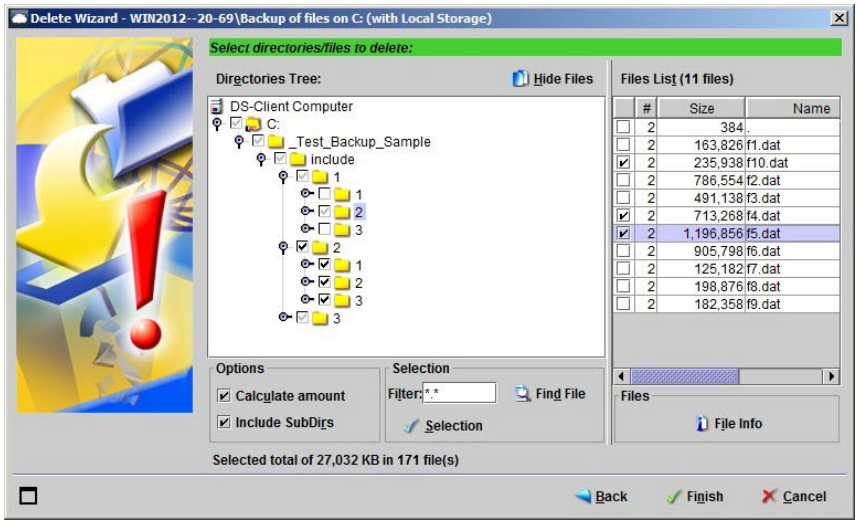
10. (If two-factor authentication is enabled) In the **Two-factor Authentication Validation** dialog box, in the **Authentication Code** box, type the authentication code that you have received from the DS-System, and then click **Validate**.

NOTE: The authentication code is sent to the email address that is associated with your user account in the two-factor authentication settings for the DS-Client. The code is valid for two hours. To request an authentication code be resent to you, click **Resend**.

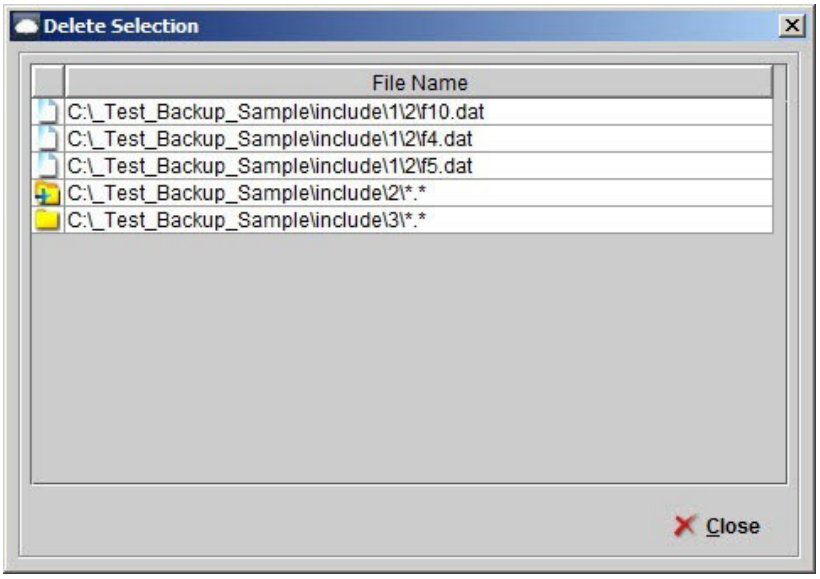
The **Delete Process** dialog box appears.

To delete individual files:

1. Follow the same steps as Section 7.15.1, “To perform a selective delete:”, on page 334 until you reach the **Select directories/files to delete** page.
2. Browse the **Directories Tree** to the directory that contains files you want to delete.
3. Click **Show Files**.



4. Browse the **Files List** and select the files you want to delete.
   - To view a list of the files you have selected for deletion and the full path to each file, click **Selection** to open the **Delete Selection** dialog box.



F1 Help: Selection

5. In the **Select directories/files to delete** page, click **Finish** to start the delete process.

6. (If two-factor authentication is enabled) In the **Two-factor Authentication Validation** dialog box, in the **Authentication Code** box, type the authentication code that you have received from the DS-System, and then click **Validate**.

NOTE: The authentication code is sent to the email address that is associated with your user account in the two-factor authentication settings for the DS-Client. The code is valid for two hours. To request an authentication code be resent to you, click **Resend**.

The **Delete Process** dialog box appears.

7.15.2 Performing an assisted delete

You can delete obsolete directories and files that have been removed from the backup source. The backup set will continue to exist and scheduled backups will continue to run.

NOTE: During each backup session, DS-Client identifies files that have been removed from the source. Files that have been removed from the source after the most recent backup session are not yet identified and will not be deleted.

The granularity of the assisted delete operation depends on the type of DS-Client installation:

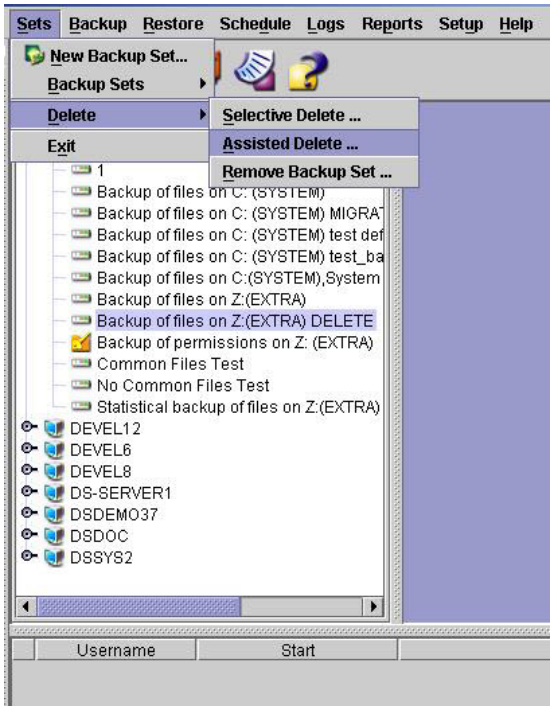
- For Windows DS-Clients, you can delete obsolete directories from File system and DS-MLR backup sets. Based on your search criteria, directories that have been removed from the backup source are automatically displayed.
- For Linux / Mac DS-Clients, you can delete obsolete directories and files from NAS, UNIX-SSH, NFS, and Local File System backup sets. Based on your search criteria, directories that have been removed from the backup source or directories containing file(s) that have been removed from the backup source are automatically displayed.

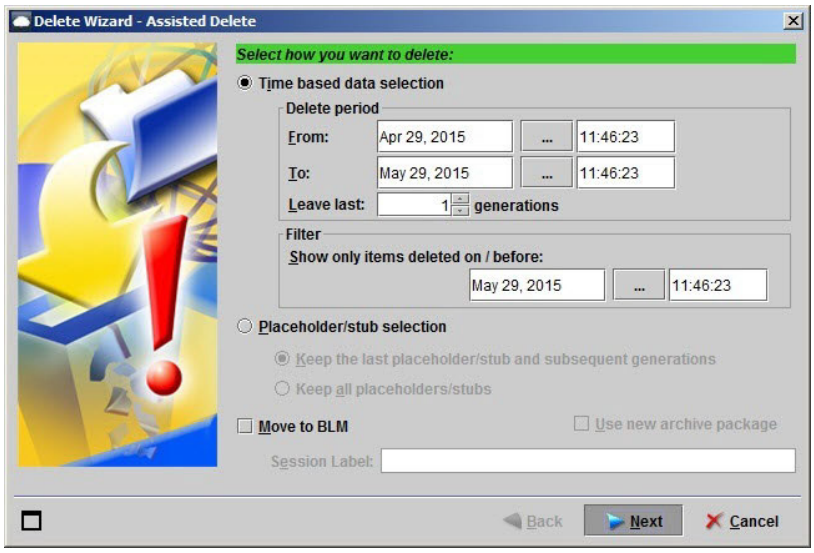
NOTE: When you select directories containing files that are removed from the source in Linux/Mac DS-Clients, only obsolete files will be deleted from those directories.

To perform an assisted delete:

1. On the **Sets** menu, click **Delete** and then **Assisted Delete**.

   The Assisted Delete Wizard appears. Options in this first page allow you to narrow down the directories from which to select for deletion.





F1 Help: Assisted Delete - Select how you want to delete

2. Proceed according to the DS-Client installation you are using:

   - For Windows DS-Client, select the method by which data will be selected for deletion.

     – If you select **Time based data selection**, continue to Step 3.

     – If you select **Placeholder/stub selection**, select one of the two criteria, and continue to Step 4. You can use this option if the data source is managed by a recognized HSM system.

     For details on these options, see the online help for the page.

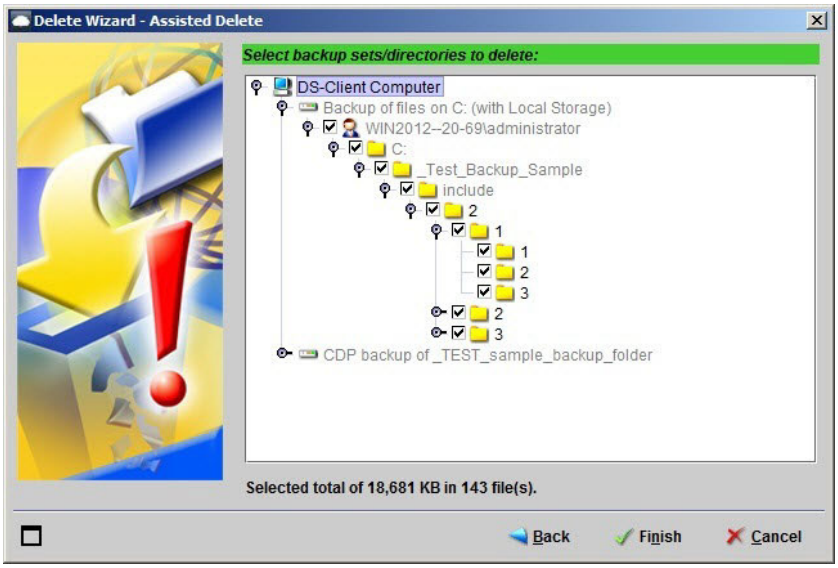
- For Linux / Mac DS-Client, only time-based data selection is available in Assisted Delete, therefore continue in step 4.

3. Specify the following criteria for time-based data selection:
   - **Delete Period —** Time range from which to delete backup data.
   - **Leave last [ ] generations —** Number of generations (if any) to retain online.
   - **Filter —** Cutoff date and time to qualify for deletion items that have been removed from the source computer.

   The next page displays directories (or directories containing files) that have been backed up during the delete period and removed from the source before the cut-off date and time.

4. Select **Move to BLM** if you want to send to BLM a copy of all the files that are deleted.

5. Click **Next**.



F1 Help: Assisted Delete - Select Backup Set / Directory

6. The **Select backup sets/directories** page, clear selections in this dialog box if required.

   Directories that do not match the delete period or filter selections are unavailable for selection.

   Windows DS-Client performs deletion at the directory level. The Assisted Delete Wizard can select and delete directories that have been removed from the source but cannot select or delete individual files removed from the source.

   Linux / Mac DS-Client performs deletion at the file level. The Assisted Delete Wizard can select and delete directories that have been removed from the source and directories containing file(s) that have been removed from the source.

7. Click **Finish** to start the delete process.
8. (If two-factor authentication is enabled) In the **Two-factor Authentication Validation** dialog box, in the **Authentication Code** box, type the authentication code that you have received from the DS-System, and then click **Validate**.

NOTE: The authentication code is sent to the email address that is associated with your user account in the two-factor authentication settings for the DS-Client. The code is valid for two hours. To request a new authentication code, click **Resend**.

7.15.3 Deleting a backup set

You can delete a backup set and all its associated data in online storage and the instant recovery vault (if applicable).

NOTE: You can also delete a backup set that is marked incomplete in its initial backup status. For more information, see Section 12.1.4, “Monitoring the status of an initial backup set”, on page 425.

To delete a backup set:

1. Browse the Backup Sets tree, select the backup set you want to delete.
2. On the **Sets** menu, click **Delete** and then **Remove Backup Set**.
3. Select the required options:
   - **Move to BLM**
   - **Use new archive package**
   - **Session Label**

   These options are only available when BLM has been enabled as a DS-Tool for DS-Client. For DS-Client to complete the above BLM requests, BLM must also be registered with DS-System. For details on these options, see the online help for the dialog box.

   F1 Help: Remove Backup Set
4. Click **OK**. When a confirmation dialog box appears, press **Y** to delete the backup set. To cancel, press any other key.

5. (If two-factor authentication is enabled) In the **Two-factor Authentication Validation** dialog box, in the **Authentication Code** box, type the authentication code that you receive from the DS-System, and then click **Validate**.

NOTE: The authentication code is sent to the email address that is associated with your user account in the two-factor authentication settings for the DS-Client. The code is valid for two hours. To request an authentication code be resent to you, click **Resend**.

7.15.4 Deleting local-only backup set data

Local-Only backup set data is stored in a Local Storage Path, which is either the default path defined for DS-Client (see Section 3.1.5, “Configuring the parameter settings”, on page 25) or a specific path defined for a backup set.

You can delete Local-Only backup set files using one of the following methods:

- On demand from the Delete Wizard

NOTE: If enabled, two-factor authentication is required.

- By a retention rule (Enforce Retention), either scheduled or on demand

  Local-Only backup sets use the Online Storage retention options (and not the Local Storage retention options, which apply only to Online backup sets configured with the “Save on local storage” option.). This is because the Local-Only backup sets behave exactly like Online backup sets with the exception of the data storage location.

NOTE: If enabled, two-factor authentication is required.

- By automatic generation recycling, when a backup file reaches its maximum number of generations (See: Section 6.1.3.4, “Maximum generations”, on page 129).

NOTE: Two-factor authentication does not apply if you modify the maximum number of generations.

When Local-Only backup set files are deleted by DS-Client, the deleted data is moved to a recycle sub-folder of the Local Storage Path. This is a safe delete feature that helps prevent the accidental or inadvertent deletion of data. You should periodically clean the Local-Only Trash folder(s) as deleted data accumulates.

7.16 Cleaning local-only trash

As data deleted from Local-Only backup set accumulates, you can clean the local-only trash.

To clean the local-only trash:

1. On the **Tools** menu, click **Clean Local-Only Trash**.
2. In the **Clean Local-Only Trash** dialog box, to qualify data for cleaning, select the duration for which data has been deleted.
3. Select a specific location from the drop-down list.

   Otherwise, all local storage paths on DS-Client will be cleaned by default.

   F1 Help: Clean Local-Only Trash

4. Click **OK**.

NOTE: You can also schedule this process. For more information, see Chapter 4, "Working with schedules".

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8 Working with VM replication sets (Windows)

8.1 About VM replication

VM replication is a DS-Client function that replicates virtual machines (VMs) from one server to another server and supports failover and failback. This function is available for virtual machines in VMware vSphere and Microsoft Hyper-V Server environments.

Two DS-Clients are required in VM replication. The VM replication data will flow from the source virtual machine through the source DS-Client. Upon receiving the VM replication data, the destination DS-Client places the data into the destination server.

When a virtual machine is replicated by the DS-Client for the first time, a full replication is performed. All subsequent replication processes are incremental. The DS-Client provides two ways to replicate virtual machines: online and offline. You must use a VM replication set to configure the VM replication process.

NOTE: Unlike backup sets, a VM replication set does not send any data to the DS-System. Instead, replication data is transferred between the source DS-Client and destination DS-Client. The DS-Client with which you create a VM replication set is the source DS-Client.

NOTE: VM replication is not supported in Grid DS-Client.

To optimize your networking configuration and avoid potential conflicts between multiple DS-Clients that share the same IP address, you can specify the ports used by the source DS-Client and the destination DS-Client.

8.1.1 Online VM replication

In online VM replication, the source DS-Client sends replication data of the source virtual machine directly to the destination DS-Client, which places the replicated snapshot/checkpoint into the replication target virtual machine on the destination server. The snapshot/checkpoint is then ready to be used for failover.

A VM replication set will perform online replication if the **Initial replication** option is not selected in the **Specify replication set options** page in the New Replication Set Wizard.

NOTE: The term “destination server” refers to the destination vCenter Server in VMware vSphere snapshot replication and to the destination Hyper-V Server in Microsoft Hyper-V checkpoint replication.

8.1.2 Offline VM replication

Offline VM replication is intended to reduce transmission time between the source DS-Client and destination DS-Client, especially for the replication of large virtual machines.

In offline VM replication, the source DS-Client saves replication data of the source virtual machine onto a local disk location in a folder as an **Initial VMR Set**. You then copy that folder to a local disk of the destination DS-Client machine and specify the location to import the data. The destination DS-Client places the replicated snapshot/checkpoint into the replication target virtual machine on the destination server. The snapshot/checkpoint is then ready to be used for failover.

To configure a VM replication set to perform offline replication, select **Initial replication** in the **Specify replication set options** page in the New Replication Set Wizard.

8.1.3 Prerequisites for VM replication

The following prerequisites must be met before you create a VM replication set for VMware vSphere snapshots or Microsoft Hyper-V checkpoints.

Hardware:

For best results, we recommend that each source and destination DS-Client use a minimum of 4 processors.

Licensing:

Your service provider must allocate sufficient VM Replication licenses based on either native capacity or the number of virtual machines. To check the current allocation, on the **Setup** menu, click **View Quotas**, and then in the **View Quotas** dialog box, see the **VM Replication Storage Quota** section.

Configuration:

- **VM Replication Grouping (DS-System)**: Your service provider must add at least two DS-Clients to a VM replication group using DS-Operator. The source DS-Client performs replication processes for the source virtual machine, and the Destination DS-Client performs replication processes for the target virtual

machine. The DS-Client with which you create a VM replication set is the source DS-Client of the VM replication set. For instructions on how to configure VM replication groups, see the DS-System User Guide.

- **VMRServiceStart parameter (DS-Client)**: Ensure that the value of the advanced parameter **VMRServiceStart** is set to **Yes** in all the DS-Clients that will perform VM replication processes. To view or change this setting, log on to DS-Client, on the **Setup** menu, click **Configuration**. In the **Advanced** tab, select the category **Miscellaneous** and the parameter **VMRServiceStart**. Select **Yes** as the **Value**, and then click **Apply**.

NOTE: When the **VMRServiceStart** parameter is set to **No**, the category **DS-Client replication sets** will be hidden in the New Backup Set Wizard, and existing VM replication sets will be inaccessible. When the parameter is set to **Yes**, you will be able to create new VM replication sets and run replication as long as DS-Client has sufficient **VM Replication Capacity** for its **VMR License**. By default, this parameter is set to **Yes**.

- **VMRSourcePort parameter (DS-Client)**: Ensure that the value of the advanced parameter **VMRSourcePort** has been set to the port that the DS-Client will use for VM replication processes. This value is set to 8090 by default and is equivalent to the source DS-Client port number in DS-Operator. To view this value, log on to the DS-Client, on the **Setup** menu, click **Configuration**. In the **Advanced** tab, select the category **Miscellaneous** and the parameter **VMRSourcePort**. To change this value, type the appropriate port number as the **Value**, click **Apply**, and then stop and restart the DS-Client Service of the DS-Client for the change to take effect. If you have changed the VM replication port settings on multiple DS-Clients, stop and restart each affected DS-Client Service one at a time. Wait until the DS-Client Service on one machine has successfully restarted before you stop and restart the DS-Client Service on another machine.

Network:

- The source DS-Client must be able to connect to the destination DS-Client.
- You must ensure that the port that you have specified in the **VMRSourcePort** parameter is open in any firewall on the DS-Client machine.
- Your service provider must ensure that multiple DS-Clients sharing the same IP address use different ports to avoid conflicts. For information on configuring VM replication groups, see the DS-System User Guide.
- When creating a new replication set, you will be asked to specify the port used by the destination DS-Client. You must ensure that the port you specify is open in any firewall on the destination DS-Client machine.

Setup:

- Ensure that the name of the virtual machine to be replicated in the vCenter Server or in the Hyper-V Server does not contain these characters: @ \ /
- For VMware VM replication, also ensure that the name of the folder in which the virtual machine is located in the vCenter Server does not contain these characters: @ \ /

Snapshots/Checkpoints:

Before you replicate a source virtual machine, you must ensure that the source virtual machine on the source server does not contain any snapshots or checkpoints. Refer to the VMware documentation on how to manage snapshots. Refer to the Microsoft documentation on how to manage checkpoints.

NOTE: The term “source server” refers to the source vCenter Server in VMware vSphere snapshot replication or the source Hyper-V Server in Microsoft Hyper-V checkpoint replication.

Credentials for the source and destination servers:

The following recommendations apply when you are typing the credentials for the source and destination servers. That refers to the source and destination vCenter Servers in VMware vSphere snapshot replication and the source and destination Hyper-V Servers in Microsoft Hyper-V checkpoint replication.

- If logging on as a domain user, type both the domain and user name in this format: domain\username. For example: `dchv\user126`
- If logging on as a local user, type only the user name without the domain. For example: `user126`
- Ensure that DS-Client users who perform the following tasks for VM replication have administrative privileges or have access to the folder `C:\ProgramData\boost_interprocess\dsclient_replication`:
  - Create or modify a VM replication set
  - Start the VM replication process
  - Import the initial VMR set (initial VM replication data) for offline VM replication
  - Perform failover or failback

NOTE: The permissions should be set after DS-Client and the VM Replication Service start for the first time.

8.2 Microsoft Hyper-V checkpoint replication sets

8.2.1 About Microsoft Hyper-V checkpoint replication sets

The following sections provide information about Microsoft Hyper-V checkpoint replication sets.

8.2.2 Prerequisites for Microsoft Hyper-V checkpoint replication

NOTE: Ensure that you have met the general prerequisites for VM replication. For information, see Section 8.1.3, “Prerequisites for VM replication”, on page 346.

The following prerequisites apply to VM replication in Microsoft Hyper-V standalone and cluster configurations:

- **Application consistent checkpoints** — For application consistent checkpoints, ensure that Hyper-V Integration Services is installed on the guest operating system of the virtual machine.
- **Required Hyper-V Server user privilege** — You must provide user credentials for the DS-Client to access the Hyper-V Server during the replication process. Ensure that the user either has administrative privileges or has been assigned Full Control permission to all folders on both the source and destination Hyper-V Servers that will be used for replication. This includes hard disk locations of virtual machines on the source and destination Hyper-V Servers.

  Examples of folders that require Full Control permission are as follows:

  - **Standalone and cluster –** `C:\ProgramData\Microsoft\Windows\Hyper-V`
  - **Cluster –** `C:\ClusterStorage\Volume1`

The following prerequisite applies to Microsoft Hyper-V checkpoint replication for standalone Hyper-V Servers:

- **Same drive letters** — The disks in the destination Hyper-V Server must have the same set of drive letters (e.g., C:\, D:\, E:\) as the source Hyper-V Server that you plan to replicate.

The following prerequisites apply to Microsoft Hyper-V checkpoint replication for Hyper-V clusters:

- **Same CSV** — The hard disks of highly available Hyper-V virtual machines are located in Cluster Shared Volumes (CSV). The destination Hyper-V Cluster Server must have the same set of CSV as the source Hyper-V Cluster Server. That means drive letters and paths must be identical. An example of CSV:

  `C:\ClusterStorage\Volume1\`

  `C:\ClusterStorage\Volume2\`

- **Virtual machine in current host** — DS-Client can only replicate virtual machines from the current host of the Hyper-V cluster. To replicate a virtual machine from other nodes, first migrate the virtual machine to the current host of the cluster.

- **Existing mount point of cluster** — Only use the existing mount point of the Hyper-V cluster, which was established when the cluster was created. Example: **C:\ClusterStorage\Volume1** Do not use additional CSV mount points because the Failover Cluster Manager will change its mount point access while deleting a virtual machine checkpoint.

- **Processor compatibility** (Optional) — When replicating virtual machines between two Hyper-V Servers that run on different types of processors, enable the feature **Migrate to a physical computer with different processor version** in the Compatibility settings of the source virtual machine.

8.2.3 Limitations for Microsoft Hyper-V checkpoint replication

The following information applies to the VM replication function for Hyper-V checkpoints.

- DS-Client can only replicate virtual machines from a stand-alone Hyper-V Server to another stand-alone Hyper-V Server, or from a Hyper-V cluster to another Hyper-V cluster.

- DS-Client will replicate all hard disks on the source virtual machine. But network devices (e.g. network adapters) and other peripheral components (e.g. DVD drives) that are used by the source virtual machine will not be replicated.

- DS-Client can replicate only virtual machines with a virtual machine name that does not exceed 71 characters.

- Because the option **Enable write caching on the disk** is enabled by default in the guest operating system, recent changes in the source virtual machine can be lost in the checkpoint. To ensure that the lost changes are replicated to the target virtual machine, perform the VM replication process again. For information on this write-cache policy, follow this link:

  https://support.microsoft.com/en-us/kb/324805

- Avoid scheduling or performing VSS-aware backup and Microsoft Hyper-V checkpoint replication activities at the same time on the same Hyper-V virtual machine. Doing so can adversely affect the backup or replication process.

8.2.4 Creating a Microsoft Hyper-V checkpoint replication set

To create a VM replication set for Microsoft Hyper-V checkpoints, perform the following steps in the New Backup Set Wizard in the source DS-Client. Before proceeding, ensure that the requirements described in Section 8.1, “About VM replication”, on page 345 have been met.

8.2.4.1 Selecting the kind of VM replication set

1. In the source DS-Client, on the **Sets** menu, click **New Backup Set**.

   The New Backup Set Wizard appears.

2. In the **DS-Client replication sets** tree, select **VM Replication**, and then click **Next**.

   You will continue in the New Replication Set Wizard.

3. In the **Select VM replication type** page, select **Hyper-V checkpoint replication**, and then click **Next**.

8.2.4.2 Specifying the source server

1. In the **Select the computer** page, select **VM Replication** and ensure that **Ask for Network Credentials** is selected.

2. In the **Path** box, type the IP address of the source Hyper-V Server, and then click **Next**.

   The source DS-Client (which is the DS-Client you are using to create this VM replication set) will request the Hyper-V Server to create a checkpoint for each virtual machine being replicated. The VM replication data will flow from the source Hyper-V Server through the source DS-Client. No data is sent to DS-System.

3. When prompted, type the credentials that are needed to access the source Hyper-V Server. For important recommendations, see Section 8.1.3, “Credentials for the source and destination servers:”, on page 348.

   F1 Help: Specify Credentials (Windows DS-Client)

8.2.4.3 Specifying the items to replicate

1. In the **Select directories/files for replication** page, select the source virtual machine in the **Shares & Directories List**, and then click **Add**.

   The source virtual machine that you have just added is displayed in the **Replicated Items Selected** section. You can add multiple virtual machines.

   F1 Help: Select Items for Backup Set

2. Click **Next**

8.2.4.4 Specifying replication item options

In the **Specify replication items options** page, the **Max gen** value refers to the maximum number of checkpoints of the replication target virtual machine that will be available for both failover and failback. The allowed range for a VM replication set for Hyper-V is 4-47.

- Retain the default setting unless you have specific checkpoint requirements and then click **Next**.

  F1 Help: Set Properties - Items tab

NOTE: A VM replication set does not send or back up any data to DS-System.

8.2.4.5 Specifying the destination for VM replication

In the **Choose Destination for Replication Set** page, the DS-Client that has been grouped with the source DS-Client by your service provider will be shown in the **Destination DS-Client** list. IP addresses of multiple DS-Clients will be available for selection in this list if multiple DS-Clients have been grouped with the source DS-Client.

NOTE: Sufficient **VM Replication Capacity** must be available before you can complete this step. See information on the prerequisite Section 8.1.3, “Licensing:”, on page 346.

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1. In the **Destination DS-Client Info** section, verify that the IP address shown beside **Destination DS-Client** represents the DS-Client you want to use. If necessary, select the IP address of another DS-Client in the list.

   The IP address of the DS-Client that is shown will be the destination DS-Client acting for the replication target virtual machine in this VM replication set.

   F1 Help: Set Properties - Destination tab

2. Verify that the port number displayed beside **Destination Port** represents the port used by the destination DS-Client.

3. In the **Destination Hypervisor Info** section, type the IP address of the destination Hyper-V Server as the **Hypervisor IP**.

   The selected virtual machine(s) will be replicated to the destination Hyper-V Server.

4. Type the user name and password that are needed to access the destination Hyper-V Server (or click the Browse **...** button to open a key file that contains the required user name and password) and then click **Next**. For important recommendations, see Section 8.1.3, “Credentials for the source and destination servers:”, on page 348.

   The credentials you have entered are sent to the destination DS-Client, which then attempts to access the destination Hyper-V Server.

8.2.4.6 Specifying destination information for VM replication

1. In the **Destination Information for Replication Set** page, you can click under **Destination Machine Name** to type a name that you want for the replication target virtual machine.

   The replication target virtual machine will be identified in the destination Hyper-V Server by the name you provide. Renaming the replication target virtual machine is optional.

   F1 Help: Destination Information for Replication Set

   NOTE: The name of the virtual machine must not contain these characters: @ \ /

2. Click **Next**.

8.2.4.7 Specifying replication set options

The **Specify replication set options** page allows you to configure the replication set for online or offline VM replication. In addition, you can also specify the number of errors that you will allow before DS-Client should stop a VM replication process.

1. In the **Specify replication set options** page, configure the VM replication set for either online or offline VM replication by doing one of the following:

   - To perform online VM replication, keep the **Initial replication** check box cleared.

- To perform offline VM replication, select the **Initial replication** check box and, when prompted in the **Initial Backup Settings** dialog box, select a local disk location to which DS-Client should save the replication data. If necessary, click **Add** to specify a new location.

NOTE: If you have selected the **Initial replication** check box, take note of the local disk location that you specify. After the source DS-Client performs the offline VM replication process, you will need to copy the replication data from this specified location to a local disk location on the destination DS-Client machine.

2. If you need to specify the number of errors to allow before DS-Client should stop a VM replication process, type a number between 1 and 9999 beside **Stop on errors**. Keep the default value, 0, if you have no specific requirements.

   The value 0 means that the number of errors encountered will not cause DS-Client to stop a VM replication process.

   F1 Help: Set Properties - Options tab

8.2.4.8 Specifying notification options (optional)

See instructions in Section 6.2.3.8, “Specifying notification options”, on page 153.

8.2.4.9 Specifying a schedule (optional)

You can assign the VM replication set to an existing schedule or a new schedule. When a VM replication set is assigned to a schedule, DS-Client automatically performs the replication of virtual machines according to the schedule. Otherwise, the VM replication process will only be performed on demand.

For important information regarding schedules, see related sections in Chapter 4, “Working with schedules”, such as Section 4.1, “About schedules”, on page 89. Information on schedules that pertains to backup sets also applies to VM replication sets.

To assign the VM replication set to a schedule, follow these steps:

1. In the **Choose a schedule for this replication set** page, select **Schedule**.
2. To select a new schedule, click **New** to create a new schedule and then add schedule details through the **Schedule** dialog box. For more information, see Section 4.2, “Configuring a schedule”, on page 90.
3. To select an existing schedule, select a schedule from the list under **Available schedules**. If necessary, click **Edit** to open the **Schedule** dialog box and modify the schedule.

4. In the **Schedule** dialog box, ensure that **Perform Replication** is selected and the **1. Perform Backup** check box is cleared in the schedule.

IMPORTANT: Use extra precaution when you modify or select a schedule to which other VM replication sets or backup sets have already been assigned. See Section 4.3, “Assigning a schedule to a backup set”, on page 94.

Only two tasks in a schedule specifically apply to VM replication:

- **1. Perform Backup**: Does not apply
- **2. Enforce Retention**: Does not apply
- **3. Perform Validation**: Applies
- **4. Perform BLM**: Does not apply
- **Start LAN Scan Shares**: Performs processes at the DS-Client level only, not for a VM replication set
- **Clean Local-Only Trash**: Performs processes at the DS-Client level only, not for a VM replication set
- **Perform Replication**: Applies

NOTE: A task that does not apply to VM replication will not be performed for a VM replication set. Consequently, when tasks like **Enforce Retention** or **Perform BLM** are selected in a schedule to which a VM replication set is assigned, no action related to those tasks will be performed for the set.

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5. Click **Save** to save changes to the schedule.

   The VM replication set will be assigned to the schedule shown under **Available schedules** in the **Choose a schedule for this replication set** page.

6. Click **Next**.

8.2.4.10 Name the Replication Set

- Type a name for the VM replication set.

  This name allows you to identify the VM replication set in DS-Client.

8.3 VMware vSphere snapshot replication sets

8.3.1 About VMware vSphere snapshot replication sets

The following sections provide information about VMware vSphere snapshot replication sets.

8.3.2 Prerequisites for VMware vSphere snapshot replication

For successful VM replication, do the following:

- Ensure that the version of the virtual machines to be replicated is supported in both the source server and destination server.
- Ensure that VMware Tools is installed on the guest operating system of the virtual machine for application consistent snapshots.

8.3.3 Limitations for VMware vSphere snapshot replication

The following information applies to the VM replication function for vSphere snapshots.

- Avoid scheduling or performing VMware VADP backup and VMware vSphere snapshot replication activities at the same time on the same vSphere virtual machine. Doing so can adversely affect the backup or replication process.

8.3.4 Creating a VMware vSphere snapshot replication set

To create a VM replication set for VMware vSphere Snapshots, perform the following steps in the New Backup Set Wizard in the source DS-Client. Before proceeding, ensure that the requirements described in Section 8.1, “About VM replication”, on page 345 have been met.

8.3.4.1 Selecting the kind of VM replication set

1. In the source DS-Client, on the **Sets** menu, click **New Backup Set**.

   The New Backup Set Wizard appears.

2. In the **DS-Client replication sets** tree, select **VM Replication** and then click **Next**.

You will continue in the New Replication Set Wizard.

3. In the **Select VM replication type** page, select **VMware vSphere snapshot replication**, and then click **Next**.

8.3.4.2 Specifying the source server

1. In the **Select the computer** page, select **VM Replication** and ensure that **Ask for Network Credentials** is selected.
2. In the **Path** box, type the IP address of the source vCenter Server and then click **Next**.

   The source DS-Client (which is the DS-Client you are using to create this VM replication set) will request the source vCenter Server to create a snapshot for each virtual machine being replicated. The VM replication data will flow from the source vCenter Server through the source DS-Client. No data is sent to DS-System.
3. When prompted, type the credentials that are needed to access the source vCenter Server. For important recommendations, see Section 8.1.3, “Credentials for the source and destination servers:”, on page 348.

   F1 Help: Specify Credentials (Windows DS-Client)

8.3.4.3 Specifying items to replicate

1. In the **Select directories/files for replication** page, select the source virtual machine in the **Shares & Directories List** and then click **Add**.

   The source virtual machine that you added is displayed in the **Replicated Items Selected** section. You can add multiple virtual machines.

   F1 Help: Select Items for Backup Set
2. Click **Next**.

8.3.4.4 Specifying replication item options

In the **Specify replication items options** page, the **Max gen** value refers to the maximum number of snapshots of the replication target virtual machine that will be available for both failover and failback. The allowed range for a VMware vSphere snapshot replication set is 1-30.

- Retain the default setting unless you have specific snapshot requirements and then click **Next**.

F1 Help: Set Properties - Items tab

NOTE: A VM replication set does not send or back up any data to DS-System.

8.3.4.5 Specifying the destination for VM replication

In the **Choose Destination for Replication Set** page, the DS-Client that has been grouped with the source DS-Client by your service provider will be shown in the **Destination DS-Client** list. IP addresses of multiple DS-Clients will be available for selection in this list if multiple DS-Clients have been grouped with the source DS-Client.

NOTE: Sufficient **VM Replication Capacity** must be available before you can complete this step. See information on the prerequisite Section 8.1.3, “Licensing:”, on page 346.

1. In the **Destination DS-Client Info** section, verify that the IP address shown beside **Destination DS-Client** represents the DS-Client that you want to use. If necessary, select the IP address of another DS-Client in the list.

   The IP address of the DS-Client that is shown will be the destination DS-Client acting for the replication target virtual machine in this VM replication set.

   F1 Help: Set Properties - Destination tab

2. Verify that the port number displayed beside **Destination Port** represents the port used by the destination DS-Client.

3. In the **Destination Hypervisor Info** section, type the IP of the destination vCenter Server as the **Hypervisor IP**.

   The selected virtual machine(s) will be replicated to the destination vCenter Server.

4. Type the user name and password that are needed to access the destination vCenter Server (or click the Browse **...** button to open a key file that contains the required user name and password). For important recommendations, see Section 8.1.3, “Credentials for the source and destination servers:”, on page 348.

5. Click the **Destination DataCenter** list.

   The credentials you have entered are sent to the destination DS-Client, which then attempts to access the destination vCenter Server. On a successful logon, the **Destination DataCenter** list is automatically populated with all the available DataCenters.

6. Select the DataCenter in which you want the replication target virtual machine to be located and then click **Next**.

8.3.4.6 Specifying destination information for VM replication

1. In the **Destination Information for Replication Set** page, specify the location within the destination vCenter Server to which the virtual machine will be replicated.

   Unless you specify the host, datastore, and folder for each individual virtual machine being replicated, each virtual machine will be replicated to the host, folder, and datastore shown in the **Global** section. If a datastore is not specified in the **Global** section, the first available datastore from the list will be used. If a folder is not specified, the default location is the root level of the vCenter Server.

   F1 Help: Destination Information for Replication Set

2. If necessary, click under **Destination Machine/Folder Name** to type a name that you want for the replication target virtual machine.

   The replication target virtual machine will be identified in the destination vCenter Server by the name you provide. Renaming the replication target virtual machine is optional.

   NOTE: The name of the virtual machine or folder must not contain these characters: @ \ /

3. Click **Next**.

8.3.4.7 Specifying replication set options

The **Specify replication set options** page allows you to configure the replication set for online or offline VM replication. In addition, you can also specify the number of errors that you will allow before DS-Client should stop a VM replication process.

1. In the **Specify replication set options** page, configure the VM replication set for either online or offline VM replication by doing one of the following:

   - To perform online VM replication, keep the **Initial replication** check box cleared.
   - To perform offline VM replication, select the **Initial replication** check box and, when prompted in the **Initial Backup Settings** dialog box, specify a local disk location to which DS-Client should save the replication data. If necessary, click **Add** to specify a new location.

   NOTE: If you have selected the **Initial replication** check box, take note of the local disk location that you specify. After the source DS-Client performs the offline VM replication process, you will need to copy the replication data from this specified location to a local disk location on the destination DS-Client machine.

2. If you need to specify the number of errors to allow before DS-Client should stop a VM replication process, type a number between 1 and 9999 beside **Stop on errors**. Keep the default value, 0, if you have no specific requirements.

   The value 0 means that the number of errors encountered will not cause DS-Client to stop a VM replication process.

   F1 Help: Set Properties - Options tab

8.3.4.8 Specifying notification options (optional)

See instructions in Section 6.2.3.8, “Specifying notification options”, on page 153.

8.3.4.9 Specifying a schedule (optional)

You can assign the VM replication set to an existing schedule or a new schedule. When a VM replication set is assigned to a schedule, DS-Client automatically performs the replication of virtual machines according to the schedule. Otherwise, the VM replication process will only be performed on demand.

For important information regarding schedules, see related sections in Chapter 4, “Working with schedules”, such as Section 4.1, “About schedules”, on page 89. Information on schedules that pertains to backup sets also applies to VM replication sets.

To assign the VM replication set to a schedule, follow these steps:

1. In the **Choose a schedule for this replication set** page, select **Schedule**.
2. To select a new schedule, click **New** to create a new schedule and add schedule details through the **Schedule** dialog box. For more information, see Section 4.2, “Configuring a schedule”, on page 90.
3. To select an existing schedule, select a schedule from the list under **Available schedules**. If necessary, click **Edit** to open the **Schedule** dialog box and modify the schedule.
4. In the **Schedule** dialog box, ensure that **Perform Replication** is selected and the **1. Perform Backup** check box is cleared in the schedule.

IMPORTANT: Use extra precaution when you modify or select a schedule to which other VM replication sets or backup sets have already been assigned. See Section 4.3, “Assigning a schedule to a backup set”, on page 94.

Only two tasks in a schedule specifically apply to VM replication:

- **1. Perform Backup**: Does not apply
- **2. Enforce Retention**: Does not apply

- **3. Perform Validation**: Applies
- **4. Perform BLM**: Does not apply
- **Start LAN Scan Shares**: Performs processes at the DS-Client level only, not for a VM replication set
- **Clean Local-Only Trash**: Performs processes at the DS-Client level only, not for a VM replication set
- **Perform Replication**: Applies

NOTE: A task that does not apply to VM replication will not be performed for a VM replication set. Consequently, when tasks like **Enforce Retention** or **Perform BLM** are selected in a schedule to which a VM replication set is assigned, no action related to those tasks will be performed for the set.

5. Click **Save** to save changes to the schedule.

   The VM replication set will be assigned to the schedule shown under **Available schedules** in the **Choose a schedule for this replication set** page.

6. Click **Next**.

8.3.4.10 Naming the VM replication set

- Type a name for the VM replication set.

  This name allows you to identify the VM replication set in DS-Client.

8.4 Performing on-demand replication

VM replication sets are listed in the **Backup Sets** tree. After a VM replication set has been created, you can replicate the virtual machine(s) in the set.

NOTE: Before replicating virtual machines, ensure that no snapshot or checkpoint currently exists in the source virtual machine on the source server. Refer to the VMware documentation on how to manage snapshots. Refer to the Microsoft documentation on how to manage checkpoints.

NOTE: Sufficient **VM Replication Capacity** must be available before a VM replication process can begin by schedule or on demand. See information on the prerequisite Section 8.1.3, “Licensing:”, on page 346.

The replication of virtual machines is performed automatically when if you have assigned a schedule to the VM replication set. Otherwise, follow these steps to replicate virtual machine(s) on demand:

1. Browse the **Backup Sets** tree, right-click the VM replication set that has the virtual machine(s) you need to replicate, and then click **Replicate Now**.
2. In the **Select items for on-demand replication** dialog box, ensure that the virtual machine(s) that you want to replicate are selected, and then click **Next**.
3. In the **Select options for on-demand replication** dialog box, specify the value for **Stop on errors** if necessary. Otherwise, keep the default value, 0.
4. Click **Finish**.

   The VM replication process begins. The process varies depending on whether the replication set is configured for offline VM replication (Initial replication) or online VM replication (default).

Online VM replication process:

The source DS-Client will directly send the replication data of the source virtual machine to the destination DS-Client. When the VM replication process is complete, the source virtual machine will be replicated to the destination server (that is, the destination vCenter Server for VMware vSphere snapshot replication or the destination Hyper-V Server for Microsoft Hyper-V checkpoint replication).

Offline VM replication process:

The source DS-Client will download the replication data onto a local disk location specified for the Initial replication option. You then need to (1) manually copy the replication data from the local disk of the source DS-Client machine to a local disk of the destination DS-Client machine, and (2) import the replication data. When the import is complete, a snapshot or checkpoint of the source virtual machine will be replicated to the destination server. To continue, see Section 8.5, “Importing replication data (Offline replication)”, on page 363.

NOTE: A VM replication set does not send or back up data to DS-System.

8.5 Importing replication data (Offline replication)

At this point, the source DS-Client has performed replication for an offline VM replication set: The Source DS-Client has saved the initial replication data of the source virtual machine as a folder to a specified local disk location on the source DS-Client machine. To replicate the source virtual machine to the destination server, the destination DS-Client needs to import the initial VM replication data from a local disk location on the destination DS-Client machine.

You need to perform the steps in Section 8.5.1, “Copying the initial replication data”, on page 363 and then Section 8.5.2, “Importing the Initial VMR set”, on page 364.

8.5.1 Copying the initial replication data

1. Locate the initial VM replication data that the source DS-Client has placed in a specified local disk.

   This local disk location was specified through the **Initial Backup Settings** dialog box when the VM replication set was being created in the New Backup Set Wizard.

2. Copy the folder that contains the initial VM replication data and place the folder in a local disk on the destination DS-Client machine.

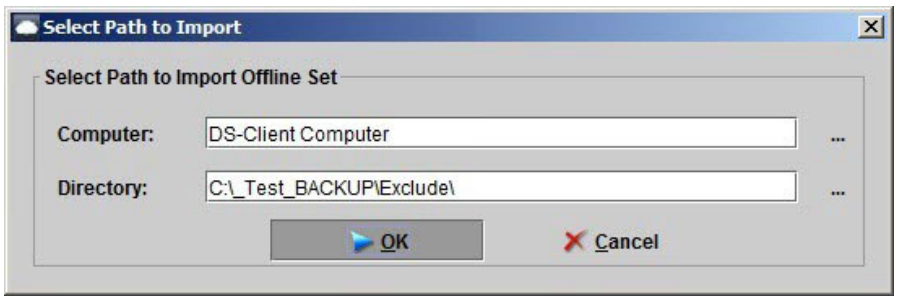
3. Specify the path for the destination DS-Client to import the initial VM replication data. See Section 8.5.2, “Importing the Initial VMR set”, on page 364 for detailed instructions.

   After importing the data, the destination DS-Client will replicate the source virtual machine to the target virtual machine on the destination server.

8.5.2 Importing the Initial VMR set

Perform the following steps so that the destination DS-Client can import the initial VM replication data from a local disk location:

1. On the destination DS-Client, on the **VM Replication** menu, click **Import Initial VMR Set**.



   F1 Help: Select Path to Import

2. In the **Select Path to Import** dialog box, do the following:

   a) Select the computer on which you have placed the folder containing the initial VM replication data.

   b) Select the directory path to the folder that contains the initial VM replication data, and then click **OK**.

3. In the **VMR Offline Configuration** dialog box, do the following:

   F1 Help: VMR Offline Configuration

   a) In the list of VM replication sets that are available for importing, select the VM replication set that you want to import.

   b) Click **Import** to start the process.

This destination DS-Client sends the data to the destination server. After that is finished, the source virtual machine is replicated on the destination server.

8.6 Performing a failover

The following procedure describes how to perform a failover on a replicated virtual machine.

After the virtual machine on the source server has been replicated to the destination server, the replicated virtual machine on the destination server is ready for failover.

Before performing a failover, you can select from multiple replicated generations if available. When a target virtual machine is being used after failover, it is available for failback.

To perform a failover:

1. On the **VM Replication** menu, click **All Replicated Machines**. In the **All Replicated Machines** dialog box, under Items ready for failover, each row displays a source virtual machine that has been replicated to the destination server.

   F1 Help: All Replicated Machines

2. In the **Generations** column, for each virtual machine on which you plan to perform a failover, verify that the replicated generation that you want to use is displayed. By default, the most recent replicated generation is already selected.

   NOTE: To select another generation from a list of all successfully replicated generations of the virtual machine, click the Generations column in the row that corresponds to the virtual machine and then click the Browse **>>** button.

3. To perform a failover on one virtual machine, in the row that corresponds to the virtual machine, click **Failover**.

   NOTE: When you click Failover, the failover process begins. The selected generation of the virtual machine is powered on from the destination server. You can then start using the target virtual machine.

4. To perform a failover on multiple virtual machines concurrently, select the check box in the rows that correspond to the virtual machines, and then click **Trigger**.

   NOTE: DS-Client has no limit on concurrent failover activities. When you click Trigger, the failover process begins. The selected generation of each selected virtual machine is powered on from the destination server. You can then start using the target virtual machines.

8.7 Performing a failback

The following procedure describes how to perform a failback on a replicated virtual machine. You must always perform a failback from the destination DS-Client.

IMPORTANT: Before performing a failback, ensure that the existing source virtual machine has already been deleted and that all notifications are resolved. If you want to retain the existing source virtual machine, clone the virtual machine before deleting it. Do not delete a partially restored source virtual machine from a previously attempted failback that has been stopped or has failed.

To perform a failback:

1. On the **VM Replication** menu, click **All Replicated Machines**.
2. In the **All Replicated Machines** dialog box, under **Items ready for failback**, each row displays a target virtual machine that is being used after failover. Do one of the following:
   - To perform a failback on one virtual machine, in the row that corresponds to the virtual machine, click **Failback**.
   - To perform a failback on multiple virtual machines concurrently, select the check box in the rows that correspond to the virtual machines, and then click **Trigger**. You can perform a maximum of three concurrent failbacks.

   NOTE: If a replication set consists of folders that contain multiple virtual machines with files located on different datastores, you should perform a failback of the multiple virtual machines concurrently to the same datastore or perform a failback of each virtual machine to a different datastore. When performing a failback to different datastores, ensure that the first failback completes before performing another failback.
3. In the **Select the Source Host and Datastore for Failback** dialog box, do the following for each virtual machine on which you are performing a failback:
   a) Verify the original host and original datastore.
   b) In the **Failback to host** list, select the target host for failback.
   c) In the **Failback to datastore** list, select the target datastore for failback.
   d) To start the failback process, click **Failback**.

   During the failback process all changes to the active virtual machine are preserved and transmitted to the target host and datastore on the destination server, and the restored generation is powered on.

   F1 Help: Select the Source Host and Datastore for Failback

When the failback process completes, you can perform replication on the source DS-Client to ensure that all changed data is replicated to the destination DS-Client. Subsequent replication activities after failback will transmit only incremental changes to the destination server. The virtual machine at the destination server must not be deleted to allow for incremental replication, otherwise full replication of the virtual machine will occur.

IMPORTANT: If the failback process is stopped or fails, restart the process. Do not delete a source virtual machine that has only been partially restored in a previous failback attempt.

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9 Monitoring DS-Client activities

You can monitor important operations such as backup and recovery processes to ensure that they have been performed successfully. The DS-Client interface provides various ways for you to monitor real-time and past activities.

NOTE: If you need to view system status information to check performance or troubleshoot, see Section 3.11.3, “Viewing the system status”, on page 77.

9.1 Monitoring activities in real time

DS-Client provides two features for you to monitor activities in real time:

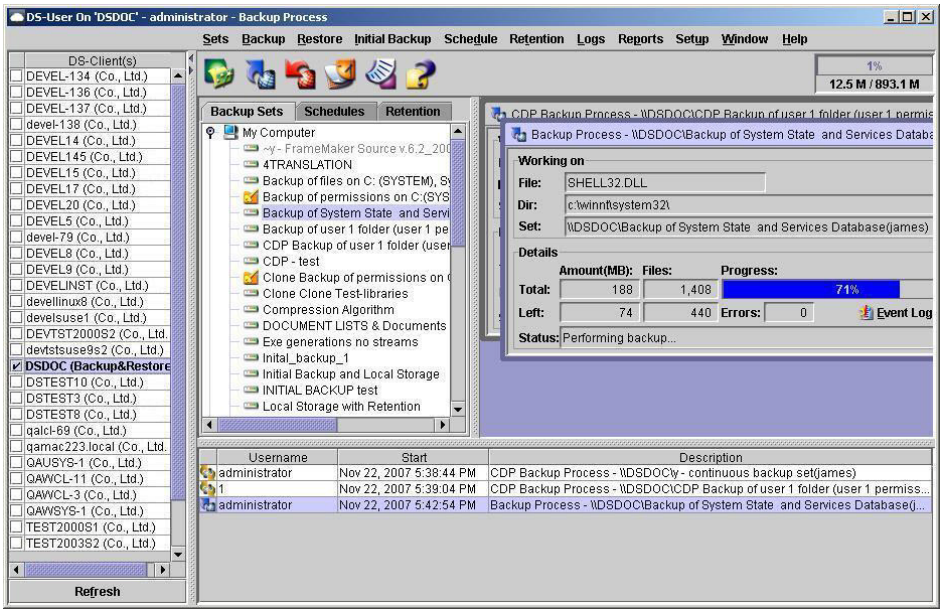
- **The real-time activity monitor**: The real-time activity monitor is a pane that is located at the lower section of the DS-User window. This pane cannot be hidden. It lists only activities that are currently in progress and displays the following basic information:
  - The user who authorized the activity.
  - The time at which the activity started.
  - The type of activity and the name of the backup set on which the activity is being performed.
- **The process window**: The title of this window displays the type of process and the name of the backup set for which the process is being performed. If you have started an activity on demand, the process window of the activity automatically appears and displays additional details of the activity, which include the following:
  - The name of the file being processed and the last directory that the process scanned. These are independent of each other and might not correspond.
  - The total and remaining amount of data and number of files to be processed.
  - The number of errors encountered.
  - The percentage of the process that has been completed.

NOTE: Because most processes are multi-threaded, they might finish before the process window can refresh.

The process window also allows you to access the **Event Log** to view events that relate to the current process. For more information, see Section 9.3.2, “Viewing the Event Log”, on page 376.

- To open the process window of an activity that is listed in the real-time activity monitor, double-click the activity, or right-click the activity and then click **Monitor**.

  F1 Help: Process Window



9.2 Stopping an activity

While an activity is in progress, you can stop the activity in one of two ways:

- In the real-time activity monitor, right-click the activity, and then click **Stop Activity**.
- In the process window of the activity, click **Stop**.

9.3 Viewing logs

The DS-Client logs information about scheduled and on-demand activities that you can use for monitoring and troubleshooting. You can configure how long the DS-Client keeps this information in its database. For more information, see Section 3.1.5, “Configuring the parameter settings”, on page 25).

NOTE: Logs older than the defined retention period are automatically deleted by the Admin processes. However, for each existing backup set, the last 10 activities will be preserved even if they exceed the retention period for logs. This means some backup sets that have only a few activities might retain old logs indefinitely or until the backup set itself is deleted.

If a DS-Client fails to start due to a configuration, database, or other error, it will record errors in the operating system event log:

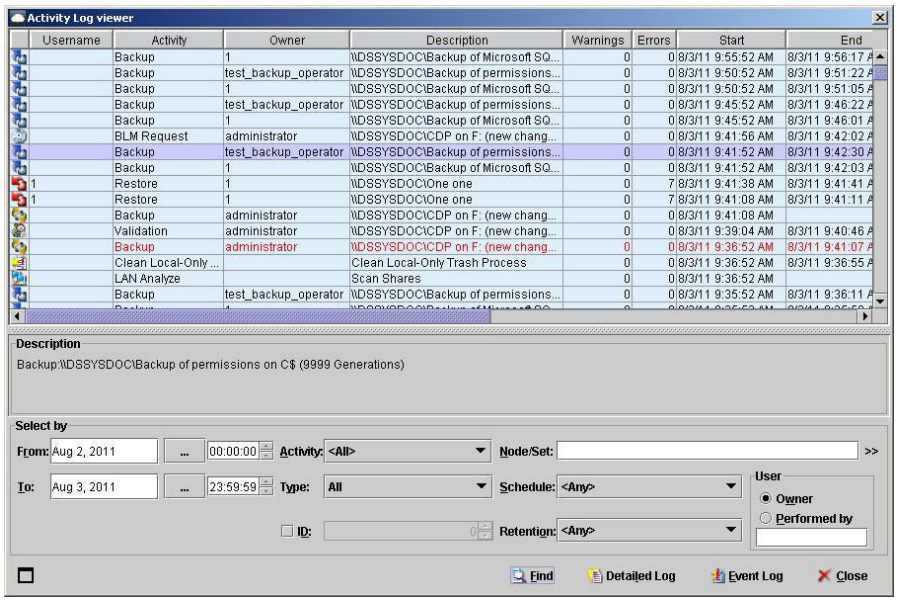
- For Windows, they are logged in the Event Viewer.
- For Linux, they are logged in `/tmp/dsclient.err`, or `/tmp/dsclient.out`, or `/var/log/messages`.
- For Mac, they are logged in `/Library/Logs` or `/var/log`.

9.3.1 Viewing the Activity Log

The Activity Log displays a list of the activities that have occurred on the DS-Client.

To view the activity log:

1. On the **Logs** menu, click **Activity Log**. The **Activity Log Viewer** appears.



F1 Help: Activity Log viewer

2. Cick **Find**. The following information is displayed.

Username	Name of the user who performed the activity. This column is empty if the activity was scheduled.
Activity	Type of activity.
Owner	Name of the owner of the backup set
Customer	Name of the customer associated with the backup set. This column is displayed only when using the Multitenant feature.
Description	Description of the activity.
Node ID	DS-Client node associated with the activity. This column is displayed only when connected to a Grid DS-Client.
Warnings	Number of warnings that occurred during activity.
Errors	Number of errors that occurred during activity.
Start	Date and time the activity started.
End	Time of day the activity ended.
Duration	Length of time between the activity's start and end times.
Files	Number of files that were transferred or processed by the activity. For CDP backup sets that are currently running, this information is updated every 30 minutes.
Online	Amount of data transferred to or from online storage. For activities that do not transfer data, the value indicates the amount of data processed. For CDP backup sets that are currently running, this information is updated every 30 minutes.
Transmitted Amount	Amount of data transmitted between the DS-Client and the DS-System. For activities that do not require a connection to the DS-System, this value indicates the amount of data processed after deduplication and compression.

Completion	Status of the activity. Activities that appear in black are still in progress or have completed. Activities that appear in red did not complete. For more details, check the Event Log. For activities that completed or are still running, they appear in black color in that Activity Log. Examples of this type of completion include: Completed with errors Completed with errors and warnings Completed with warnings In progress: activity is still running Successful: activity successfully completed with no errors or warnings For activities that did not complete for different reasons, they appear in red color in the Activity Log. Examples of this type of completion include: Amount limit Disconnect Error limit Incomplete: activity did not finish completely and/or failed to close its connection with DS-System properly No connection: activity failed to connect to the DS-System No source: failed to connect to backup set source Not allowed Shutdown Time limit User stop(ped): user stopped the activity Unexpected stop: activity stopped for other reasons Yield
ID	Activity's unique identification number.
Note	Additional information about the activity.

3. To filter the results, do the following:

   a) To specify a start date and time for the log, click **[…]** beside the **From** box. No activities before this date and time will be displayed.

   b) To specify an end date and time for the log, click **[…]** beside the **To** box. No activities after this date and time will be displayed.

   c) To view a specific activity, select the activity from the **Activity** box.

   d) To view a specific type of activity, select the type In the **Type** box.

   e) To view the log for a specific node or backup set, click **[>>]** beside the **Node/Set** box.

   f) To view the log for a specific backup schedule, select the schedule from the **Schedule** box.

   g) To view the log for a specific retention rule, select the retention rule from the **Retention** box.

   h) To view the activities performed by a specific user, select one of the following options:

      - **Owner** — Searches for activities performed by the backup set owner.

- **Performed by** — Searches for activities performed by the specified user.

i) To view the log for a specific activity ID, select the **ID** check box, and then enter the ID.

j) To view the log for a specific Grid DS-Client node, select the node in the **Node ID** box.

k) To update the activity log, click **Find**.

4. To view a detailed log of all files that were affected by a backup or restore activity, click Detailed Log. For more information, see Section 9.3.1.1, “Using the Detailed Log”, on page 374.

5. To view specific event information for an activity, select the activity, and then click **Event Log**.

6. To close the log, click **Close**.

9.3.1.1 Using the Detailed Log

You can view detailed log information if the backup set is configured to record it. This feature is available if the selected activity contains **Detailed Log** information (refer to Section 6.2.3.5, “Specifying backup set options”, on page 149). This means a log of all the files processed in the selected session was recorded.

DS-Client dumps all detailed logs to a folder called `asigra_archivlog`. By default, this is located in the DS-Client installation directory, but can be configured using the `LogArchivePath` advanced parameter. (For more information see Section 3.1.8, “Configuring the advanced settings”, on page 33.)

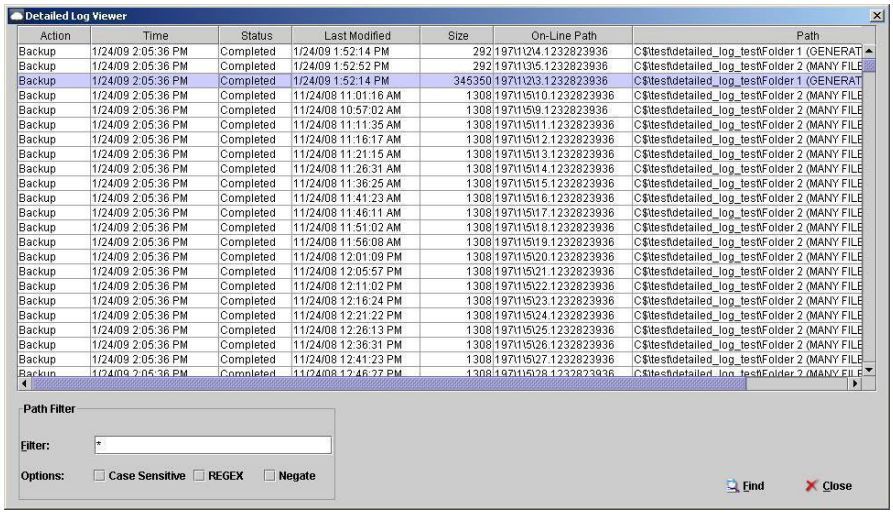
For Grid DS-Clients, if **LogArchivePath** is not configured, the default is each node writes to the its local `asigra_archivlog` folder for the activity it performs. However, DS-User can access only the detailed log on the Main Node. To ensure the detailed log for all sessions is accessible, configure **LogArchivePath** to a UNC path (which can be accessed by all nodes).

The detailed log contains a log of all files that were affected by a specific backup or restore activity. Only those activities whose **Detailed Log** check box is selected, will have that information recorded. This is set as follows:

- For scheduled backups — In the **Backup Set Properties** dialog box, on the **Options** tab.
- For on-demand backups — In the **Backup Now Wizard**, on the **Select options for demand backup page**.
- For restores — In the **Restore Now Wizard**, on the **Select Restore Options** page.

To view the detailed log:

1. In the Activity Log, select the activity session you would like to view.
2. Click **Detailed Log**.



F1 Help: Detailed Log Viewer

3. In the Detailed Log Viewer, select a filter (the default is "*****", which means "ALL"), and then click **Find**. You can narrow the search by using the options in the **Path Filter** section.

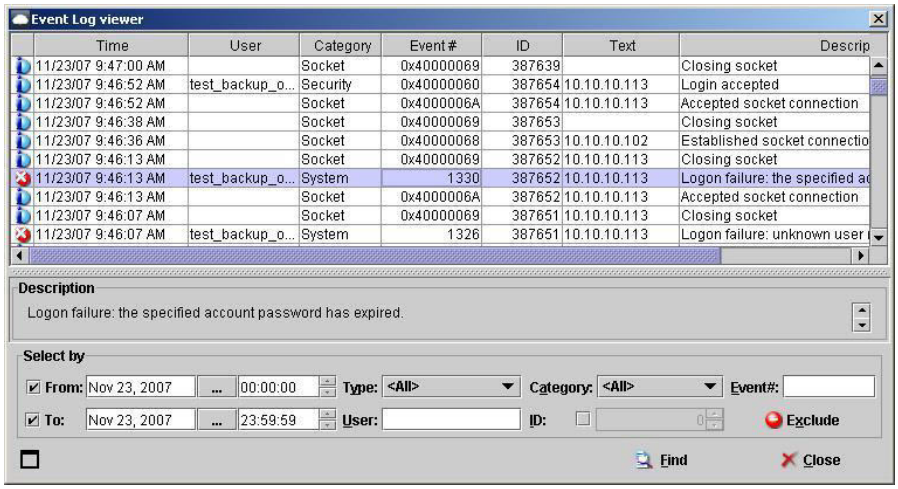
NOTE: When you search a detailed log, you are actually searching for a file stored in the `asigra_archivlog` folder. You must make decisions about the maintenance for this folder (e.g. delete / archiving). By default, the logs will constantly accumulate.

9.3.2 Viewing the Event Log

The Event Log displays the events (error, warning, and information messages) that occurred on the DS-Client while performing activities. It also displays logon and logoff attempts.

To view the Event Log:

1. On the **Logs** menu, click **Event Log**. The **Event Log Viewer** appears.



F1 Help: Event Log Viewer

2. Cick **Find**. The following information is displayed.

Icon	Event type (Information, Warning or Error)
Time	Date and time that the event occurred.
User	Name of the user who associated with the event. This column is empty if the activity was scheduled.
Category	Category of the event (database, socket, system, ...)
Event #	Error ID number.
ID	Unique event number that distinguishes one activity from another.
Text	Display additional information associated with the message (ex: the IP address of a connection).
Description	Description of the event.

3. To filter the results, do the following:

   a) To specify a start date and time for the log, click **[…]** beside the **From** box. No events before this date and time will be displayed.

   b) To specify an end date and time for the log, click **[…]** beside the **To** box. No events after this date and time will be displayed.

   c) To view a specific type of error, select the type In the **Type** box.

   d) To view the log for a specific user, type the user name in the **User** box.

e) To view the log for a specific error category, select it from the **Category** box.

f) To view the log for a specific error ID, select the **ID** check box, and then enter the ID.

g) To view the log for a event number, type the number in the **Event#** box.

h) To exclude events from the list, click **Exclude**. The **Exclude Event #** dialog box appears.

1. To add an event, type the number in the click **Event#** box and click **Add**.
2. To select from the list of events that occurred, click **Select** and in the **Select Event #** dialog box, select the events and click **Select**.
3. Click **OK**.

i) To update the event log, click **Find**.

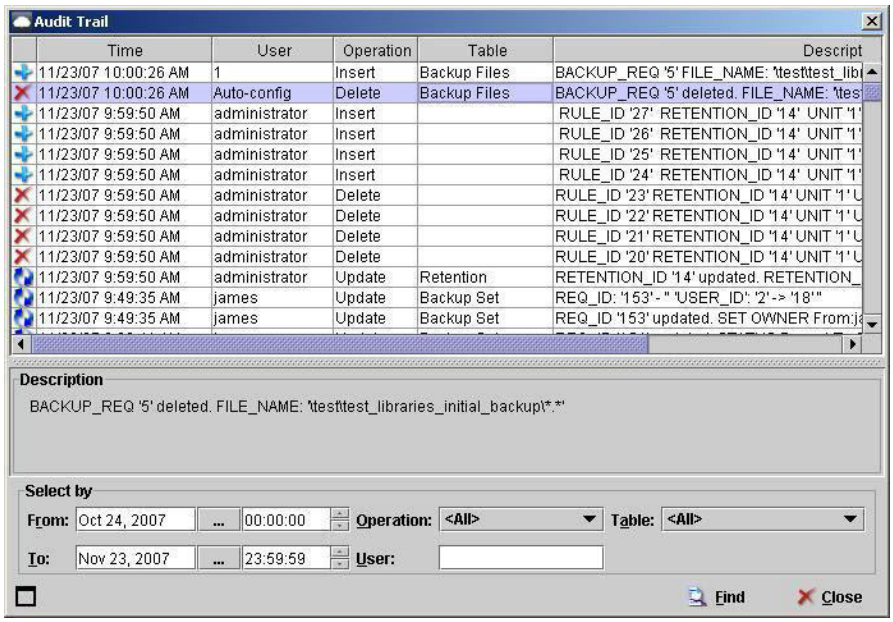
4. To close the log, click **Close**.

9.3.3 Viewing the Audit Trail

The audit trail displays the changes made to the DS-Client database. This information includes DS-Client setup, backup set, and schedule information. The DS-Client administrator can use these logs for troubleshooting and auditing purposes.

To view the Audit Trail:

1. On the **Logs** menu, click **Audit Trail**. The **Audit Trail** dialog box appears.



F1 Help: Audit Trail

2. Cick **Find**. The following information is displayed.

Icon	Operation type.
Time	Time the modification occurred.
User	Name of the user who performed the modification.
Operation	Type of modification performed.
Table	Table that was modified.
Description	Details of the modification that occurred.

3. To filter the results, do the following:

   a) To specify a start date and time for the log, click **[…]** beside the **From** box. No events before this date and time will be displayed.

   b) To specify an end date and time for the log, click **[…]** beside the **To** box. No events after this date and time will be displayed.

   c) To view a specific type of operation, select the type In the **Operation** box.

   d) To view the log for a specific user, type the user name in the **User** box.

   e) To view the log for a specific error category, select it from the **Category** box.

   f) To view the log for a database table, select it from the **Table** box

   g) To update the event log, click **Find**.

4. To close the log, click **Close**.

10 Working with reports

10.1 About reports

This section provides information on the various reports that DS-User can produce and how to generate these reports.

Reports can be printed or exported regarding one DS-Client. Global reports allow you to print or export reports for multiple DS-Clients in the same print session.

An export function is also included to allow you to save important backup set information in an electronic format.

If you are an advanced user, custom reports allows you to create your own reports, based on the data provided from the DS-Client database tables.

NOTE: If you are logged into DS-Client as a member of the Administrators group, you will be able to view only reports that include all DS-Client users.

10.1.1 Generating reports for multiple DS-Clients

Global Reports allow you to print the selected report for multiple DS-Clients in the same print session. This saves a lot of time if your environment has many DS-Clients, since you would otherwise have to connect to each DS-Client individually, and then print the desired reports.

NOTE: You **do not** need to be connected to a specific DS-Client to use this feature. This option is always available from the DS-User > Reports Menu > Global Reports.

The DS-User must be able to connect to the selected DS-Clients, and you must use valid credentials for each DS-Client.

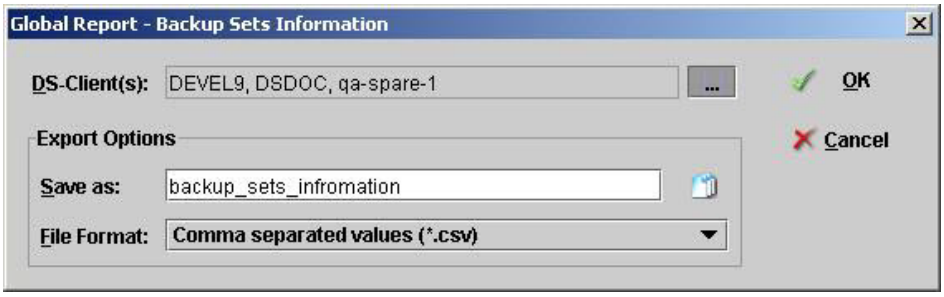
10.1.1.1 Selecting DS-Client(s) for a global report

Global reports require a list of DS-Clients and credentials so that the DS-User can connect and generate the reports.

Remember that this section (under the Global Reports sub-menu) applies only to the current DS-User installation from which you are working.

To select DS-Clients for a global report:

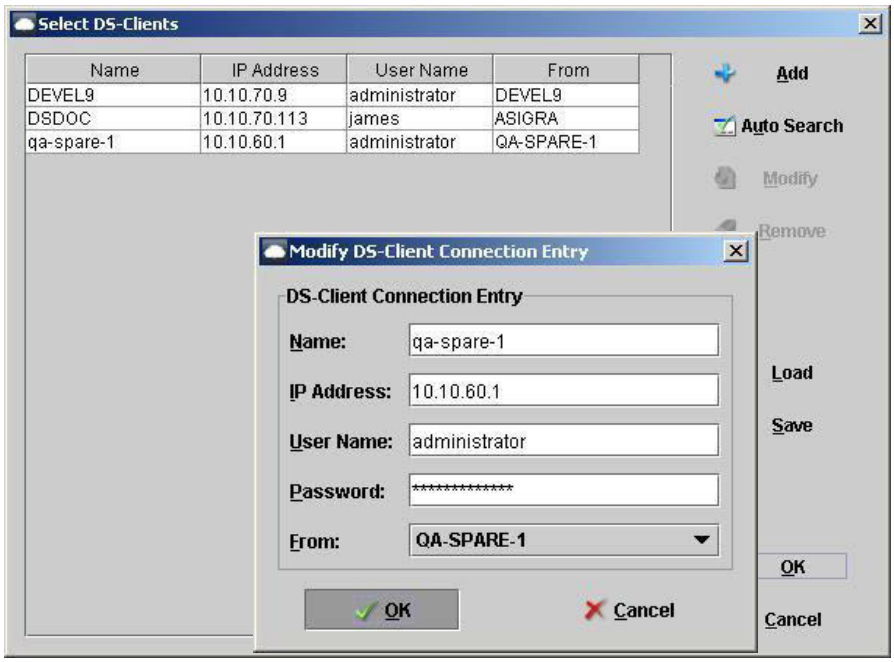
A **DS-Client** box appears at the top of each Global Report print dialog box.



F1 Help: Print Global Report - Export Backup Sets Information

1. Click the **[...]** button.

   The **Select DS-Clients** dialog box appears.



   F1 Help: Select DS-Client (Print Global Report)

2. In this dialog box, configure the list of DS-Clients whose reports you want to generate. You must specify at least one DS-Client, either individually or in a group by using the Auto Search feature.

   To add DS-Clients individually:

   a) Click **Add / Modify**.

      F1 Help: Add / Modify DS-Client Connection Entry (Print Global Report)

   b) In the **New / Modify DS-Client Connection Entry** dialog box, enter the IP address and credentials to the target DS-Client computer.

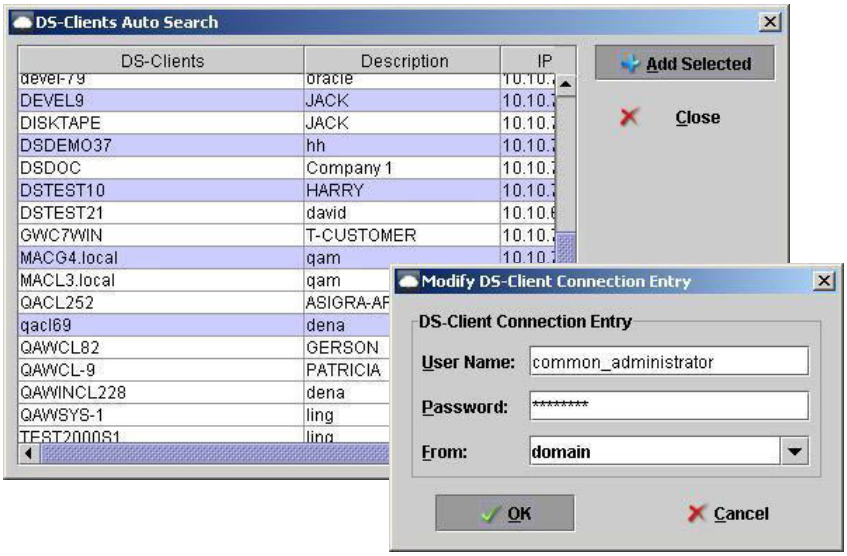
NOTE: These credentials must be administrator-level.

DS-User attempts to connect to the DS-Client at that IP address. If successful, the drop-down list is activated beside the **From** box (with the available servers where the credentials can be verified).

To add using the Auto Search feature:

a) Click **Auto Search**.

DS-User scans the network, and the **DS-Clients Auto Search** dialog box appears with the visible DS-Clients.



F1 Help: DS-Clients Auto Search (Print Global Report)

b) To add multiple DS-Clients, hold down the CTRL key while clicking.

c) When you have finished making your selections, click **Add Selected**.

The **DS-Client Connection Entry** dialog box appears.

d) Enter a user name and password that is valid on all of the selected DS-Clients, and then click **OK**.

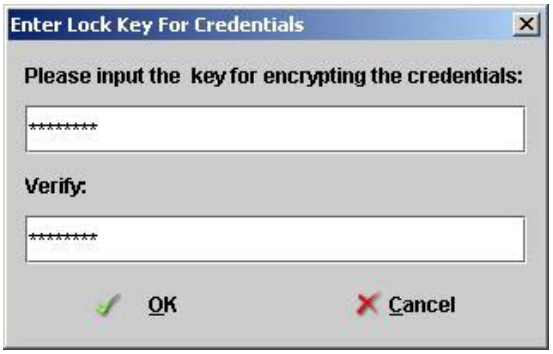
NOTE: You must enter a user name and password that is valid on all of the selected DS-Clients. If you do not have common credentials (with sufficient permissions), you must specify each DS-Client individually.

The **Select DS-Clients** dialog box displays the added connection entries.

You can save the connection entries you have listed, but they will be retrievable only from the current DS-User installation. (The computer, IP address, and credentials are saved to the local user.ini file in encrypted format.)

3. To save or load credentials, click the corresponding button. Enter the key to lock or unlock the credentials, and then click **OK**.

If you are loading credentials, the **Select DS-Clients** dialog box returns with the saved connection entries.



F1 Help: Enter Lock Key For Credentials (Print Global Report)

NOTE: You can only save one set of DS-Client connection entries. If you click **Save** again, whatever is in the **Select DS-Clients** dialog box at that time will overwrite any saved credentials.

4. After you have finished the list of DS-Clients, click **OK**.

   The **Global Report Print** dialog box returns with the selected DS-Clients in the corresponding field.

5. Select the required reports, and then click **OK** to generate the reports.

10.2 Configuring the font for reports

In each installation of the DS-User, you can customize the font used in the PDF reports that the DS-Client service generates:

To configure the report font:

1. On the **Reports** menu, click **Report Setup**.
   - To configure the font:
     a) Click **Select**.
     b) Browse for and select a TrueType font file (ending in .ttf or .ttc), and then click **Open**.
   - To return to the default, clear this box.
2. Click **OK**.

   Reports generated on demand from this DS-User installation will use the selected font.

10.3 Generating a Backup Groups Report

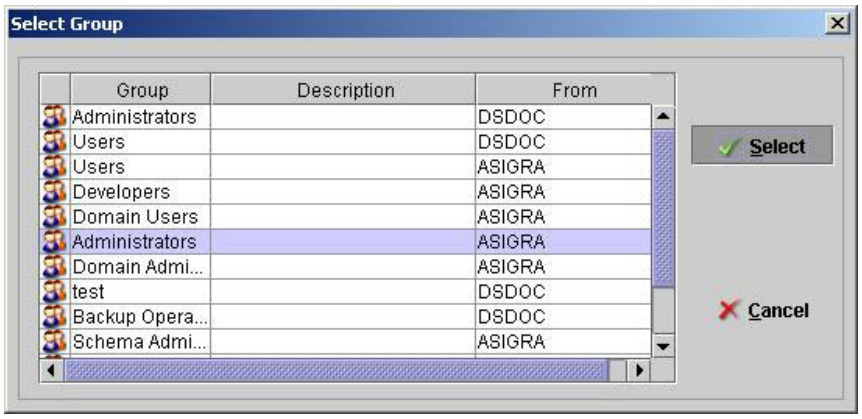
The Backup Groups Report summarizes the usage by user groups (Administrator, Backup Operator, Regular User, etc.).

To generate a Backup Groups Report:

1. On the **Reports** menu, click **Backup Groups**. The **Backup Groups Report** dialog box appears.

   F1 Help: Print Backup Groups

2. For a summary for all backup groups, leave the **Group Name** box empty. To specify a single group, click **>>**. The **Select Group** dialog box appears.



   F1 Help: Select Group / User

3. Highlight the required group, and then click **Select**.
4. Select the backup set type(s) to display.
5. If the Multi-Tenant feature is enabled and configured, you can select the customer for which you want to generate the report. The report will only display data for the backup sets associated with the customer.
6. To view a preview of the report, click **OK**.
7. To print the report, click the printer icon. To export the report to a file, click the **Save** icon, and select the export format (PDF, Word, Excel, etc.) and destination.

The report displays the following information:

Report Header	
Account No.	The customer account number.
Account Name	The name of the customer account.
DS-Client No.	The number of the DS-Client covered in this report.
Customer Name	If the Multi-Tenant feature is enabled, this field is displayed and indicates the customer that was specified when the report was generated. The report displays only information about backup sets associated with this specified customer.
Backup Groups report selection DS-Client Report (DS-User displays the DS-Client computer name in parenthesis)	
Group	Shows the backup group, or <All>
Online Statistical Self contained Local-Only Local DS-VDR Instant recovery	Shows the types of backup sets described in the report. • Statistical backup sets allow you to estimate the potential storage those backup would occupy. • Self contained and Local-Only backup sets perform backup and restore using only the local storage path (on the Setup menu, click Configuration, and then click Parameters). • Local DS-VDR backup sets do not show any DS-System data storage or transmission amounts, since they do not apply.
Printing date	Day the report was printed.
Report Table	
Columns	**Description**
Group	The first column lists the user group.
User Name	Shows all users belonging to the Group.
Full Name	Contains the appropriate real name associated with the user in the User Name column (if applicable).
Files	Shows the number of files that the user currently has stored online.
Online Amount	Shows the total amount which the files occupy online.
Totals	At the bottom of the data for each group, there is a summary total in the Files and the Online Amount columns.

Table 1 Backup Groups Report

10.3.1 Generating a Global Backup Groups report

To generate a Global Backup Groups report:

1. On the **Reports** menu, point to **Global Reports**, and then click **Export Backup Sets Info**. The **Global Report - Backup Groups** dialog box appears.

   F1 Help: Print Global Report - Backup Groups Report

2. To select DS-Client(s), see Section 10.1.1.1, “Selecting DS-Client(s) for a global report”, on page 379.

3. In the **Report Selection** section, specify what you want to display.

For details on the options, see the online help for the dialog box. See Section 10.3, “Generating a Backup Groups Report”, on page 383.

10.4 Generating a Backup Items Report

This report displays information about each backup set on a DS-Client.

To generate a Backup Items Report:

1. On the **Reports** menu, click **Backup Items**. The **Backup Items** dialog box appears.

   F1 Help: Print Report

2. Select the information you want to see in the report.
3. If the Multi-Tenant feature is enabled and configured, you can select the customer for which you want to generate the report. The report will only display data for the backup sets associated with the customer.
4. To view a preview of the report, click **OK**.
5. To print the report, click the printer icon. To export the report to a file, click the **Save** icon, and select the export format (PDF, Word, Excel, etc.) and destination.

The report displays the following information:

Report Header	
Account No.	The customer account number.
Account Name	The name of the customer account.
DS-Client No.	The number of the DS-Client covered in this report.
Customer Name	If the Multi-Tenant feature is enabled, this field is displayed and indicates the customer that was specified when the report was generated. The report displays only information about backup sets associated with this specified customer.
Backup Items report selection DS-Client Report (DS-User displays the DS-Client computer name in parenthesis)	
Online Statistical Self contained Local-Only Local DS-VDR Instant recovery	Shows the types of backup sets described in the report. • Statistical backup sets allow you to estimate the potential storage those backup would occupy. • Self contained and Local-Only backup sets perform backup and restore using only the local storage path (on the Setup menu, click Configuration, and then click Parameters). • Local DS-VDR backup sets do not show any DS-System data storage or transmission amounts, since they do not apply.
Printing date	Day the report was printed.
Report Table	
Columns	**Description**

Table 2 Backup Items Report

Backup Set	The Backup Set Column lists the source server, backup set name, and backup set owner.
Set Type	Shows what type of backup set (Online, Statistical, Self Contained, etc.).
Backup Items	The Backup Items column lists the individual backup items specified in the backup set. • A double-plus sign (++) indicates this backup item includes sub-directories. • A single-plus sign (+) indicates this backup item does not include sub-directories. • A minus-sign (-) indicates that this is an “Exclude” backup item.

Table 2 Backup Items Report

10.4.1 Generating a Global Backup Items report

To generate a Global Backup Items report:

1. On the **Reports** menu, point to **Global Reports**, and then click **Backup Items**. The **Global Report - Backup Items** dialog box appears.

   F1 Help: Print Global Report - Backup Items Report

2. To select the DS-Client(s), see Section 10.1.1.1, “Selecting DS-Client(s) for a global report”, on page 379.

3. In the **Report Selection** section, specify what you want to display.

   For details on the options, see the online help for the dialog box. See Section 10.4, “Generating a Backup Items Report”, on page 385.

10.5 Generating a Backup / Restore Report

The Backup / Restore report provides a detailed breakdown of each user's daily backup and restore activities during the specified Report period.

To generate a Backup / Restore report:

1. On the **Reports** menu, click **Backup / Restore**.

   F1 Help: Print Backup/Restore Summary & Backup Trends Report

2. By default, summaries of daily user backup and restore sessions from the beginning of the month to the current day are displayed. Select the information you want to see in the report.

3. If the Multi-Tenant feature is enabled and configured, you can select the customer for which you want to generate the report. The report will only display data for the backup sets associated with the customer.

4. Click **OK** to see a preview of the report.

5. To print the report, click the printer icon. To export the report to a file, click the **Save** icon, and select the export format (PDF, Word, Excel, etc.) and destination.

The report displays the following information.

Report Header	
Account No.	The customer account number.
Account Name	The name of the customer account.
DS-Client No.	The number of the DS-Client covered in this report.
Customer Name	If the Multi-Tenant feature is enabled, this field is displayed and indicates the customer that was specified when the report was generated. The report displays only information about backup sets associated with this specified customer.
Backup / Restore report selection DS-Client Report (DS-User displays the DS-Client computer name in parenthesis)	
Online Statistical Deleted Self contained Local-Only Local DS-VDR Instant recovery	Shows the types of backup sets described in the report. • Statistical backup sets allow you to estimate the potential storage those backup would occupy. • Self contained and Local-Only backup sets perform backup and restore using only the local storage path (on the Setup menu, click Configuration, and then click Parameters). • Deleted backup sets are calculated using data from the Activity Log. • Local DS-VDR backup sets do not show any DS-System data storage or transmission amounts, since they do not apply.
Period	Indicates the period covered by the report.
User Name	Shows the user or <All>
Backup Set(s)	Shows the backup set, or <All>
Printing date	Day the report was printed.
Report Table	

Table 3 Backup/Restore Report

Columns	Description
User Name	Shows the user who performed the backup or restore, and the date of the operation. Each day listed beneath a user name represents a day within the report period when either backup or restore activities occurred for that user.
Activities	Shows the total time taken for backup/restore activities and the total number of sessions for the listed user. • **Time (min)**: Total duration of all the sessions for the corresponding line of the report. (Note: CDP backups are counted when they are stopped, which means if a CDP backup that has been running for 5 days is stopped, it will report 7200 minutes on that day.) • **#**: Total number of sessions (both backup and restore).
Backup Activities	Shows the number of files backed up that day, the volume of data backed up, and the number of connections made on that day to perform a backup. • **# of Files**: Total number of files backed up. • **Amount (MB)**: Total amount of data backed up (Protected Size). • **#**: Total number of backup sessions.
Restore Activities	Shows the number of files restored that day, the volume of data restored, and the number of connections made on that day to perform a restore. • **# of Files**: Total number of files restored. • **Amount (MB)**: Total amount of data restored (Protected Size). • **#**: Total number of restore sessions.
User Total	The last row for each user listed in the report contains that user's totals for the report period.
Grand Total	The last row of the entire report contains the grand totals for all users listed in this report.

Table 3 Backup/Restore Report

10.5.1 Generating a Global Backup/Restore report

To generate a Global Backup/Restore report:

1. On the **Reports** menu, click **Global Reports** and then **Backup / Restore**.

   The **Global Report - Backup / Restore** dialog box appears.

   F1 Help: Print Global Report - Backup / Restore Report

2. To select DS-Client(s), see Section 10.1.1.1, "Selecting DS-Client(s) for a global report", on page 379.

3. In the **Report Selection** section, specify what you want to display.

   For details on the options, see the online help for the dialog box. See Section 10.5, "Generating a Backup / Restore Report", on page 387.

10.6 Generating a Backup Sets Report

This report displays information about backup sets of each DS-Client.

To generate a Backup Sets Report:

1. On the **Reports** menu, click **Backup Sets**.

   The **Backup Sets** dialog box appears.

   F1 Help: Print Report

2. Select the information you want to see in the report.
3. If the Multi-Tenant feature is enabled and configured, you can select the customer for which you want to generate the report. The report will only display data for the backup sets associated with the customer.
4. Click **OK** to see a preview of the report.
5. To print the report, click the printer icon. To export the report to a file, click the **Save** icon, and select the export format (PDF, Word, Excel, etc.) and destination.

The report contains the following information:

Report Header	
Account No.	The customer account number.
Account Name	The name of the customer account.
DS-Client No.	The number of the DS-Client covered in this report.
Customer Name	If the Multi-Tenant feature is enabled, this field is displayed and indicates the customer that was specified when the report was generated. The report displays only information about backup sets associated with this specified customer.
Backup Sets report selection DS-Client Report (DS-User displays the DS-Client computer name in parenthesis)	
Online Statistical Self contained Local-Only Local DS-VDR Instant recovery	Shows the types of backup sets described in the report. • Statistical backup sets allow you to estimate the potential storage those backup would occupy. • Self contained and Local-Only backup sets perform backup and restore using only the local storage path (on the Setup menu, click Configuration, and then click Parameters). • Local DS-VDR backup sets do not show any DS-System data storage or transmission amounts, since they do not apply.
Printing date	Day the report was printed.
Report Table	
Columns	**Description**
Backup Set Column	Shows the backup sets defined on the DS-Client.
Connect As	Shows the User Name being used to connect to the share/ application.

Table 4 Backup Sets Report

Files	Shows the number of files in each backup set (including all file generations).
Protected Size	Shows the protected size of the backup set data, which is the original, uncompressed amount of all the backup generations stored. • For Online backup sets, this shows the amount protected in the DS-System Online storage. • For Statistical backup sets, this shows the amount of data that would theoretically be protected (if they were Online backup sets). • For Self-Contained and Local-Only backup sets, this shows the amount of data protected in the corresponding Local Storage Path(s).
Stored Size	[This column only appears if it is enabled from the DS-System.] • For Online backup sets, this is the actual amount stored in the DS-System Online storage (after processing, compression, etc.). DS-Client retrieves the current Stored Size amount from DS-System at the end of any successful backup, retention or delete process, as well as during any Weekly Admin or Daily Admin process. • This column does not apply for Statistical, Self-Contained and Local-Only backup sets.
Last Backup	The Last Backup column indicates the most recent date a scheduled backup was performed for that share.
Status	The Status column indicates whether the corresponding backup set is active or suspended.

Table 4 Backup Sets Report

10.6.1 Generating a Global Backup Sets report

To generate a Global Backup Sets report:

1. On the **Reports** menu, point to **Global Reports**, and then click **Backup Sets**.

   The **Global Report - Backup Sets** dialog box appears.

   F1 Help: Print Global Report - Backup Sets Report

2. To select DS-Client(s), see Section 10.1.1.1, “Selecting DS-Client(s) for a global report”, on page 379.

3. In the **Report Selection** section, specify what you want to display.

   For details on the options, see the online help for the dialog box. See Section 10.6, “Generating a Backup Sets Report”, on page 389.

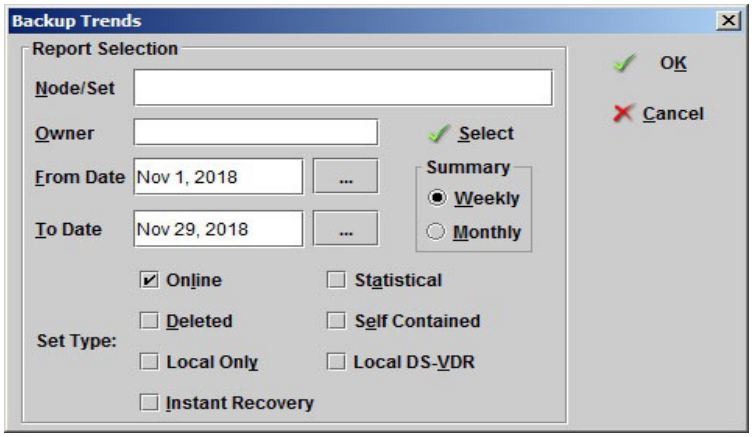
10.7 Generating a Backup Trends Report

This report shows usage statistics.

To generate a Backup Trends Report:

1. On the **Reports** menu, click **Backup Trends**.

   The Backup Trends dialog box appears.



   F1 Help: Print Backup/Restore Summary & Backup Trends Report

2. By default, trends for all backup sets from the beginning of the month to the current day are displayed. Select the information you want to see in the report.
3. If the Multi-Tenant feature is enabled and configured, you can select the customer for which you want to generate the report. The report will only display data for the backup sets associated with the customer.
4. Click **OK** to see a preview of the report.
5. To print the report, click the printer icon. To export the report to a file, click the **Save** icon, and select the export format (PDF, Word, Excel, etc.) and destination.

The report contains the following information:

Report Header	
Account No.	The customer account number.
Account Name	The name of the customer account.
DS-Client No.	The number of the DS-Client covered in this report.
Customer Name	If the Multi-Tenant feature is enabled, this field is displayed and indicates the customer that was specified when the report was generated. The report displays only information about backup sets associated with this specified customer.
Backup Trends report selection • DS-Client Report (DS-User displays the DS-Client computer name in parenthesis) • Weekly / Monthly Summary	

Table 5 Backup Trends Report

Online Statistical Deleted Self contained Local-Only Local DS-VDR Instant recovery	Shows the types of backup sets described in the report. • Statistical backup sets allow you to estimate the potential storage those backup would occupy. • Self contained and Local-Only backup sets perform backup and restore using only the local storage path (on the Setup menu, click Configuration, and then click Parameters). • Deleted backup sets are calculated using data from the Activity Log. • Local DS-VDR backup sets do not show any DS-System data storage or transmission amounts, since they do not apply.
Period	Indicates the period covered by the report.
User Name	Shows the user or <All>
Backup Set(s)	Shows the backup set, or <All>
Printing date	Day the report was printed.
Report Table	
Columns	**Description**
Week / Month	Shows the week or month number for each row of data.
Date	Shows the date each row of data covers.
Files	Shows the total number of files backed up in each period.
Total Size	Shows the total size of all the files backed up in each period.
Backup Time	Shows the total time taken for backups in the corresponding period (in minutes).
Total	Shows a grand total of each of the last three columns.

Table 5 Backup Trends Report

10.7.1 Generating a Global Backup Trends report

To generate a Global Backup Trends report:

1. On the **Reports** menu, point to **Global Reports**, and then click **Backup Trends**.

   The Global Report - Backup Trends dialog box appears.

   F1 Help: Print Global Report - Backup Trends Report

2. To select DS-Client(s), see Section 10.1.1.1, “Selecting DS-Client(s) for a global report”, on page 379.

3. In the **Report Selection** section, specify what you want to display.

   For details on the options, see the online help for the dialog box. See Section 10.7, “Generating a Backup Trends Report”, on page 391.

10.8 Generating a Backup Users Report

This report shows every user currently associated with any backup sets on DS-Client.

To generate a Backup Users Report:

1. On the **Reports** menu, click **Backup Users**.

   The **Backup Users** dialog box appears.

   F1 Help: Print Report

2. Select the information you want to see in the report.
3. If the Multi-Tenant feature is enabled and configured, you can select the customer for which you want to generate the report. The report will only display data for the backup sets associated with the customer.
4. Click **OK** to see a preview of the report.
5. To print the report, click the printer icon. To export the report to a file, click the **Save** icon, and select the export format (PDF, Word, Excel, etc.) and destination.

The report contains the following information:

Report Header	
Account No.	**The customer account number.**
Account Name	The name of the customer account.
DS-Client No.	The number of the DS-Client covered in this report.
Customer Name	If the Multi-Tenant feature is enabled, this field is displayed and indicates the customer that was specified when the report was generated. The report displays only information about backup sets associated with this specified customer.
Backup Users report selection DS-Client Report (DS-User displays the DS-Client computer name in parenthesis)	
Online Statistical Self contained Local-Only Local DS-VDR Instant recovery	Shows the types of backup sets described in the report. • Statistical backup sets allow you to estimate the potential storage those backup would occupy. • Self contained and Local-Only backup sets perform backup and restore using only the local storage path (on the Setup menu, click Configuration, and then click Parameters). • Local DS-VDR backup sets do not show any DS-System data storage or transmission amounts, since they do not apply.
Printing date	Day the report was printed.
Report Table	
Columns	**Description**
User Name	Shows each user associated with at least one backup set.
Full Name	Shows the corresponding full name of each user who created the backup set (if applicable).

Table 6 Backup Users Report

Connect As	Shows the credentials being used to access the backup set's share.
Backup Set	Shows the share\set name of each backup set on the DS-Client.
Online Limit	Shows the maximum limit that each user can store online.
Online Amount	Shows the amount that each user currently has online.

Table 6 Backup Users Report

10.8.1 Generating a Global Backup Users report

To generate a Global Backup Users report:

1. On the **Reports** menu, point to **Global Reports**, and then click **Backup Users**.

   The **Global Report - Backup Users** dialog box appears.

   F1 Help: Print Global Report - Backup Users Report

2. To select DS-Client(s), see Section 10.1.1.1, “Selecting DS-Client(s) for a global report”, on page 379.

3. In the **Report Selection** section, specify what you want to display.

   For details on the options, see the online help for the dialog box. See Section 10.8, “Generating a Backup Users Report”, on page 393.

10.9 Generating a Load Summary Report

The load summary is a tool that helps administrators analyze the load on the DS-Client computer for a selected period. If you observe high values at a particular time, you should consider rescheduling the activities to distribute the load more evenly. If you observe high values at all times, you should consider using a more powerful computer or delegate some backup sets to another DS-Client.

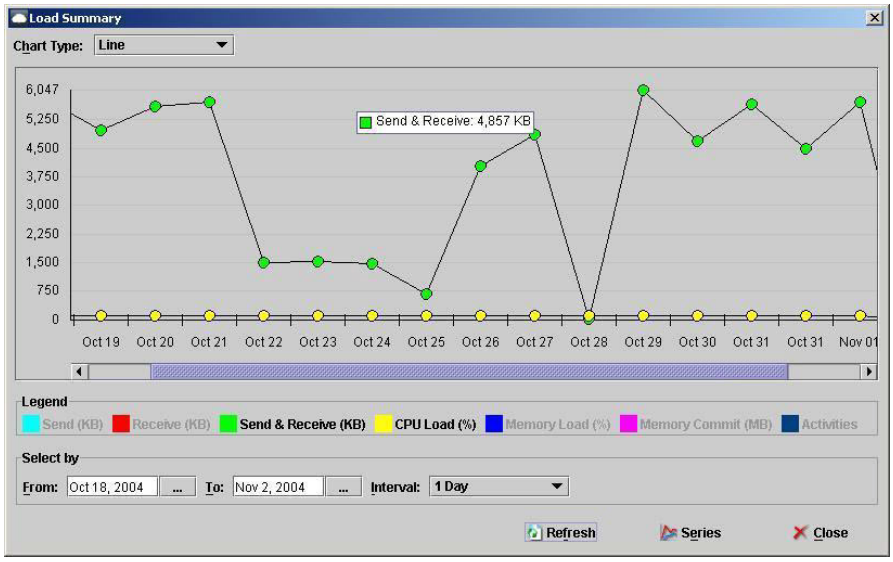
The DS-Client service automatically collects data for these statistics at one minute intervals. Every five minutes, the DS-Client service updates an internal table with the peak amounts for the following statistics:

Send amount	Peak transmitted amount to DS-System (KB/sec)
Receive amount	Peak received amount from DS-System (KB/sec)
CPU load	CPU utilization (0-100%)
Memory load	Memory utilization (0-100%)
Memory committed	Amount of allocated memory (in MB)
Activities	Number of DS-Client activities

NOTE: You must have sufficient rights to view information about each backup set.

To view the Load Summary report:

1. On the **Reports** menu, click **Load Summary**.



F1 Help: Load Summary

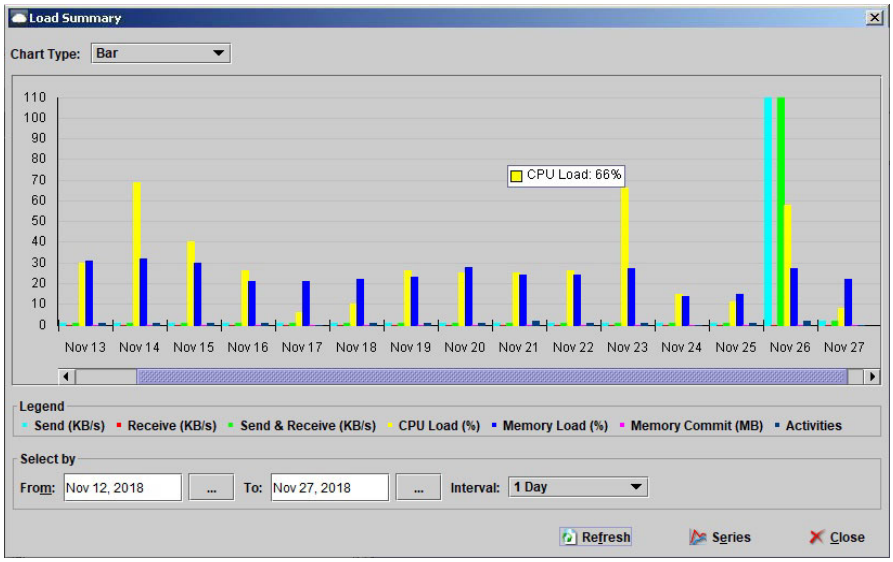
2. By default, the display is a line chart. To change to a bar chart, click and select in the **Chart Type** box.

3. To change the Load Summary content, click **Series**.

F1 Help: Load Summary Series

4. In the **Load Summary Series** dialog box, add or change as many items as required. It is recommended to view only two or three items at a time, to keep the display manageable.

5. Click **OK**.



In the updated dialog box, you can hover the cursor over a point or bar and see the details in a tool tip. By default, the last seven days are displayed.

6. To update the display after modifying any **Select by** options, click **Refresh**.

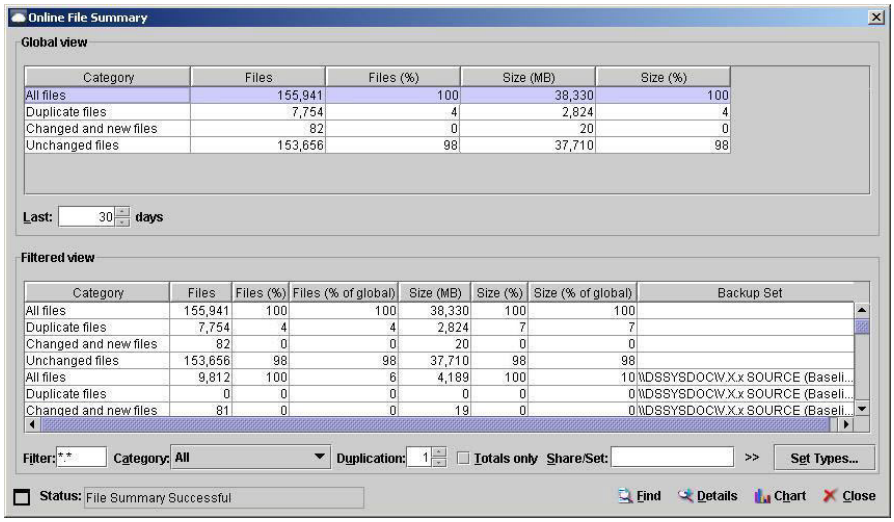
10.10 Generating an Online File Summary Report

Use the Online File Summary tool to scan the backup sets created by your DS-Client. It generates a list of the files on the DS-System online vault. This is useful for identifying duplicate files that are being backed up. You can reduce backup traffic and online storage with this information.

The dialog boxes are the same as for the LAN file summary (see Section 13.10, “Generating a LAN File Summary report”, on page 489 in the LAN Storage Discovery Tool section).

To generate an Online File Summary report:

1. On the **Reports** menu, click **Online File Summary**.

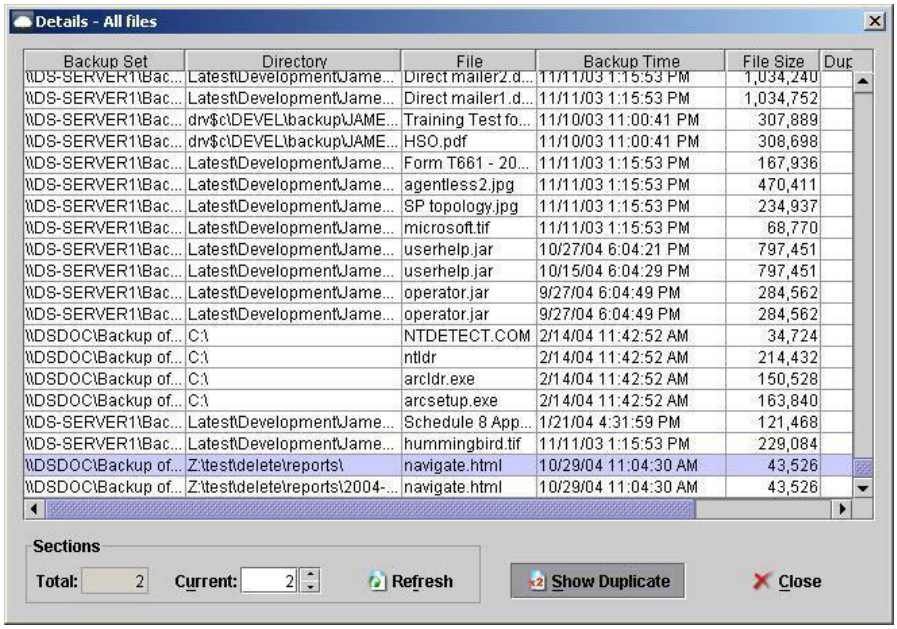


F1 Help: Online / LAN File Summary

2. Click **Find**.

   The process scans all the backup files on DS-System based on the **Filter**. For each row a file is only counted once, even if there are multiple generations of the file.

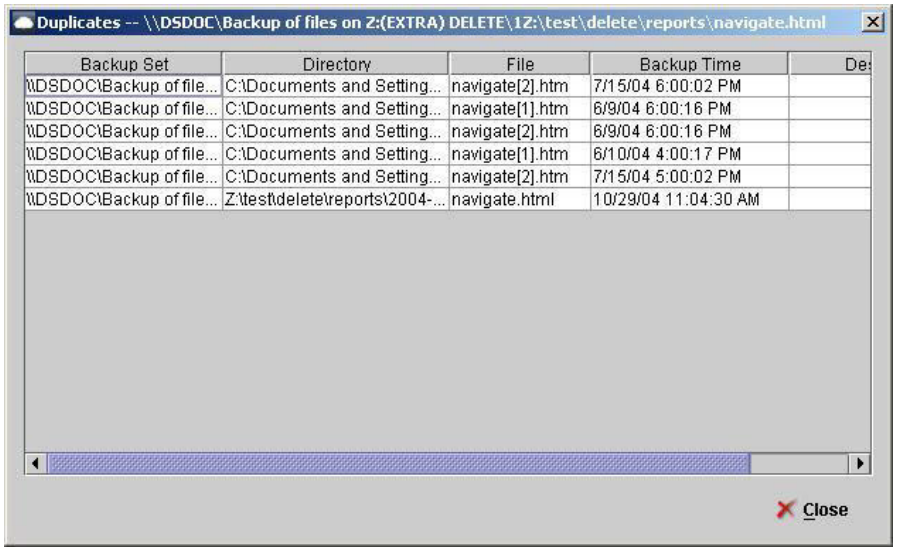
3. Select a line in the **Summary**, and then click **Details**.



F1 Help: Details

In the **Details** dialog box, each line represents a unique file. If more than one copy exists, the duplication amount is indicated in that column.

4. Select a file from the list, and then click **Show Duplicates**.



F1 Help: Duplicates

The location of each duplicate file is shown in this dialog box.

5. Click **Close** when you are finished.

10.11 Generating a Restorable Volume Report

This report displays information about restorable files.

To generate a Restorable Volume Report:

1. On the **Reports** menu, click **Restorable Volume**.

   The **Restorable Volume** dialog box appears.

   F1 Help: Print Report

2. Select the information you want to see in the report.
3. If the Multi-Tenant feature is enabled and configured, you can select the customer for which you want to generate the report. The report will only display data for the backup sets associated with the customer.
4. Click **OK** to see a preview of the report.
5. To print the report, click the printer icon. To export the report to a file, click the **Save** icon, and select the export format (PDF, Word, Excel, etc.) and destination.

The report contains the following information:

Report Header	
Account No.	The customer account number.
Account Name	The name of the customer account.
DS-Client No.	The number of the DS-Client covered in this report.
Customer Name	If the Multi-Tenant feature is enabled, this field is displayed and indicates the customer that was specified when the report was generated. The report displays only information about backup sets associated with this specified customer.
Restorable Volume report selection DS-Client Report (DS-User displays the DS-Client computer name in parenthesis)	
Online Statistical Self contained Local-Only Local DS-VDR Instant recovery	Shows the types of backup sets described in the report. • Statistical backup sets allow you to estimate the potential storage those backup would occupy. • Self contained and Local-Only backup sets perform backup and restore using only the local storage path (on the Setup menu, click Configuration, and then click Parameters). • Local DS-VDR backup sets do not show any DS-System data storage or transmission amounts, since they do not apply.
Printing date	Day the report was printed.
Report Table	
Columns	**Description**
Backup Set Column	The Backup Set Column lists all the Backup sets specified on the DS-Client.
With deleted data (Native Size)	Restorable amounts are calculated using the latest generation of files in the backup set. This column displays the restorable amount, which includes Deleted Data (Deleted data is backed up files that no longer exist on the source computer). • **Files**: The number of files available for restore, including any files deleted from the backup source that are still backed up online. • **Restorable Size**: The corresponding size of these files. This is the original (protected) size of the files as they were on the backup source.
Without deleted data	Shows the restorable amount (latest generation of files in the backup set), but it excludes Deleted Data. • **Files**: The number of files available for restore, excluding files deleted from the backup source that are still backed up online. • **Restorable Size**: The corresponding size of these files. This is the original (protected) size of the files as they were on the backup source.
Last Backup	The Last Backup column indicates the most recent date a scheduled backup was performed for that share.

Table 7 Restorable Volume Report

10.11.1 Generating a Global Restorable Volume report

To generate a Global Restorable Volume report:

1. On the **Reports** menu, point to **Global Reports**, and then click **Restorable Volume**.

   F1 Help: Print Global Report - Restorable Volume Report

2. In the **Global Report - Restorable Volume** dialog box, select DS-Client(s), see Section 10.1.1.1, “Selecting DS-Client(s) for a global report”, on page 379.

3. In the **Report Selection** section, specify what you want to display.

   For details on the options, see the online help for the dialog box. See Section 10.11, “Generating a Restorable Volume Report”, on page 398.

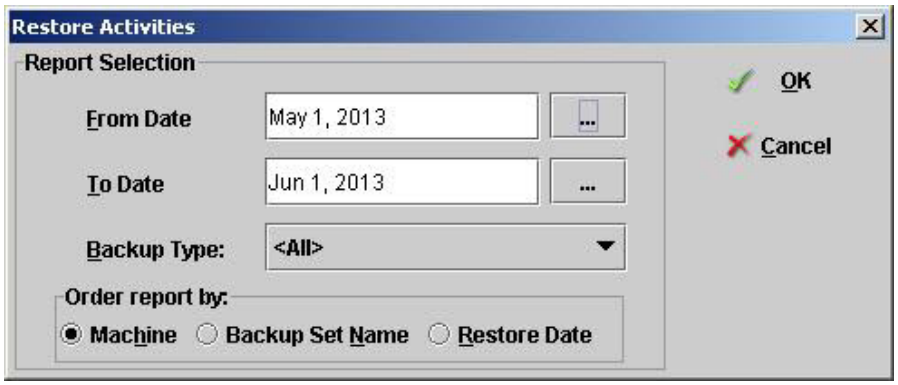
10.12 Generating a Restore Activities Report

This report can be created on demand to show the restore activities performed by the DS-Client.

To generate a Restore Activities Report:

1. On the **Reports** menu, click **Restore Activities**.

   The Restore Activities dialog box appears.



   F1 Help: Print Restore Activities Report

   By default, a summary of the current month’s restore activities up to date is displayed.

2. Select the information you want to see in the report.

3. If the Multi-Tenant feature is enabled and configured, you can select the customer for which you want to generate the report. The report will only display data for the backup sets associated with the customer.

   Click **OK** to see a preview of the report.

4. To print the report, click the printer icon. To export the report to a file, click the **Save** icon, and select the export format (PDF, Word, Excel, etc.) and destination.

The report contains the following information:

Report Header	
Account No.	The customer account number.
Account Name	The name of the customer account.
DS-Client No.	The number of the DS-Client covered in this report.
Customer Name	If the Multi-Tenant feature is enabled, this field is displayed and indicates the customer that was specified when the report was generated. The report displays only information about backup sets associated with this specified customer.
Restore Activities report selection DS-Client Report (DS-User displays the DS-Client computer name in parenthesis)	
Backup Type	Shows if this report covers any or all or a specific backup set type.
Period	Indicates the period covered by the report.
Order By	Shows the sort column.
Printing date	Day the report was printed.
Report Table	
Columns	**Description**
Activity ID	Shows the unique activity ID.
Machine Name	Name of the original backup source machine.
Backup Set Name	Shows the corresponding backup set name.
Restore Reason	Shows the restore reason specified by the user that performed the restore.
# of Files Restored	How many files were restored.
Stored Amount Restored (MB)	Shows the size of the files restored, measured by the space they occupy in the DS-System (including compression).
Native Amount Restored (MB)	Shows the size of the files restored, measured by the space they occupy after being restored (and decompressed) to the target machine.
Restore Start Time	Time when the restore process started.
Restore End Time	Time when the restore process finished.
Duration	Total duration of the restore process.

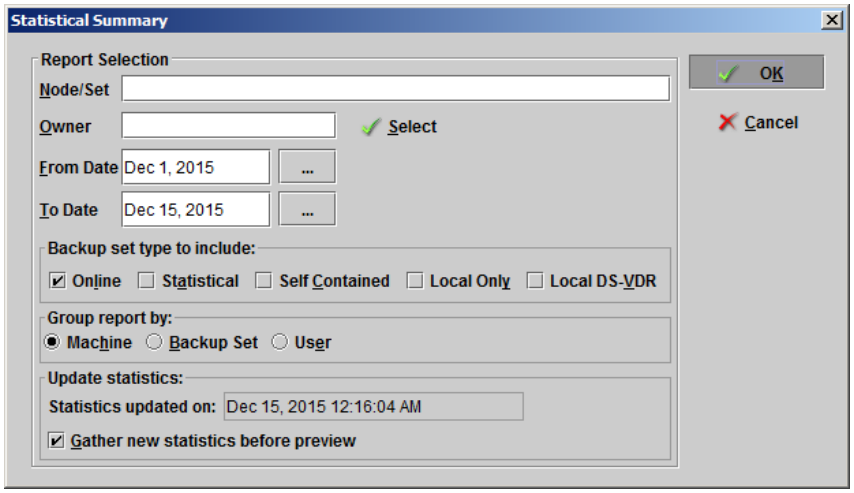
Table 8 Restore Activities Report

10.13 Generating a Statistical Summary Report

This report shows usage statistics. It is particularly useful in conjunction with the **Statistical Backup Set** feature (see Section 6.1.1.1, “Statistical backup sets”, on page 112).

To generate a Statistical Summary report:

1. On the **Reports** menu, click **Statistical Summary**.



   F1 Help: Print Statistical Summary

2. In the **Statistical Summary** dialog box, select the information you want to see in the report. For details on these options, see the F1 help for the dialog box.
3. If the Multi-Tenant feature is enabled and configured, you can select the customer for which you want to generate the report. The report will only display data for the backup sets associated with the customer.
4. Click **OK** to see a preview of the report.
5. To print the report, click the printer icon. To export the report to a file, click the **Save** icon, and select the export format (PDF, Word, Excel, etc.) and destination.

The report contains the following information:

Report Header	
Account No.	The customer account number.
Account Name	The name of the customer account.
DS-Client No.	The number of the DS-Client covered in this report.
Customer Name	If the Multi-Tenant feature is enabled, this field is displayed and indicates the customer that was specified when the report was generated. The report displays only information about backup sets associated with this specified customer.
Statistical Summary report selection DS-Client Report (DS-User displays the DS-Client computer name in parenthesis)	

Online Statistical Self contained Local-Only Local DS-VDR Instant recovery	Shows the types of backup sets described in the report. • Statistical backup sets allow you to estimate the potential storage those backup would occupy. • Self contained and Local-Only backup sets perform backup and restore using only the local storage path (on the Setup menu, click Configuration, and then click Parameters). • Local DS-VDR backup sets do not show any DS-System data storage or transmission amounts, since they do not apply.
Printing date	Day the report was printed.
Period	Indicates the period covered by the report.
Statistics updated on	Date when the statistics used in this report were gathered.
User Name	Shows the user, or <All>
Backup Set(s)	Shows the backup set, or <All>
Report Table	
Columns	**Description**
• Machine Name / • Backup Set / • User	Shows if the report is sorted by computer, backup set, or user.
Date	Each line corresponds to a specific day.
New Files	Shows the total number of new files backed up on the corresponding day. • **#**: Number of new files • **Amount (MB)**: Amount of data (MB) in the new files
Backed Up Files	Shows the files backed up on the corresponding day. This includes multiple generations of the same file (if applicable). At the bottom of each section (computer, backup set, or user), totals and averages for the period appear. • **#**: Total number of files backed up • **Amount (MB)**: Amount of data in the backed up files • **Transmitted (MB)**: Total size of files transmitted (this only includes the successfully transmitted amount) • **Compression Ratio**: Ratio achieved = Amount/Transmitted
Transmitted Amount (MB)	Shows the total amount transmitted from DS-Client to DS-System. This number includes any amounts transmitted for incomplete or failed backups.
Files Stored Off Site	Shows the running total of all the files stored on DS-System for the corresponding computer / backup set / user. (Do not consider these columns in relation to the others.) • **#**: Total number of backup files stored off-site • **Amount (MB)**: Total size of the backed up files
	• This amount includes each generation of a file. For example three generations of a 10MB file would show 3 files and 30MB transmitted. • Only generations that are still online are counted. • This column refers to the amount of data before compression, encryption, common file elimination, master/delta processing.
Backup time (min.)	Total backup time (per day) for the corresponding computer / backup set / user.

10.13.1 Generating a Global Statistical Summary report

To generate a Global Statistical Summary report:

1. On the **Reports** menu, point to **Global Reports**, and then click **Statistical Summary**.

   The **Global Report - Statistical Summary** dialog box appears.

   F1 Help: Print Global Report - Statistical Summary Report

2. To select the DS-Client(s), see Section 10.1.1.1, “Selecting DS-Client(s) for a global report”, on page 379.

3. In the **Report Selection** section, specify what you want to display.

   For details on the options, see the online help for the dialog box. See Section 10.13, “Generating a Statistical Summary Report”, on page 402.

10.14 Generating a Storage Summary Report

A Storage Summary Report is a tool that helps you to analyze the trends for online amount, number of files and backup time. There are two types of statistics: primary (such as online, files, and backup files) and derived (all of the incremental amounts). A primary figure reflects a real number obtained from the statistics. A derived statistic is linked to a primary one (for example: Incremental Files is linked to Files), and is obtained by subtracting the previous statistic from the current one.

NOTE: This report uses the storage information from the last Daily Admin process.

During administrative processes, the DS-Client calculates the following:

Time statistics (in minutes)	
Average Time	Average duration of all scheduled and on-demand backup sessions for the selected period.
Actual Time	Total duration of all scheduled and on-demand backup sessions for the selected period.

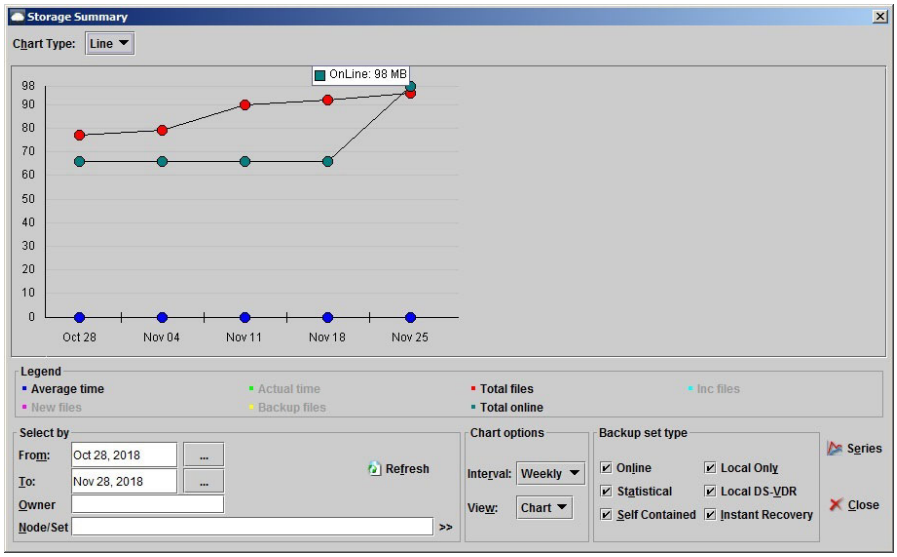
File statistics	
Total Files	The total number of files stored Online (including all generations)
Incremental Files	This is a derived figure, showing the increment to the Total files.
New Files	The total number of new backed up files (files backed up for the first time).
Backup Files	The total number of files backed up for the selected period.

File statistics	
Incremental Backup Files	This is a derived figure, showing the increment to the Backup Files.

Amount statistics (MB)	
Total Online	The total amount stored Online.
Incremental Online	This is a derived figure, showing the increment to the Total Online.
New Online	The total amount for the new backed up files.
Transmitted	The total amount of data transmitted to DS-System (includes the effects of compression, DS-Delta and DS-Library technologies.)
Incremental Transmitted	This is a derived figure, showing the increment to the Transmitted amount.
Online Backup	The total amount of data backed up for the selected period.
Incremental Online Backup	This is a derived figure showing the increment to Online Backup.

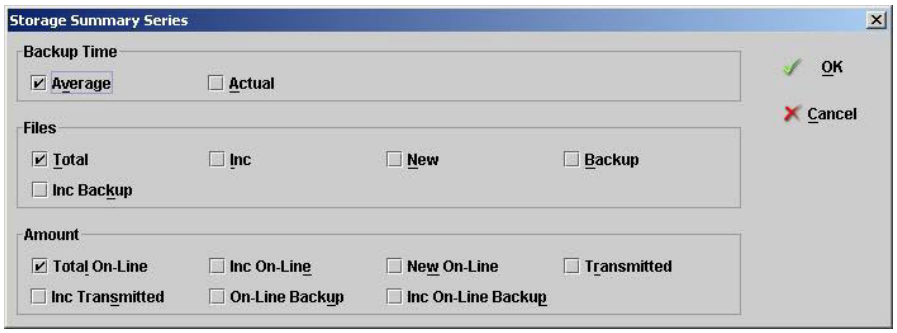
To generate a Storage Summary report:

1. On the **Reports** menu, click **Storage Summary**.



F1 Help: Storage Summary

2. In the **DS-Client Storage Summary** dialog box, you can click **Series** to change the display.



F1 Help: Storage Summary Series

3. In the **Storage Summary Series** dialog box, add the required items, and then click **OK**.

   The updated **Storage Summary** dialog box appears.

10.15 Generating a customized report

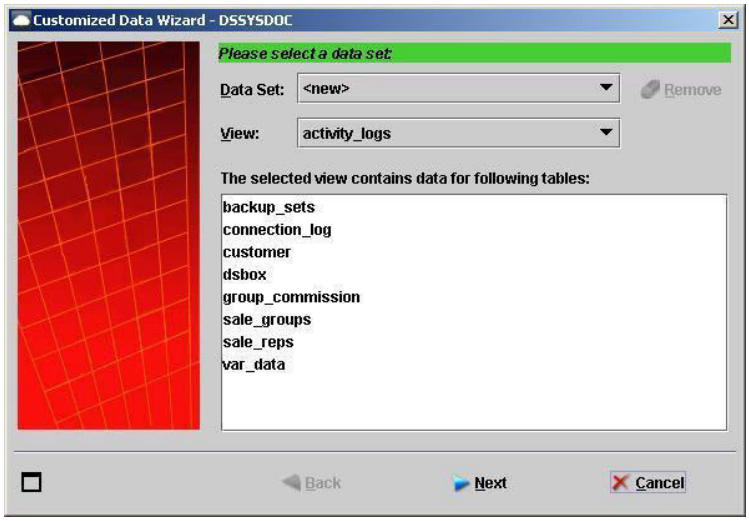
The custom reports feature allows you to create your own reports, based on the data provided from the database tables. This feature is meant for advanced users.

A third-party application called JasperReports (https://www.jaspersoft.com/) is required to create a customized report using the exported data set.

The first step is to select the data you want to use for the customized report.

To select the data set for the customized report:

1. On the **Reports** menu, click **Customized Data**. The Customized Data Wizard appears.



F1 Help: Customized Data Wizard - Select a Data Set

2. On the **Select a Data Set** page, select the type of data you want to export as follows:

   a) In the **Data Set** box, select and existing data set or select <New> to create a new one.

   b) In the **View** box, select a view. These are pre-defined groupings of tables from the database. You can only select one view per data set.

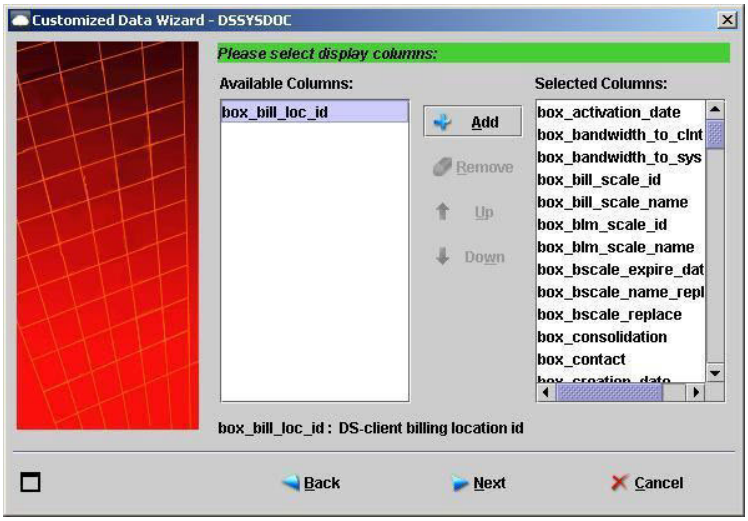
   c) Click **Next**.

NOTE: Data set selections are saved in the DS-User .ini file (user.ini).

---

3. On the **Select Display Columns** page, select the specific data fields that you want to export as follows:

NOTE: To select multiple fields, use the SHIFT or CTRL keys.



F1 Help: Customized Data Wizard - Select Display Columns

   a) To add a data field, select the field from the **Available Columns** list and then click **Add**.

   b) To remove a data field, select the field from the **Selected Columns** list and then click **Remove**.

   c) To change the order of the selected data fields, click **Up** and **Down**.

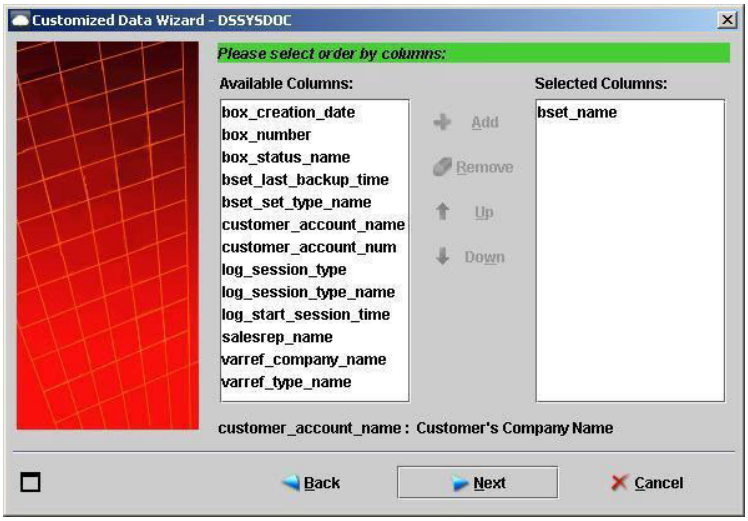
NOTE: This is the order in which the data fields will be written.

---

   d) Click **Next**.

4. On the **Select Order** page, select the order in which the data set will be sorted as follows:

NOTE: To select multiple fields, use the SHIFT or CTRL keys.



F1 Help: Customized Data / Report Wizard - Select Order

a) To add a data field, select the field from the **Available Columns** list and then click **Add**.

b) To remove a data field, select the field from the **Selected Columns** list and then click **Remove**.

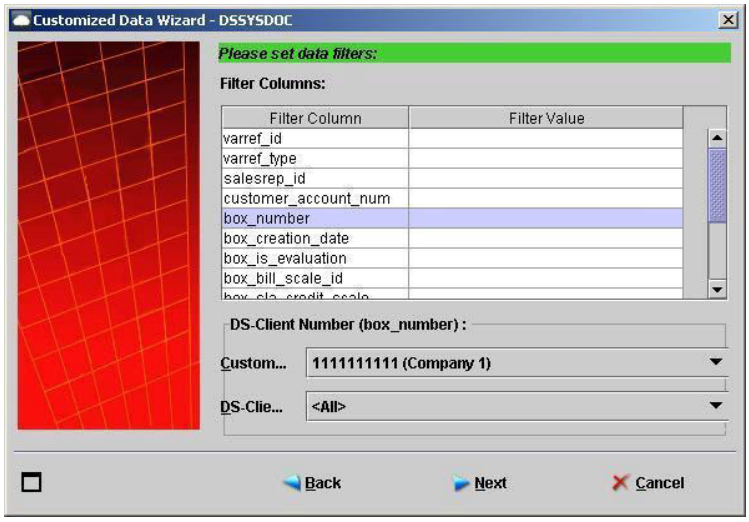
c) To change the order of the selected data fields, click **Up** and **Down**.

NOTE: This is the order in which the data fields will be written. If you do not make a selection, data will be written as it is read from the database. This sort order is not used by JasperReports.

d) Click **Next**.

5. On the **Set Data Filters** page, set filters for the data as follows:

NOTE: If you do not set any filters, all data is exported. If you set a filter, only data that matches the filter is exported.



F1 Help: Customized Data Wizard - Set Data Filters

a) In the **Filter Column**, select the data field that you want to filter.

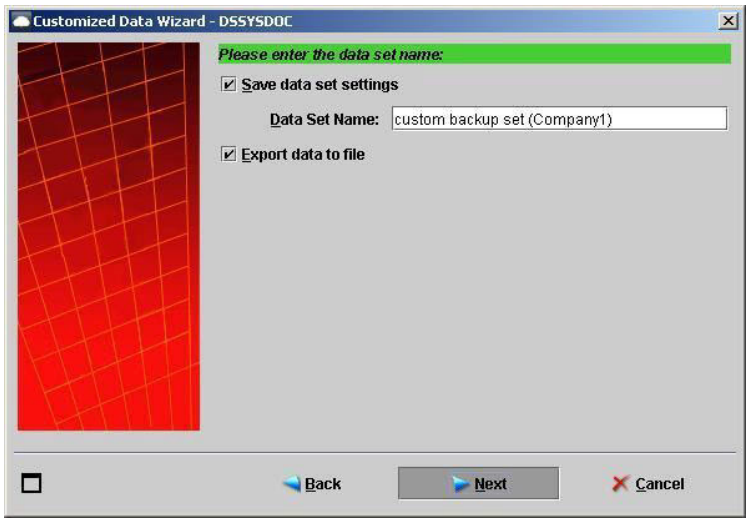
b) Configure the available filter options for the data field. The **Filter Value** displays how the filter will be applied to the corresponding data field.

NOTE: If the filter value is left blank, no filter will be applied and all data for that field will be returned.

---

c) Click **Next**.

6. On the **Enter Data Set Name** page, specify a name for the data set as follows:



F1 Help: Customized Data Wizard - Enter Data Set Name

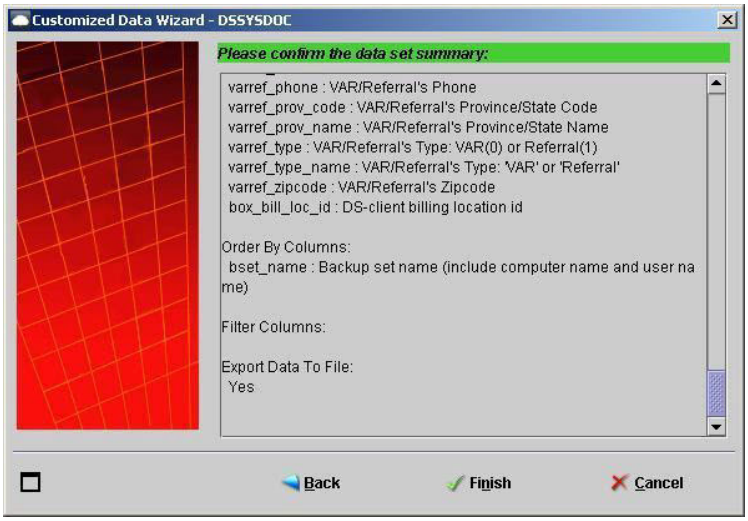
a) In the **Data Set Name** box, type a name for the data set.

b) To save the data set settings (except for data filters) in the DS-User .ini file (user.ini) so that you can reuse the same data set, select the **Save data set settings** check box.

c) To export the data set to a file, select the **Export data to file** check box.

d) Click **Next**.

7. On the **Confirm Data Set Summary** page, review the summary to ensure that the data set is customized as required, and then click **Finish**.



F1 Help: Customized Data Wizard - Confirm Data Set Summary

8. If you selected the **Export data to file** option, save the data set as either an XML or CSV file.

NOTE: To create a custom report template, you must save the data in XML format.

After this step is completed, you will have a data set file containing the data fields you chose to export from the database. You can use the data set file to generate a custom report. If you want to generate multiple custom reports, you must use the data fields to create a reusable custom report template.

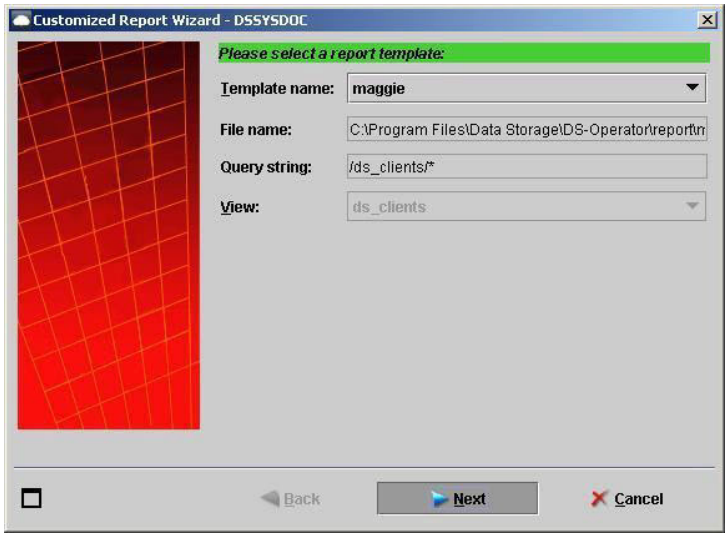
To create a customized report template:

1. Using JasperReports, create your custom report based on the fields from the exported data set (XML file).

2. Once you have created the compiled `.jasper` file, copy it to the local `\report` subdirectory where the DS-User GUI (dsuser.jar) is installed. If the folder does not exist, create it.

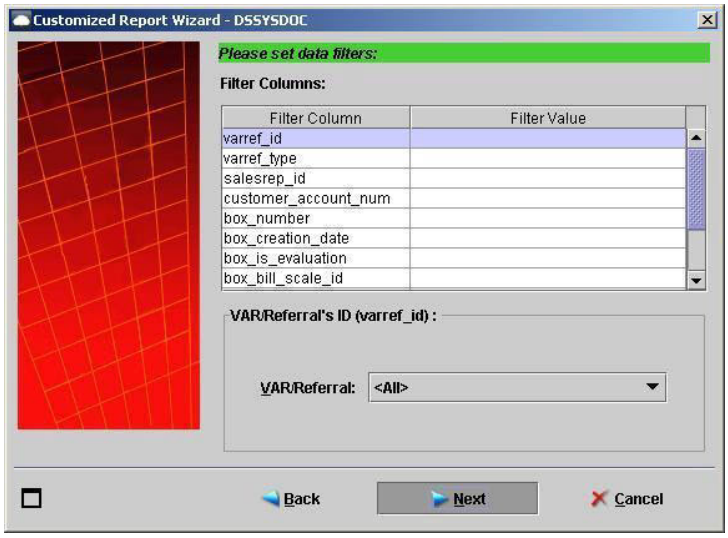
To generate a customized report:

1. On the **Reports** menu, click **Customized Reports**.



F1 Help: Customized Report Wizard - Select Report Template

2. In the **Template name** box, select the custom report you wish to view.
3. Click **Next**. In the **Select Data Filters** page, the list shows the compiled report template files in the `\report` subdirectory of this GUI installation.



F1 Help: Customized Report Wizard - Set Data Filters

4. If necessary, set a filter, and then click **Next**.

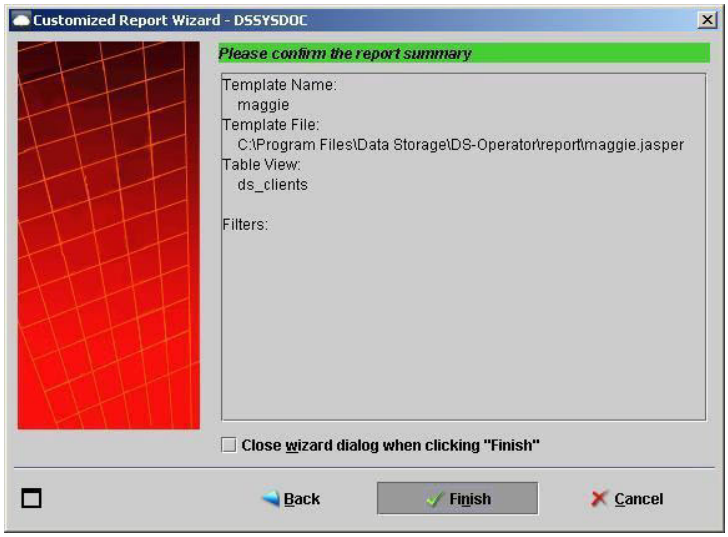
   By default, all data is displayed in the report. If you set a filter, the custom report will display only data that matches the filter.

5. In the **Select order by columns** page, choose a sort order if required, and then click **Next**.

If you do not make a selection, data will be displayed as it is read from the database.

F1 Help: Customized Data / Report Wizard - Select Order

6. In the **Confirm Report Summary** page, click **Finish**. The custom report appears.



F1 Help: Customized Report Wizard - Confirm Report Summary

10.16 Exporting information about backup sets

10.16.1 About Backup Sets Info

You can export information about all the DS-Client's backup sets to a file.

NOTE: Some additional columns might be visible, depending on the DS-Client account configuration set by your service provider.

To export backup sets information to a file:

1. On the **Reports** menu, point to **Export**, and then click **Backup Sets Info**.

   The **Backup Sets Information** dialog box appears.

   F1 Help: Backup Sets Information

2. In the **File Format** list, select a format in which to export information about backup sets.

3. In the **Save As** section, click the corresponding icon to open a standard **Save As** dialog.

The report contains the following information:

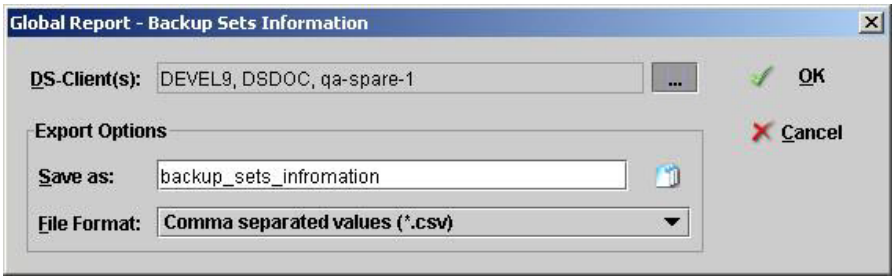
ID	Unique backup set ID number
Name	Backup set name
Restorable Files (without deleted data)	Number of files available for restore without deleted data. This is the size that the Restore Wizard would display when selecting to restore the entire backup set. Deleted data is backed up files that no longer exist on the source computer.
Restorable Amount (without deleted data)	Amount (in bytes) of data available for restore.
Restorable Files	Number of files available for restore with deleted data.
Restorable Amount	Amount (in bytes) of files available for restore with deleted data.
Protected Generation Count	Total number of file generations stored on the DS-System.
Protected Amount	Amount (in bytes) of the data storage on the DS-System (as it appears in the Backup Set's Properties > Set Info - Online Amount).
Backup Set Stored Amount	DS-Size on DS-System side.
Library Stored Amount	This number is always "0".

Distributed Library Amount	Library amount after the distribution. Library size is split by the number of links. This means the Distributed Library Amount is calculated with this formula: • **LibSize** / **TotalLinksToThisLib** x **NrLinksInThisBkSet** + **sizeOfNrLinksInThisBkSet** Because the **sizeOfNrLinksInThisBkSet** is included in Distributed Library Amount, the value for Library Stored Amount is always “0”. Therefore the backup set total stored size is: Backup Set Stored Amount + Distributed Library Amount
Last Backup	The Last Backup column indicates the most recent date a backup was performed for that share.
Files not picked up by Last Backup	Files that were not backed up by the last backup session. If the backup was not interrupted by the user (“User Stop”), this is the number (amount) of files that did not change.
Amount not picked up by Last Backup	Amount (in bytes) of the above.

10.16.2 Exporting a global report of Backup Sets Info

1. On the **Reports** menu, point to **Global Reports**, and then click **Export Backup Sets Info**.

   The **Global Report - Backup Sets Information** dialog box appears.



   F1 Help: Print Global Report - Export Backup Sets Information

2. To select DS-Client(s), see Section 10.1.1.1, “Selecting DS-Client(s) for a global report”, on page 379.
3. In the **Export Options** section, specify how you want to save the file.
4. Click **OK**.

   See Section 10.16, “Exporting information about backup sets”, on page 413.

11 Working with a Grid DS-Client (Windows)

11.1 About Grid DS-Client

In high-performance environments you can maximize DS-Client processing and distribute the load across two or more computers using a Grid DS-Client configuration. In this configuration, the DS-Client software is installed on multiple computers (nodes) and configured to use the same database.

- The Grid DS-Client is composed of one main node and a number of leaf nodes.
- The main node is the one that accepts DS-User connections for management. The leaf nodes perform activities, as instructed by the main node.

NOTE: For detailed instructions on how to install a Grid DS-Client, see the *Client Software Installation Guide*.

Any DS-User who is going to connect to the Grid DS-Client must be able to see all of its nodes (IP addresses). This is because DS-User can only connect to the main node, which is chosen randomly from the running nodes. Ensure that DS-User is configured with the IP address of each node in the Grid DS-Client.

See Section 3.2, “Configuring the initialization settings”, on page 61.

NOTE: This will not be necessary if DS-User and all DS-Client nodes are in the same subnet. By default, a DS-User can see all running DS-Clients in the same subnet.

For Grid DS-Clients, the database server saves a copy of the DS-Client databases in the DS-Client buffer of the node that performs the Daily Admin or Weekly Admin activities. By default, this folder is:

```
C:\Program Files\CloudBackup\DS-Client\db_buffer
```

The Daily / Weekly Admin activity is allocated by the main node to a leaf node with a lower load.

NOTE: The location for the DS-Client database dump folder can be configured using the **DSCDBDumpPath** parameter. For more information, see Section 3.1.8, “Configuring the advanced settings”, on page 33.

When you connect to a Grid DS-Client, a **Grid** menu is activated and the following dialog boxes will have an additional option to select by the Node ID:

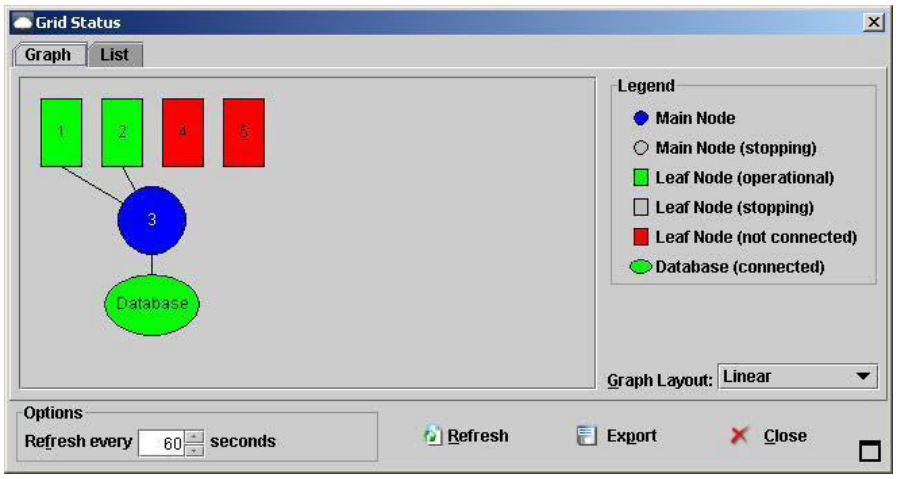
- Activity Log viewer dialog box

- Load Summary dialog box (**Reports menu** > **Load Summary**)
- DS-Client System Status dialog box (**Setup** > **System Activities** > **System**)
- DS-Client Advanced Configurations dialog box (**Setup** > **Configuration** > **Advanced** tab)

11.2 Monitoring a Grid DS-Client

You can monitor the Grid DS-Client from DS-User.

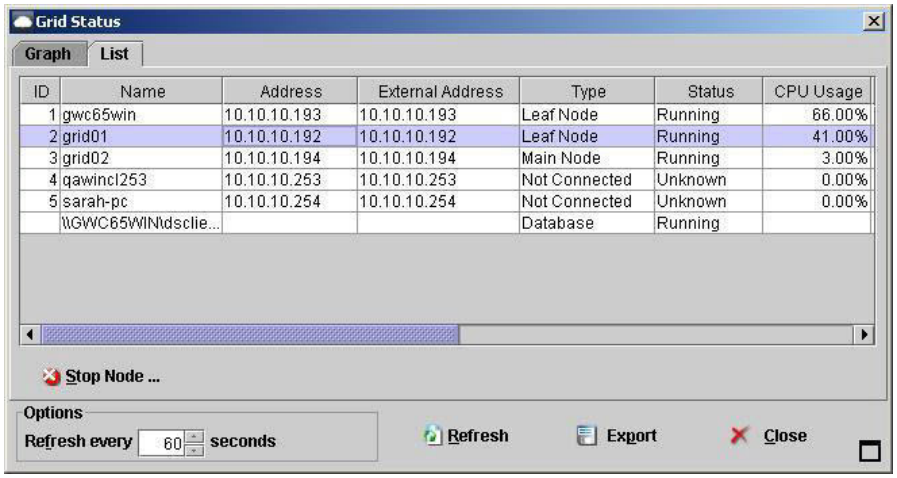
1. On the **Grid Menu** click **Grid Status**. The Grid Status dialog box appears on the Graph tab.



F1 Help: Grid Status

The graph view is an overview of the status of the Grid DS-Client.

2. Click the tab **List**.

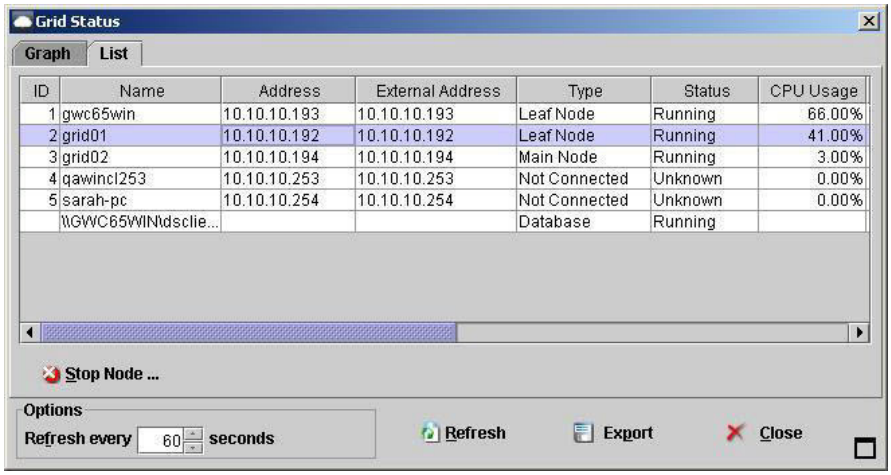


The list view shows details about each node of the Grid DS-Client, including the Main Node and the database node.

11.3 Stopping a Grid DS-Client node

You can stop a node in the Grid DS-Client from the Grid Status dialog box. You can also stop the DS-Client service from a local node's terminal using the DS-Client Service Manager.

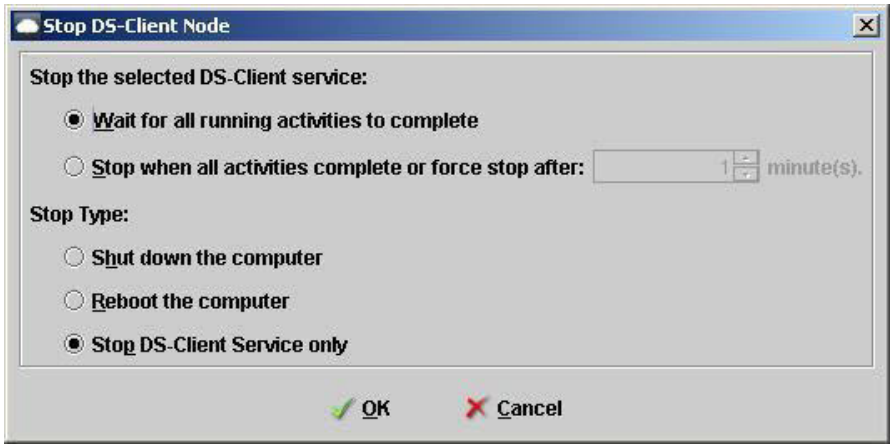
1. In the **Grid Status** dialog box highlight the node you want to stop.



F1 Help: Grid Status

2. Click **Stop Node**.

The **Stop Node** dialog box appears.



F1 Help: Stop DS-Client Node

- **Wait for all running activities to complete:** Stops DS-Client on the selected node, after all the current activities have completed. All new activities are stopped once you click **OK**.
- **Stop when all activities complete or force stop after [...] minute(s):** Stops DS-Client on the selected node after all the current activities have completed, or force stops after the specified time has elapsed. All new activities are stopped once you click **OK**.

- **Stop Type**: Select the option to shut down or reboot the node, or only stop the DS-Client service (keep the computer running).

11.4 Exporting a Grid DS-Client IP address

You can export the Grid DS-Client's IP Addresses (internal or external) to a text file. Using this text file you can quickly configure each DS-User installation with all the correct nodes of a Grid DS-Client).

1. In the **Grid Status** dialog box, click **Export**. The **Export Grid DS-Client Address** dialog box appears.

F1 Help: Export Grid DS-Client Address

2. Select **Internal Address** or **External Address**, and then click **OK**.

   The **Save As** dialog box appears, where you can select the destination format and location.

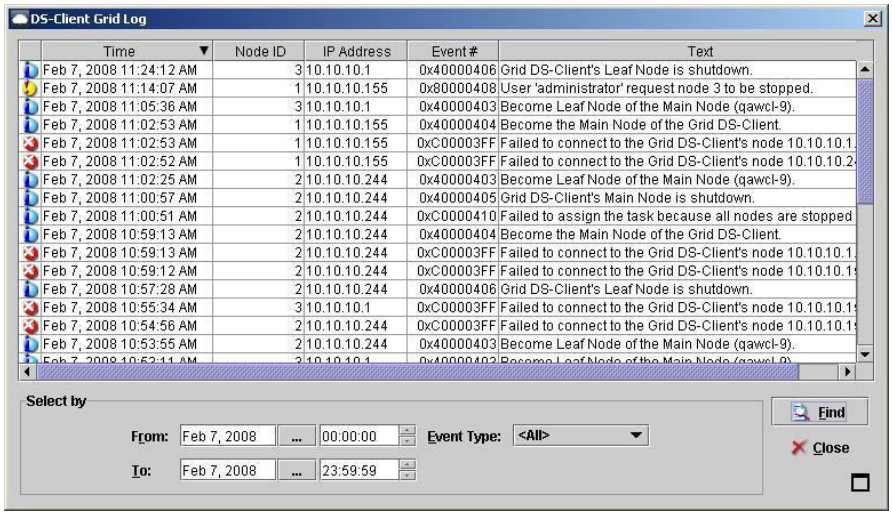
   This text file can then be imported to any other DS-User installation using the **Load** button.

See Section 3.2, "Configuring the initialization settings", on page 61.

11.5 Viewing the Grid DS-Client log

This dialog box displays all events specific to the **Grid DS-Client** configuration.

1. On the **Grid Menu** click **Grid Log**. The **DS-Client Grid Log** dialog box appears.



F1 Help: DS-Client Grid Log

2. In the **Select by** section, you can filter the events based on date, time, and type.

12 Using premium backup and recovery services

This section provides information on the premium services that can be offered by your service provider.

12.1 Initial backups

12.1.1 About initial backups

The DS-Client service is designed to perform automated backups to an off-site location. The DS-Client service backs up only incremental changes after the first backup. This requires an adequate communication link between DS-Client and DS-System that will allow backup of any modified data in the given time frame.

The first, full baseline backup often requires transferring a large amount of data. If the communication link between the DS-Client and the DS-System cannot handle this large transfer in a reasonable amount of time (for example, a few days), you can consider using the Initial Backup feature.

Two tools are available to help you to determine the size of your baseline backup and whether Initial Backup will be a more efficient method.

- You can use the LAN Storage Discovery Tool to analyze your LAN. See Section 13.1, “About the LAN Storage Discovery Tool”, on page 473.
- You can use Statistical backup sets to calculate the amount of data to transmit. Divide this number by your communications bandwidth to estimate how long the first backup will take. See Section 6.1.1.1, “Statistical backup sets”, on page 112.

The Initial Backup feature allows you to back up to local buffer locations that are either directly connected to DS-Client or visible on the LAN and then to ship that media (for example, disks) to your service provider. Your service provider will import the Initial Backup data from a media that is either attached to DS-System or connected via a LAN connection. Once the Initial Backup data is imported into DS-System, you can perform subsequent scheduled and on-demand backups.

To use the initial backup service:

1. Ensure that your DS-Client is already registered with DS-System.
2. See Section 12.1.2, “Configuring the initial backup path”, on page 422.
3. See Section 12.1.3, “Creating an initial backup set”, on page 423.
4. Perform a Backup of all Initial backup sets to the Initial Backup buffer. See Section 7.1, “Performing an on-demand backup”, on page 299.
5. Monitor the status of Initial backup sets. See Section 12.1.4, “Monitoring the status of an initial backup set”, on page 425.

6. Ship the Initial Backup buffer media to your service provider. See Section 12.1.5, “Sending initial backup data to DS-System”, on page 426.

More information can be found in the Knowledge Base article in Section 15.1, “Best practices: Initial backup”, on page 506.

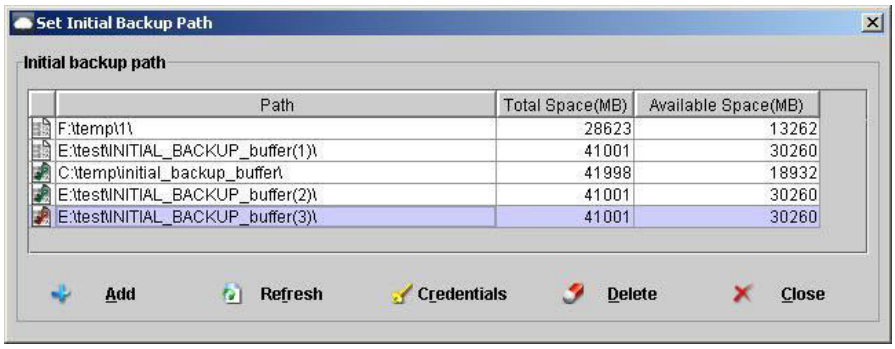
12.1.2 Configuring the initial backup path

You can configure as many Initial Backup paths as you need. These are local disks or UNC path locations (Windows DS-Client) that can be shipped to your service provider.

NOTE: You should plan to assign each Initial Backup Path to backup sets from the same DS-Client. After being assigned to the backup sets of one DS-Client, the Initial Backup path is also called the Initial Backup buffer of that DS-Client.

---

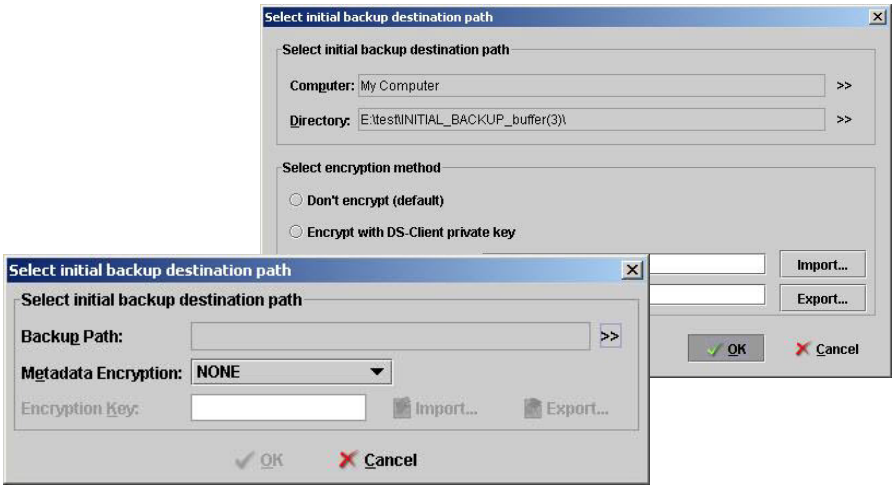
1. On the **Initial Backup** menu, click **Path**.
2. In the **Set Initial Backup Path** dialog box, click **Add**.



F1 Help: Set Initial Backup Path

3. In the **Select Initial Backup Path** dialog box, specify the **Computer** and **Directory** for the Initial Backup path. Use a descriptive name for paths to make it easier for your service provider to identify the DS-Client associated with the data.

   The **Select Initial Backup Path** dialog box is slightly different, depending on whether the DS-Client is running on Windows or Linux.



F1 Help: Select Initial Backup Destination Path

4. If desired, select an **Encryption Method** for the metadata, which are the descriptive files used to manage the Initial Backup.
5. Click **OK** to save the path.
6. In the **Set Initial Backup Path** dialog box, click **Close**.

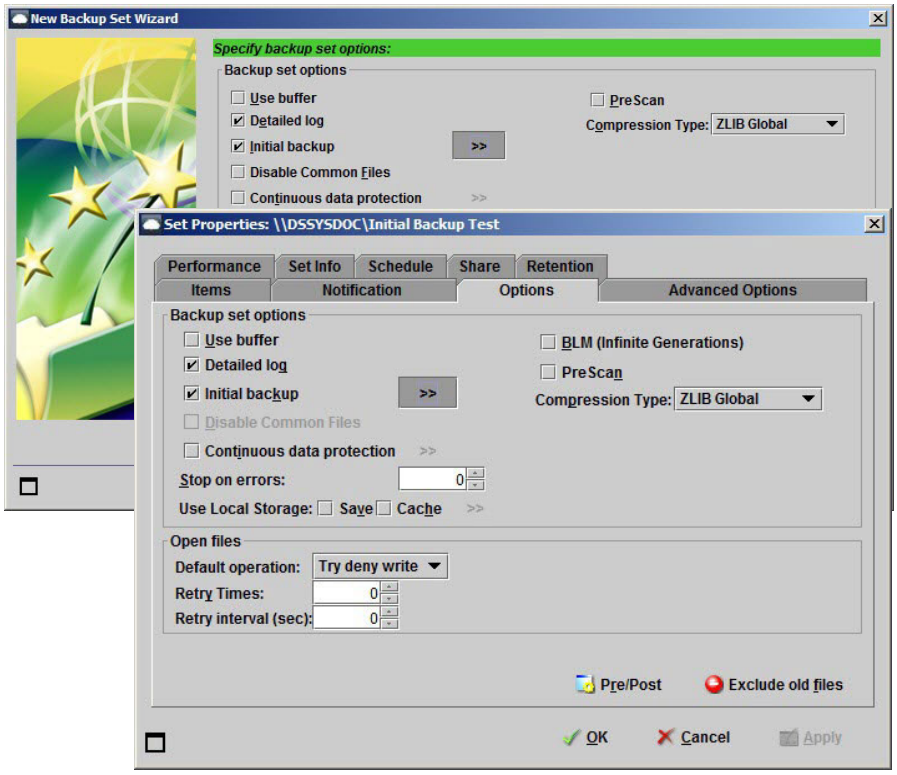
12.1.3 Creating an initial backup set

You can use the Initial Backup option in any backup sets on which backup has never been performed. Before you can use the Initial Backup option, at least one Initial Backup path must have already been configured.

NOTE: Each Initial Backup Path should be assigned to backup sets from only one DS-Client.

---

1. Access the Initial Backup option in one of two ways:



- When creating a new backup set using the New Backup Set Wizard:

  a) On the **Sets** menu, click **New Backup Set**.

  b) In the New Backup Set Wizard, proceed through the selection of backup set kind, backup source location, backup set items, and backup item options.

  c) In the **Specify backup set options** page, select **Initial Backup**.

  The **Initial Backup Settings** dialog box appears.

- In the Backup Set Properties of an existing backup set on which backup has never been performed:

  F1 Help: Set Properties - Options tab

  F1 Help: Set Properties - Options tab (Linux DS-Client)

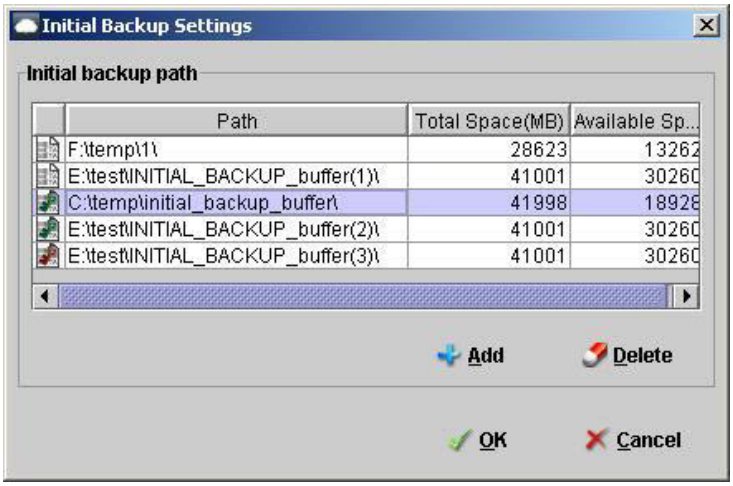
  a) In the Backup Set tree, browse and select an existing backup set on which backup has never been performed.

  b) On the **Sets** menu, point to **Backup Sets**, and then click **Properties**.

  c) In the Backup Set Properties dialog box, click the **Options** tab.

  d) Select **Initial Backup**.

  The **Initial Backup Settings** dialog box appears.



2. In the **Initial Backup Settings** dialog box, select the **Initial Backup** path for this backup set, and then click **OK**.

   F1 Help: Initial Backup Settings

NOTE: Each initial backup path should be assigned only to backup sets that are from the same DS-Client. Do not assign the same path to backup sets from multiple DS-Clients.

   After being assigned to the backup sets of one specific DS-Client, an Initial Backup path is also called the Initial Backup buffer of that DS-Client.

3. If you are in the New Backup Set Wizard, click **OK**.

   If you are in the **Options** tab of **Backup Set Properties** dialog box, click **Apply**, and then click **OK**.

4. Perform an on-demand backup of all Initial backup sets. See Section 7.1, “Performing an on-demand backup”, on page 299.

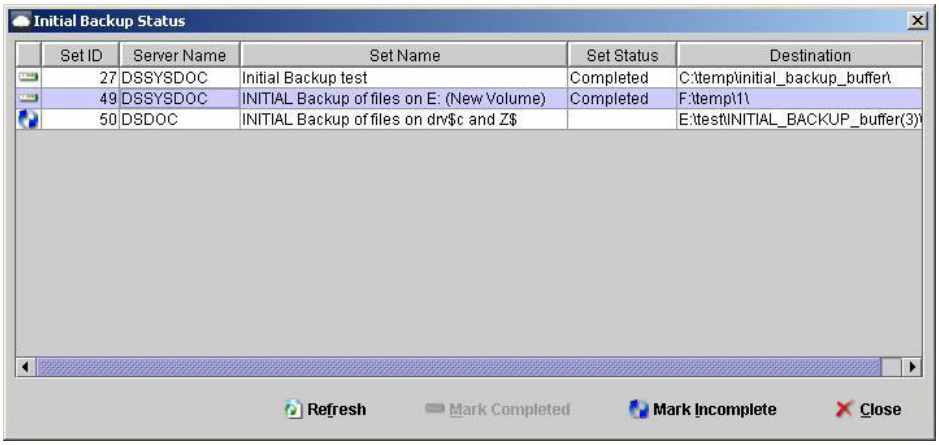
   The initial backup data is placed in the initial backup path, or initial backup buffer, assigned to the backup set(s).

12.1.4 Monitoring the status of an initial backup set

To see the status of an Initial Backup:

- On **Initial Backup** click **Status**.

  The **Initial Backup Status** dialog box displays the Initial Backup status of each backup set that has been configured for Initial Backup. Backup sets are displayed in this dialog box only before their Initial Backup data has been successfully imported into DS-System.



F1 Help: Initial Backup Status

12.1.5 Sending initial backup data to DS-System

1. Check the **Set Status** of all backup sets that you have configured for Initial Backup and for which you have performed an on-demand backup. For instructions on checking the status of an Initial Backup, see Section 12.1.4, “Monitoring the status of an initial backup set”, on page 425.
2. When the Set Status of all the backup sets sharing the same Initial Backup buffer is **Completed**, place the data in the Initial Backup buffer onto a physical media.

   NOTE: If data on multiple Initial Backup buffers needs to placed onto the same physical media, ensure that the data from each Initial Backup buffer is placed in a separate, clearly labeled folder.

3. Ship the physical media to your service provider.
4. Monitor the Set Status of all backup sets for which you have shipped Initial Backup data.

   As soon as the Initial Backup data of a backup set has been imported into DS-System, the backup set will no longer be displayed in the Initial Backup Status dialog box.

Scheduled and on-demand backups of Initial Backup sets are not allowed until after the Initial Backup data has been successfully imported into DS-System.

12.2 Disc/tape backups

12.2.1 About disc/tape backups

The DS-Client service is designed to perform automated backups to an off-site location. However, if you need to restore a large amount of data (due to a server crash or other disaster), the communication link between DS-Client and DS-System might not allow the restore process to be completed in a reasonable amount of time. In these cases, you can use the Disc/Tape feature to have the required data written to media and shipped to your physical location.

To reduce your down time, you can ask your service provider to write the required data to Disc/Tape media (snapshot of latest generation only). This must be done for each backup set you need. DS-System copies all requested files to Disc/Tape media in encrypted format, the Disc/Tape media is shipped to the DS-Client's physical location, and the required data is restored from Disc/Tape media attached to the DS-Client (or through the LAN).

The disc/tape feature is available only when the following prerequisites are met:

- Your service provider/administrator has a software license that includes Disc/Tape as a DS-Tool.
- DS-System is configured for Disc/Tape Service. This includes making adequate buffer space and a media writer (e.g. CD/DVD burner) available and adding the appropriate media to DS-System.
- Disc/Tape is selected as a DS-Tool in DS-Client.

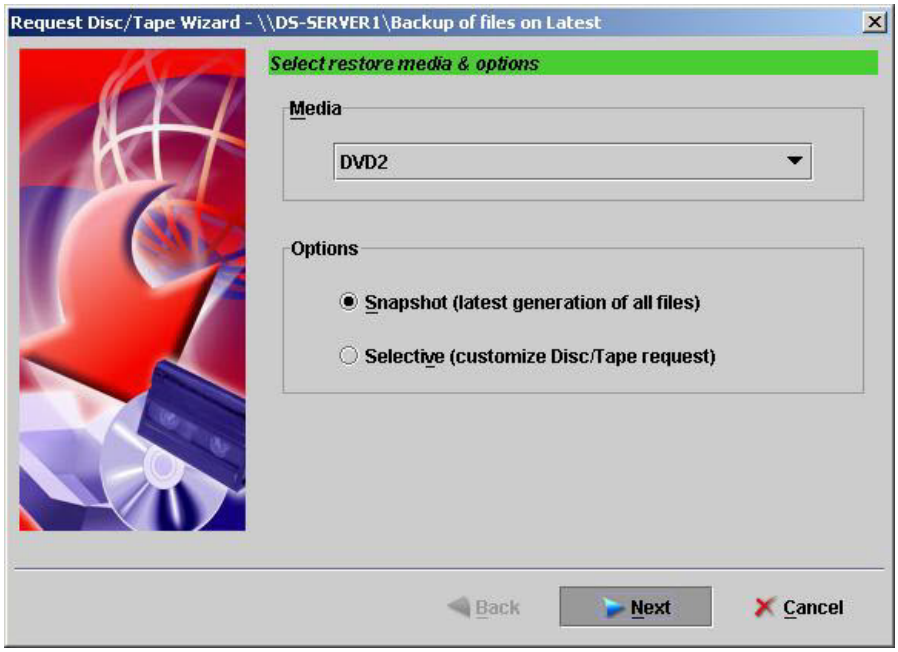
Using this feature you can copy backed up files from DS-System to any media supported by your service provider (e.g. CD/DVD, Tape, Hard Disk Drive, or USB). You can also have a copy of backed up data on hand (at your location). Data on the Disc/Tape media must be restored through DS-Client.

12.2.2 Requesting a disc/tape backup

Disc/Tape Request is a restore feature that allows you to obtain restored data via a media of your choice (e.g. CD/DVD, Tape, Hard Disk, or USB). The requested data will be delivered through that media instead of the network.

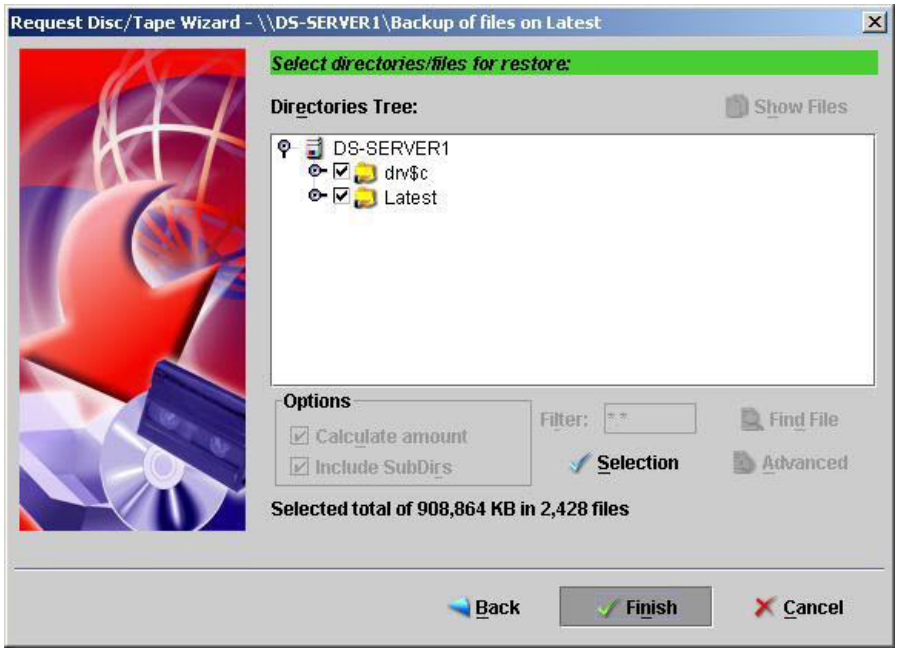
You can select files from a backup set that you want to restore. Based on your selections, DS-System will place a copy of the requested files into a buffer directory. From that buffer, your service provider/administrator can copy the requested files onto your specified medium and then mail or deliver the media to you. Upon receiving the media, you can retrieve the data on it through DS-User.

1. From the backup set tree, select the required backup set.
2. On the **Restore** menu, click **Disc/Tape**, and then click **Request**. The Request Disc/Tape Wizard appears.



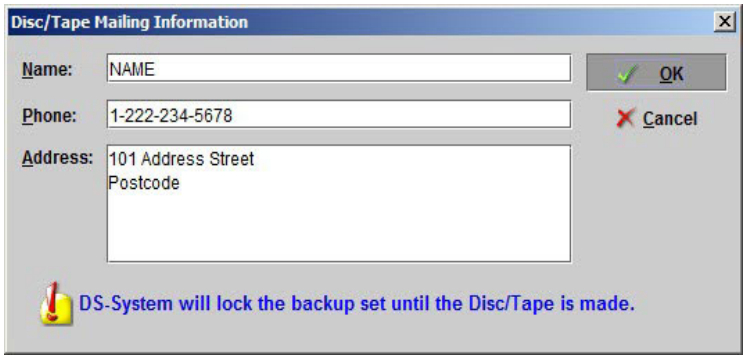
F1 Help: Select restore media & options

3. Select the **Media** and **Options** for the disc/tape request.
4. Click **Next**. The Select directories/files for restore page appears.



- If you select **Snapshot**, the entire backup set will be selected and you will not be able to change any settings.
- If you select **Selective**, you must select the directories/files for restore in the same way as you do for a normal restore.

5. After making the required selections, click **Finish**. The **Disc/Tape Mailing Information** dialog box appears.



F1 Help: Disc / Tape Mailing Information

6. Enter the required mailing information, and then click **OK** to proceed.

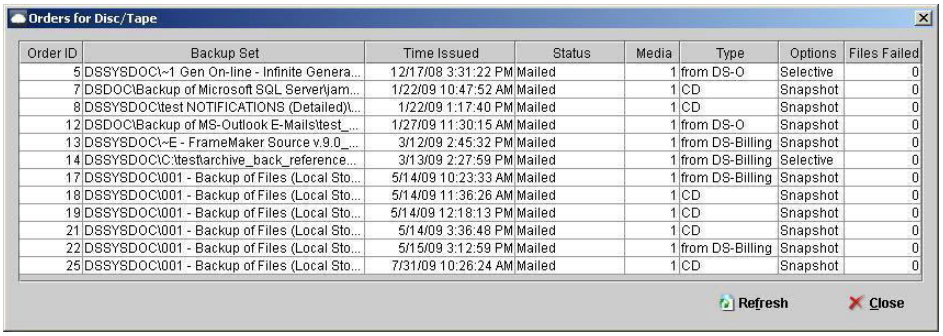
   DS-System will then mirror all the selected files (from the Request Process) to a buffer directory in DS-System (i.e. your service provider's site). Your service provider will then make the Disc/Tape order from this buffer.

NOTE: This backup set will not be accessible (for backup) until your service provider makes the Disc/Tape.

12.2.3 Viewing the status of a disc/tape backup request

You can view the progress of your order. Once DS-System has resolved the requested files in its database, the order status will show **Purchased**. However, the backup set's files must not be altered (i.e. by subsequent backups or any other process with write access to the backup files). The backup set is locked until your service provider can replicate the requested files to the media you selected (i.e. when the Status is 'Finished').

- On the **Restore** menu, point to **Disc/Tape**, and then click **Orders**. The **Orders for Disc / Tape** dialog box appears with details of each order.

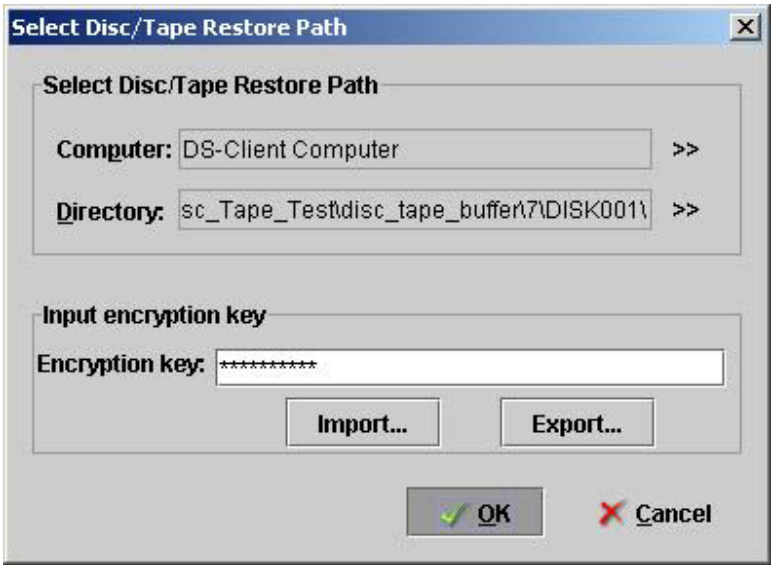


F1 Help: Orders for Disc / Tape

12.2.4 Restoring from a disc/tape backup

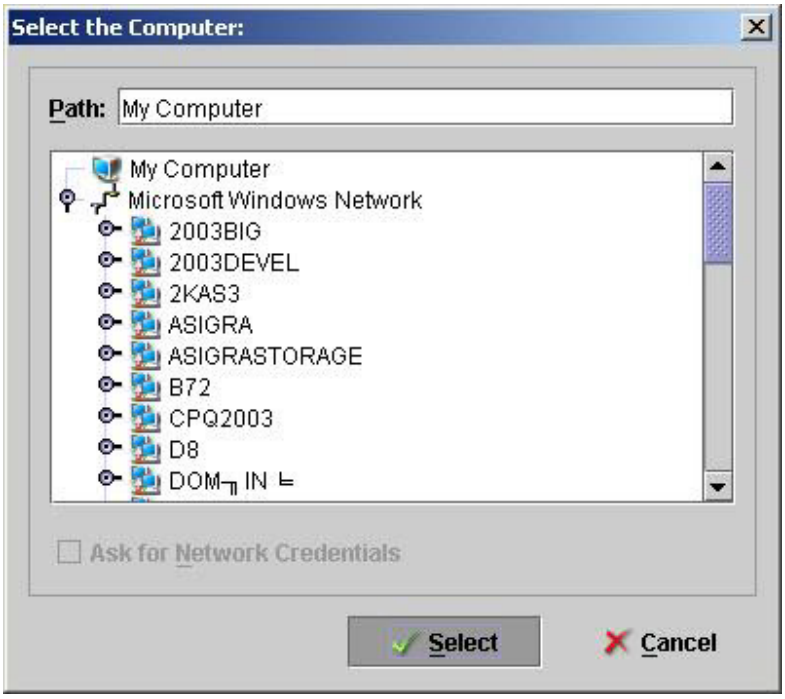
After the disc/tape media has been delivered or downloaded, you can restore from it at your convenience.

1. On the **Restore** menu, point to **Disc/Tape**, and then click **Restore from**.

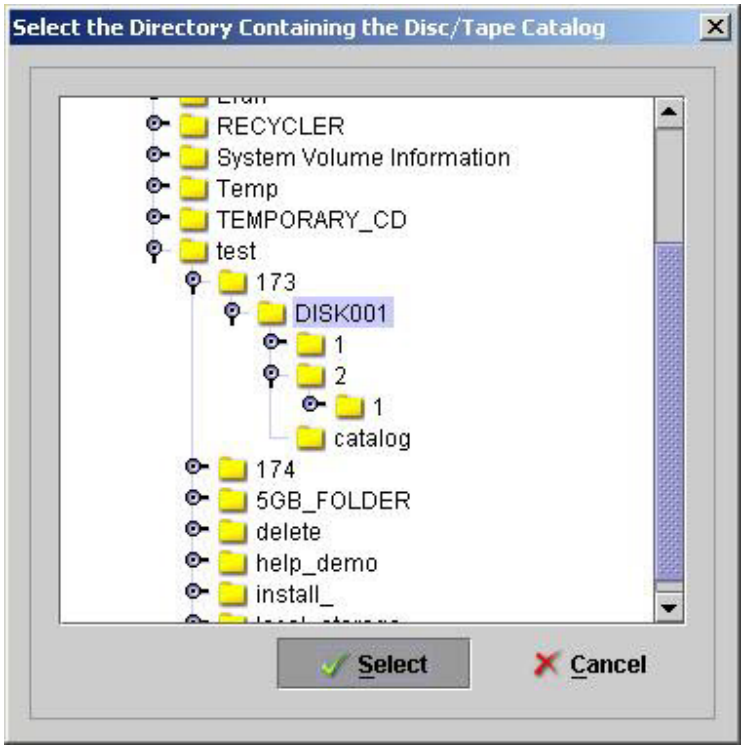


F1 Help: Select Disc / Tape Restore Path

2. In the **Select Disc/Tape Restore Path** dialog box, click **>>** and then browse to select the computer.



3. Click **>>** to select the directory.



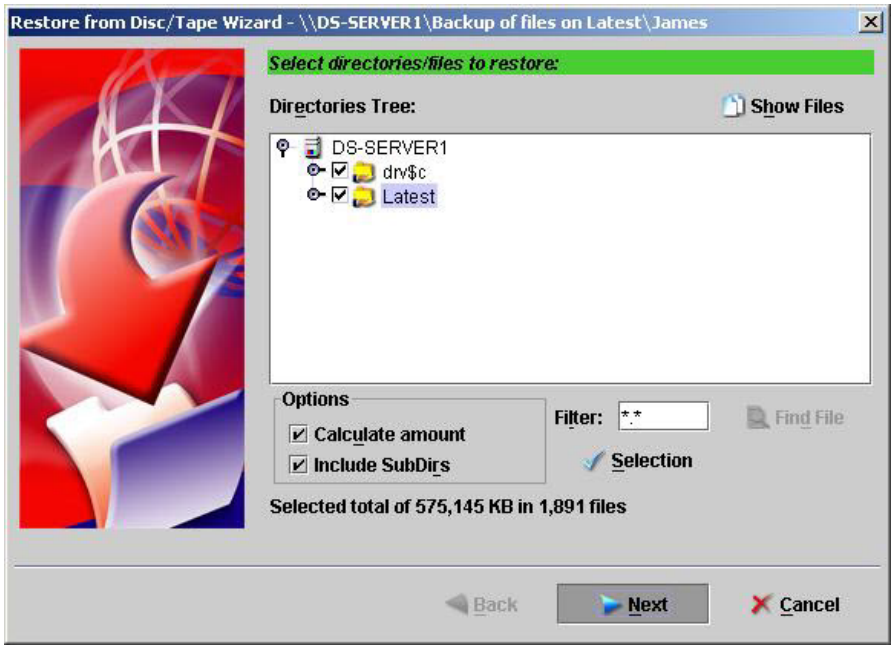
4. Select the directory containing the disc/tape catalog, and then click **Select**.

   The Shares and Directories Tree shows the available shares and directories.

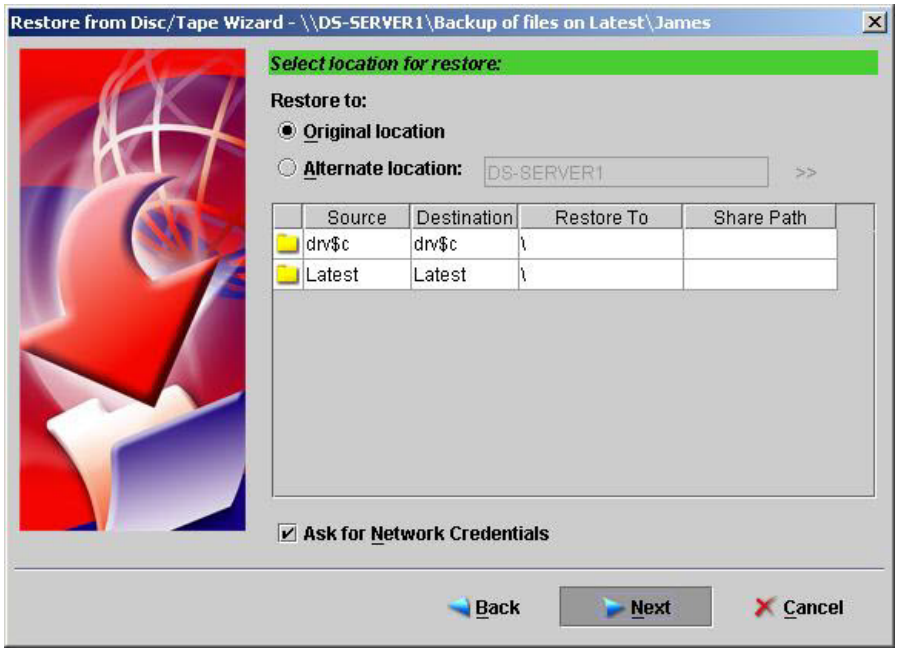
   If you need to enter an encryption key, the corresponding field appears.

5. Click **OK**.

   The **Select directories/files to restore** page appears.



6. Make the required selections, and then click **Next**.
7. From the **Select restore location** page, the remaining steps are the same as for regular restore of the corresponding type of backup set.



12.3 Backup Lifecycle Management (BLM)

12.3.1 About BLM

Backup Lifecycle Management (BLM) gives you additional options for copying, removing, and destroying data. This tool is provided from DS-System by your service provider.

The Backup Lifecycle Management (BLM) Module works with DS-Client, DS-System, and a BLM Archiver to extend the options for your backed up data. Data stored in the BLM Archiver is billed on a different scale as compared to the online (DS-System) data.

Restore from BLM is a feature that allows you to restore data from the BLM Archiver if you have data that has been previously sent to the BLM Archiver via a BLM Request.

You can perform BLM requests in the following ways:

- According to schedule from DS-Client
  - Section 12.3.2, “Configuring a backup set for BLM”, on page 433
  - Section 12.3.4, “Configuring a BLM schedule”, on page 435

    - Section 12.3.4, “Scheduling a backup set for BLM:”, on page 436
- On demand from DS-Client:
    - Section 12.3.3, “Performing an on-demand BLM request”, on page 434
    - Section 12.3.6, “Converting from tape to BLM”, on page 438
- On demand from DS-System (service provider): Contact your service provider.

NOTE: If the BLM Module is enabled for the DS-Client, an additional feature Time-Push is available for Retention. See Chapter 5, “Working with retention rules”.

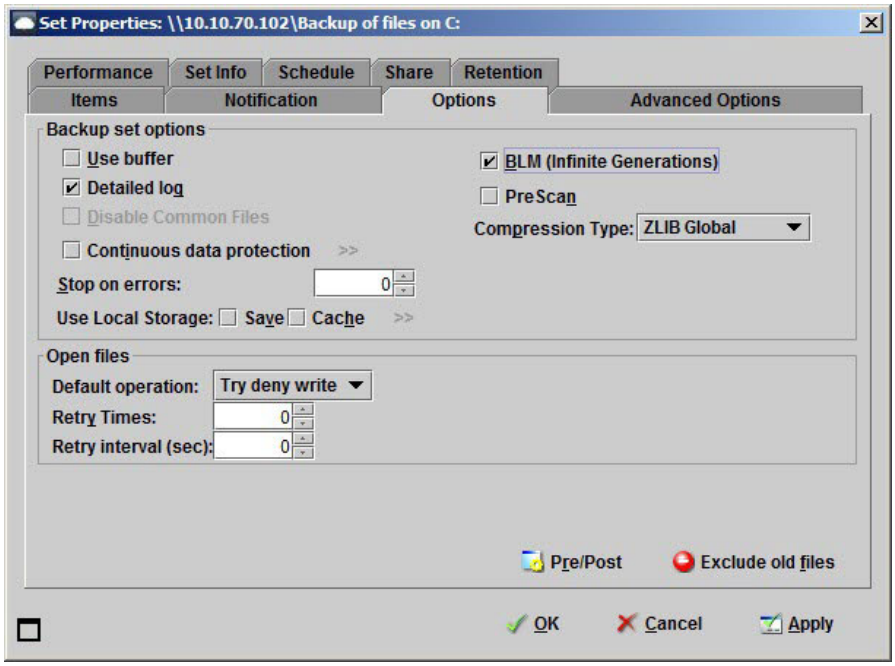
Data that is stored by the BLM Archiver is accumulated into Archive Packages. An additional step of creating a Restorable Image (which is a DS-Client readable image of archived data) is required because data in these Archive Packages can not be in a format that is immediately readable by DS-Client. Each Restorable Image represents data from a single backup set though it can contain multiple generations of files. To restore from a BLM Restorable Image, see Section 12.3.5, “Restoring from the BLM Archiver”, on page 436.

12.3.2 Configuring a backup set for BLM

Backup sets are configured to save a specific number of generations. After a backup item reaches this number of generations, the oldest will be overwritten with each new generation backed up.

When you configure a backup set for BLM, DS-Client will instruct DS-System to send a copy of the oldest generation (that is about to be overwritten) to the BLM Archiver.

1. In the Backup Sets tree, select the required back up set, right-click and select **Properties**.
2. Click Options. Select BLM (Infinite Generations).



F1 Help: Set Properties - Options tab

F1 Help: Set Properties - Options tab (Linux DS-Client)

3. Select the required parameters, and then click **OK**.

12.3.3 Performing an on-demand BLM request

BLM Requests can be performed as follows:

- According to schedule from DS-Client
- On demand from DS-Client
- On demand from DS-System (service provider)

You can perform an on demand BLM Request for any existing backup set with backed up data online. The backup set does not have to be configured with the BLM (Infinite Generations) option.

1. In the Backup Sets tree, select the required backup set.
2. On the **Backup** menu, click **BLM Request**.

   The **Request BLM Wizard** appears.
3. Select the backup items you want to copy to the BLM Archive, and then click **Next**.

   The **Select BLM Options** dialog box appears.

   F1 Help: Select BLM Options (Request BLM Wizard)

4. Select the BLM options, and then click **Finish**.

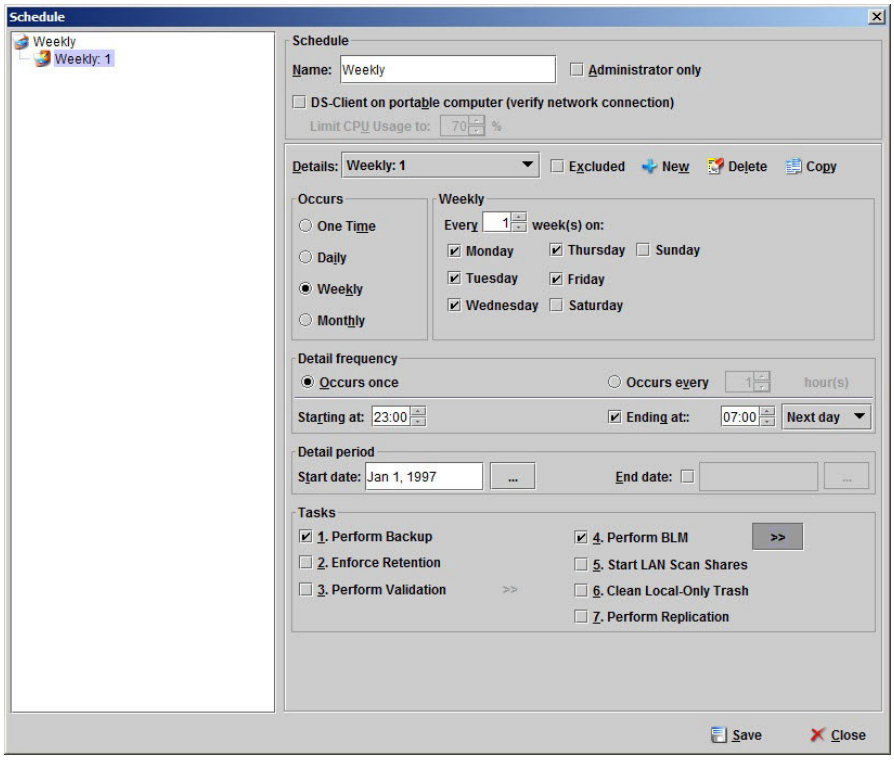
NOTE: An alternative is to contact your service provider and have them perform the BLM Request from the DS-System side on demand.

12.3.4 Configuring a BLM schedule

You can create a new BLM schedule (or edit an existing Schedule by adding a detail to copy files to BLM).

Use the **Perform BLM** detail with the **Enforce Retention** detail to set the policies for handling backed up data.

1. In the Backup Schedules tree, select the required backup schedule.
2. On the **Schedule** menu, click **Edit Schedule**.



F1 Help: Schedule

3. In the **Details** section, select **New** to create a new detail.
4. Select **Perform BLM**.
5. Beside **Perform BLM**, click the **[>>]** button.

   The **Select BLM Options** dialog box appears.

   F1 Help: Select BLM Options

6. Use these settings to configure what will be archived, and how BLM will handle the data when this schedule is run.
7. Click **OK** and then **Save**.

Scheduling a backup set for BLM:

Assign the BLM Schedule to the required backup set(s).

The backup set(s) do not have to be configured with the BLM (Infinite Generations) option.

1. In the Backup Sets tree, select the required backup set.
2. On the **Sets** menu, point to **Backup Sets**, and then click **Properties**.
3. In the **Backup Set Properties** dialog box, click **Schedule**.
4. On the Schedule tab, select a **Schedule**, and then click **OK**.

12.3.5 Restoring from the BLM Archiver

Once data has been sent to BLM Archive, you can request to have any generation in the archive written to media and shipped to you.

Restoring data from BLM includes two main steps:

1. Obtain a BLM restorable image of the archived data you want to restore.

   There are two ways to do so:

   - via DS-NOC
   - Through your service provider or backup operator.
2. Retrieve the data in the BLM restorable image through DS-User.

NOTE: Ask your service provider to generate a restorable image, or use DS-NOC if it is available.

12.3.5.1 Obtaining a BLM restorable image via DS-NOC

If you have installed DS-NOC, you can create a BLM restorable image of your archived data and download the image via DS-NOC.

Before you can create a BLM restorable image via DS-NOC, you need to ensure the following:

- The required BLM Archiver has been added to DS-NOC.
- The **Restorable Image Save Path** specified in DS-NOC is a legitimate and available path on the BLM Archiver machine.

For detailed instructions on how to add a new BLM Archiver and how to access restorable images for data recovery, see the *DS-NOC User Guide*.

12.3.5.2 Obtaining a BLM restorable image through your service provider/backup operator

You can also obtain a BLM restorable image of your archived data from your service provider or backup administrator.

Directly inform your service provider or backup administrator of the data you want to restore from the BLM Archiver.

Your service provider or backup administrator can then create a BLM restorable image of your requested data and deliver the image to you in a way that allows you to make the image accessible to DS-Client. For example, the image can be put on a media and delivered to you by mail.

12.3.5.3 Retrieving data on a BLM restorable image

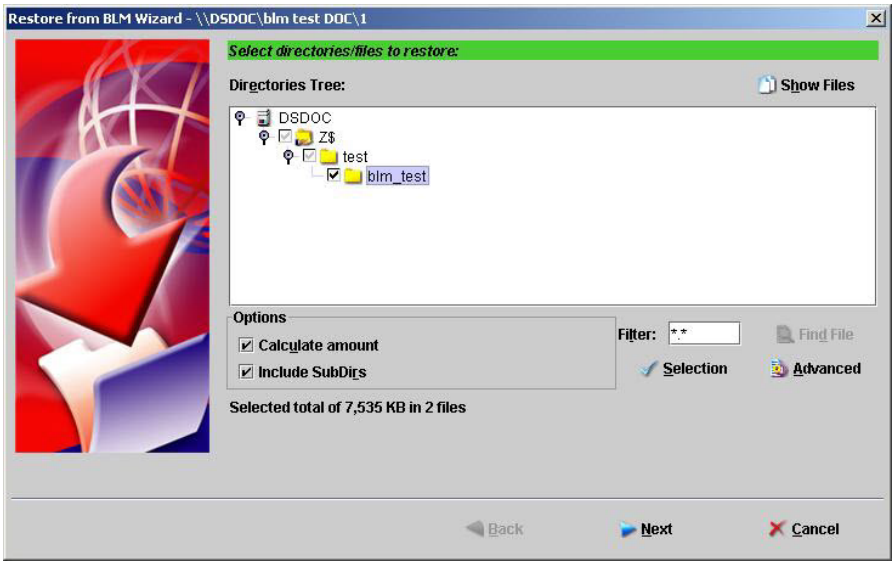
After obtaining a BLM restorable image, you can retrieve the data on the image.

1. Place the BLM restorable image in a location that DS-Client can access.
2. On the **Restore** menu, click **BLM Restore**.
3. In the **Select BLM Restore Path** page, specify the location in which DS-Client can access the BLM restorable image:

   a) Beside **Computer**, click **>>** to specify the machine in which the image is located.

   b) Beside **Directory**, click **>>** to specify the exact directory location of the image.

   F1 Help: Select Restore Path
4. In the Restore from BLM Wizard, select the items you want to restore, and then click **Next** to proceed to subsequent pages and finish the wizard.



5. Selectable options in the Restore from BLM Wizard are similar to those in the Restore Now Wizard. The following sections provide information on subsequent wizard pages:

   - Section 6.2.5.3, “Specifying the restore destination”, on page 161.
   - Section 6.2.5.4, “Specifying performance options (Windows DS-Client)”, on page 162.
   - Section 6.2.5.5, “Specifying restore options”, on page 163.
   - Section 6.2.5.6, “Specifying the reason for the restore”, on page 164.

12.3.6 Converting from tape to BLM

[Windows DS-Client]

DS-Client can convert data from tape backups into BLM format Archive Packages (see Section 12.3, “Backup Lifecycle Management (BLM)”, on page 432). These Archive Packages can then be sent to your service provider to import to the BLM Archiver (for off-site storage).

The following are requirements to convert from tape to BLM:

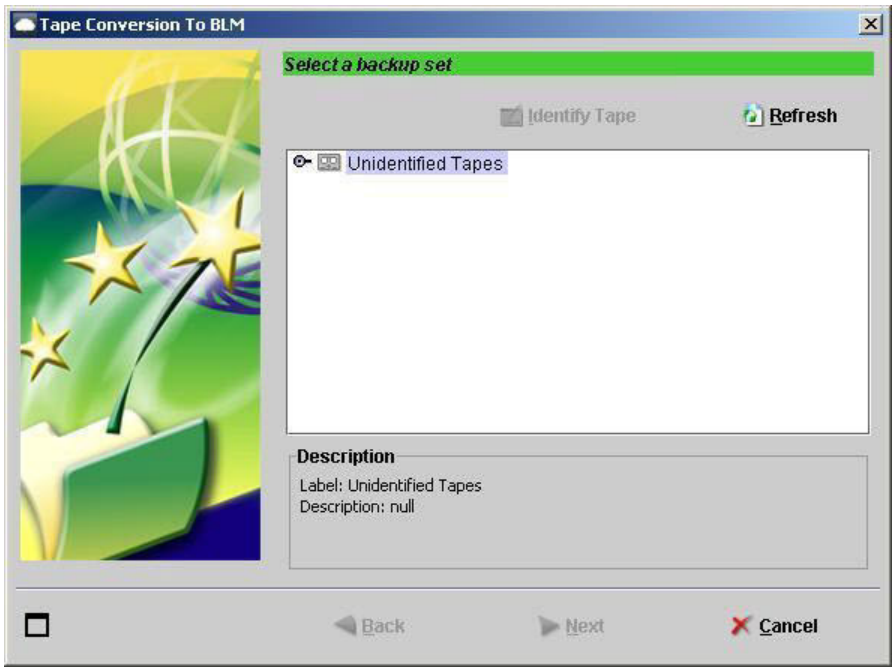
- Tape Drive must be directly connected to the DS-Client computer.
- Tape Format must be MTF (Microsoft Tape Format).

The following limitations exist for data you convert from tape: special operating system backups that were created using the tape backup utility (e.g. System State, Microsoft Exchange) are not restorable.

Converting from tape to BLM:

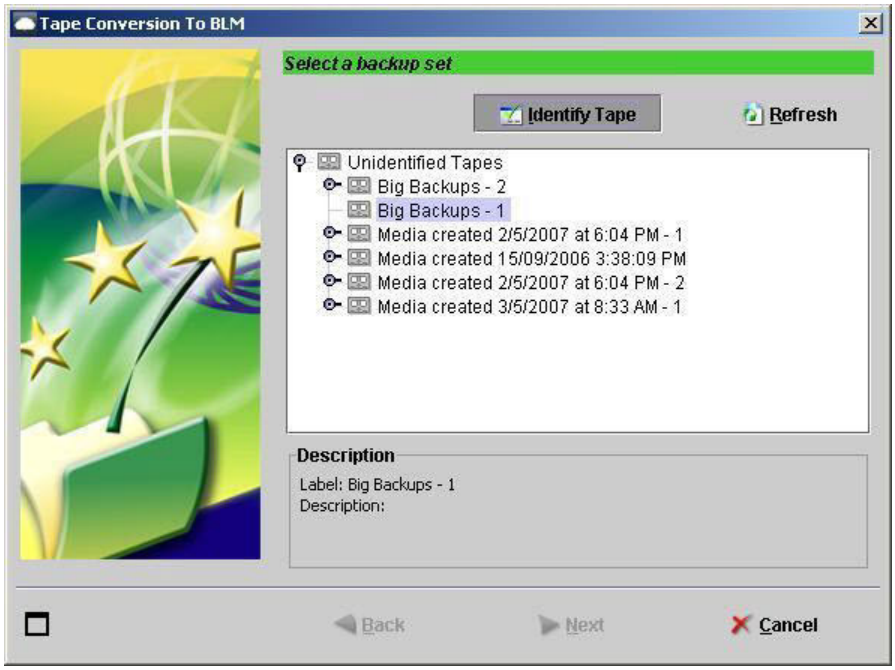
1. Load the tape(s) you want to convert.
2. On the **Initial Backup** menu, click **Tape Conversion to BLM**.

   The Tape Conversion Wizard appears.



   F1 Help: Tape Converter - Select the backup set

   When this dialog box appears, the Tape Converter automatically counts how many physical tapes are in the drives. Initially, all tapes appear under “Unidentified Tapes”.



- **Refresh**: Updates the dialog box with the latest information that DS-Client has from the Tape Library's memory.
- **Identify Tape**: Scans the selected tape for information about the backup data on the tape.

NOTE: If the DS-Client service is restarted, all tapes will be reset to "Unidentified Tapes".

---

3. If you need to identify a tape, select it, and then click **Identify Tape**.

   A new activity will start (a separate Process Monitor will appear).

4. When this activity has finished, click **Refresh** to update the list.

Changing tapes:

IMPORTANT: The DS-Client Tape Converter depends on Windows to interface with the Tape Drives. Therefore, you must change tapes in a way that Windows will always be aware of your changes.

To change a tape:

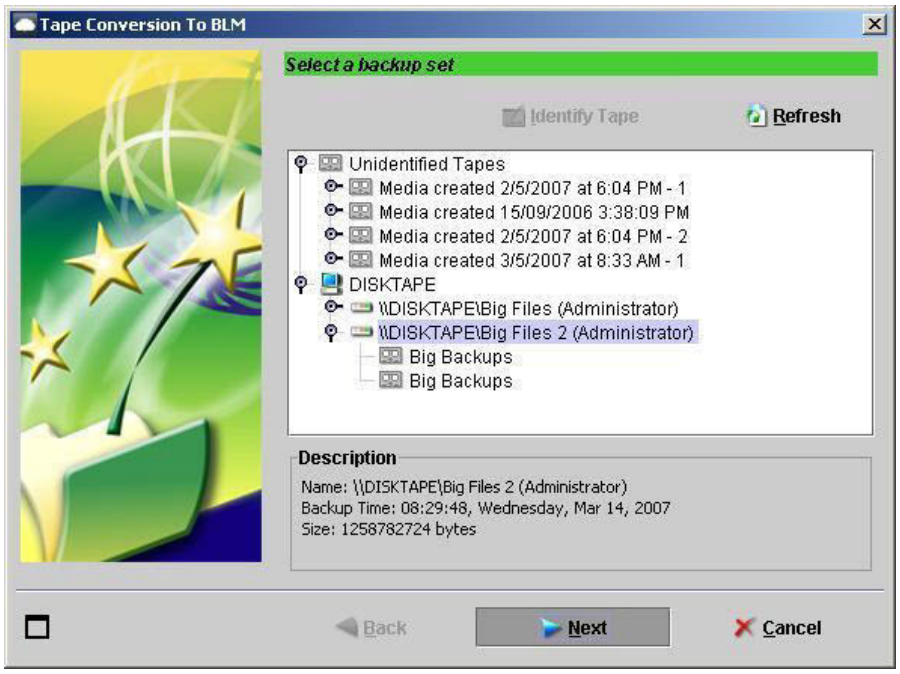
1. Open the Tape Drive door, and take a tape out from its slot.
2. Close the Tape Drive door. Let Windows perform its inventory, and the removed tape will be marked as off-line.
3. Open the Tape Drive door again, and put the new tape in the empty slot.

4. Close the Tape Drive door.

   Windows will identify the new tape.

5. After Windows identifies the Tape, click **Refresh** in the Tape Conversion Wizard to update the DS-Client's list from the Tape Library's memory.

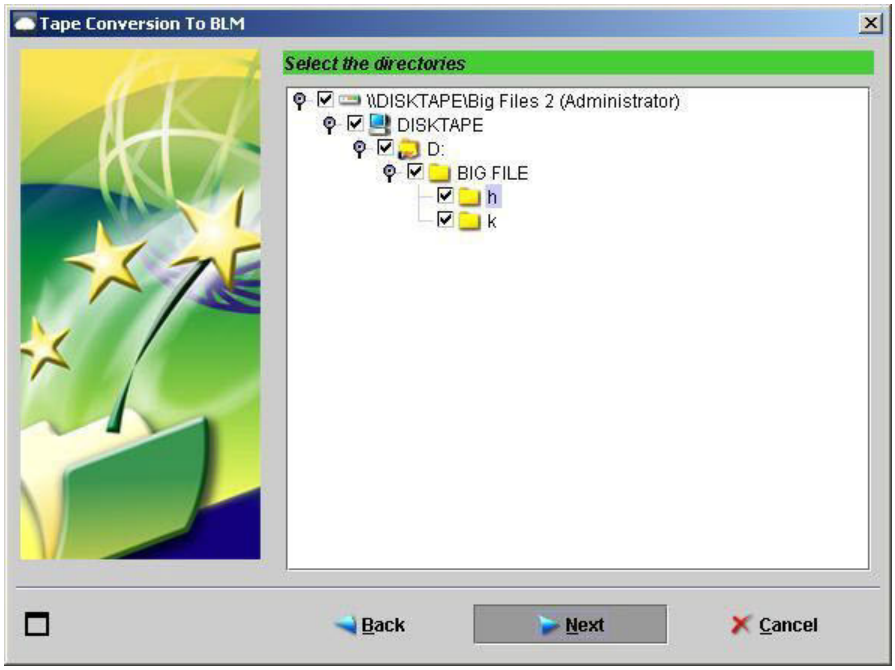
   After a Tape has been identified, all the backup set(s) on that tape appear in the list.



NOTE: You can only convert from a tape that has been identified.

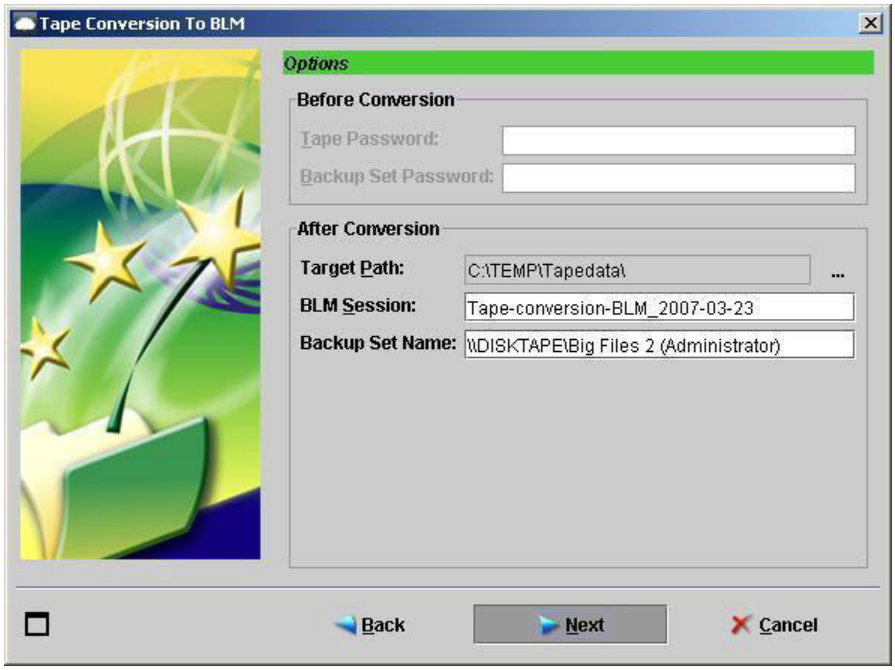
6. Select the level that you want to convert, and then click **Next**.
   - **Computer Name –** Converts all backup sets listed for that computer.
   - **Backup Set –** Converts the highlighted backup set.
7. Select the data to convert, and then click **Next**.

   By default, the entire backup set is selected.



F1 Help: Tape Converter - Select the directories

8. Select the conversion options, and then click **Next**.

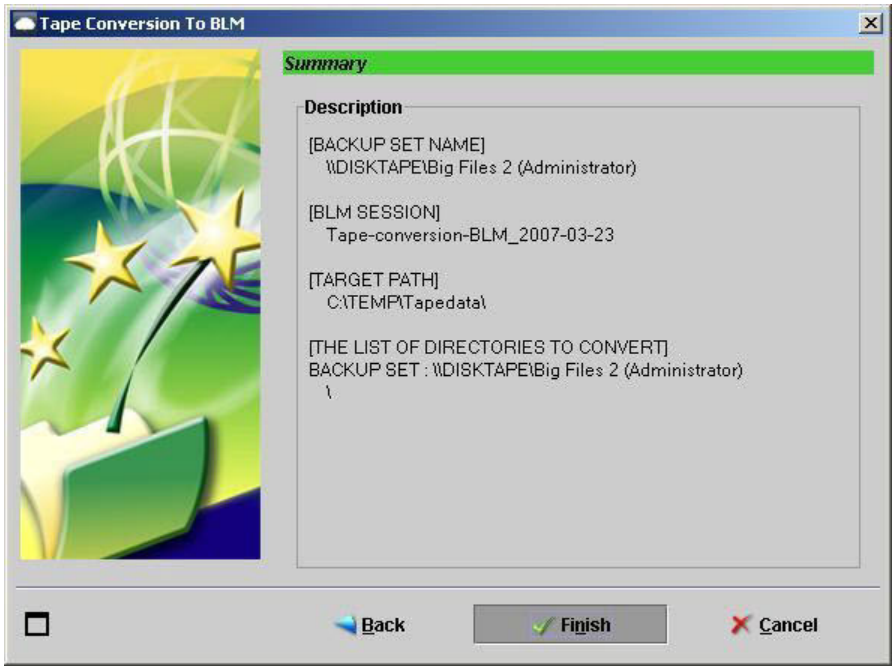


F1 Help: Tape Converter - Options

- **Before Conversion –** If the tape is in MTF, DS-Client can convert the data without entering any password(s).

- **After Conversion –** Specify the location where DS-Client will save the Archive Package. The BLM Session and Backup Set Name are labels that will help you find the Archive Package after it is imported to the BLM Archiver.

The Tape Conversion Wizard displays a summary of the tape data you are about to convert.



F1 Help: Tape Converter - Summary

9. Click **Finish**.

   When the conversion is completed, the data in the Target Path can be shipped to your service provider for import to the BLM Archiver.

After the data has been imported to the BLM Archiver, you can request Restorable Images. (See Section 12.3.5, “Restoring from the BLM Archiver”, on page 436.)

12.4 Local Storage Tool

The Local Storage Tool must be enabled by your service provider from the DS-System. It allows the DS-Client to save backup data to a local disk or UNC path.

12.4.1 About the Local Storage Tool

The Local Storage Tool allows you to save copies of the backup files to a local storage location. If a restore is needed, the file can be quickly restored at LAN speed from the local environment without connecting through the IP WAN to DS-System.

NOTE: Local storage does not apply during the initial backup process. Any backup sets configured for local storage will ignore the setting until the initial backup is transferred to the DS-System online storage.

When a file in a backup set configured with local storage is created or modified, the backup process sends it to both DS-System and the local storage. If a file was previously backed up on DS-System, but there is no copy of the file on the local storage (for example, it was backed up before the backup set was marked for local storage), the backup process sends it only to local storage. If for some reason the file cannot be saved locally, it is still sent to the DS-System and an error is logged.

Local storage behaves differently for backup sets assigned to a retention rule:

- **Without Retention —** Local storage keeps a copy of the latest generation of the backup set files (as well as online, offsite at the DS-System).
- **With Retention —** The same number of generations are backed up to local storage as are on DS-System. Ensure there is enough space in the Local Storage, and perform the “Enforce Retention” process regularly. For more information, see Chapter 12, “Using premium backup and recovery services”.

NOTE: In both cases, when a new backup session occurs and an existing generation of a file is replaced by a new one, the old generation of the file is deleted after the new one is saved on the local storage. This means there must be enough free space on the local storage to accommodate both generations.

The **Set Properties Options** tab offers the following options:

- **Save** on Local Storage **—** Enables local storage for the backup set.
- Transmission **cache** on Local Storage **—** See Section 12.4.2, “About the local storage cache”, on page 445.

By default, DS-Client tries to restore from local storage first. For missing files or older generations, DS-Client retrieves them from DS-System online storage. For more information, follow from Section 6.2.5.1, “Selecting the backup set”, on page 159.

12.4.2 About the local storage cache

The local storage cache is an option that you can configure for a backup set to define a disk location for the temporary storage of backup data if the connection to DS-System is lost while a backup is in progress and all configured retries fail. Once DS-Client reestablishes the connection, it sends the data in the local storage cache to the DS-System.

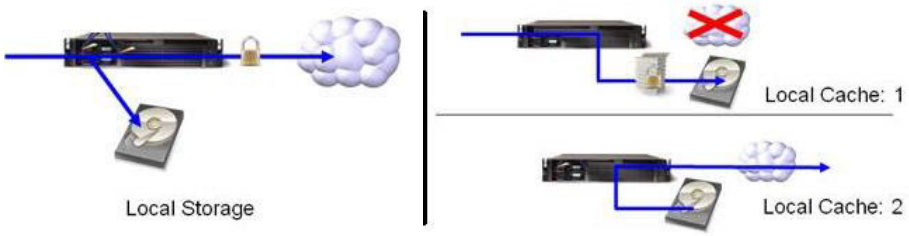
When sending data to the local storage cache, DS-Client processes the data from the source and saves the data as a full backup in a compressed and encrypted format on the local storage cache. If the connection from DS-Client to the DS-System is maintained throughout the entire backup activity, the local storage cache is not used.

IMPORTANT: By default, the local storage cache location is the same as the local storage path. Whatever path you select, ensure it has sufficient capacity to store the backup data. When used, the local storage cache supports the total amount of data that needs to be master processed and backed up in a compressed and encrypted format for a backup set.

12.4.3 Local storage vs local storage cache

By default, local storage and the local storage cache use the same default storage location as defined in Section 12.4.4, “Setting the default local storage path”, on page 447.

However, local storage and the local storage cache have the following differences:



Function	Local Storage	Local Storage Cache
Used when:	Data is to be kept locally AND online.	Connection to DS-System is not available.
DS-System connection:	Yes	No
Types of generations:	Regular	Master and delta pointers

Function	Local Storage	Local Storage Cache
Number of generations:	Up to 30 days	Infinite
Common file elimination	No	No
Compression:	Yes	Yes
Restore:	Yes	No

.Data is sent to the local storage location at the same time the data is processed by DS-Client to be sent to the DS-System. Data is sent to the local storage cache only when the connection to the DS-System is not available.

By default, data is saved in the local storage as regular generations in compressed format, but is not encrypted. Data is saved in the local storage cache as a master generation that includes additional information that determines which blocks of data from within that file are required for delta generations. When the connection between the DS-Client and DS-System is reestablished, DS-Client moves the required files from the local storage based on the backup set configuration in the format they were stored in the local storage cache (encrypted and compressed) and sends only delta generations to DS-System. As a result, DS-Client can still process master/delta (Incremental forever) generations when performing backup using the Local Storage Cache option. Similarly, the local storage can include encrypted as well as unencrypted data, depending on when the files were processed during a particular backup activity. Files are released from the local storage cache one-by-one as their successful transmission to the DS-System is confirmed between DS-System and DS-Client.

The configured number of generations for the items in a backup set does not take effect when data is sent to the local storage cache. For example, a backup set is configured to store a maximum of three generations of data on the DS-System Online Storage. It can store more than three generations of data in the Local Storage Cache if DS-System is unavailable and/or DS-Client did not finish moving the data from the Local Storage Cache to the DS-System. All generations will be sent to DS-System whenever possible as regular generations or Master/Delta generations and DS-System will process them as it would process any generations sent directly to it (e.g. it will mark generations as recycled when required, it will trigger reconstruction when required, etc.). By default, the Local Storage will store the latest generation of all the files processed for a backup set. However, if Local Storage Retention is enabled and assigned to a backup set with Local Storage Options enabled, DS-Client will store all generations that meet the criteria specified in the Local Storage Retention rules in the Local Storage.

DS-Client can restore data directly from the local storage and can connect to DS-System to retrieve only data that does not exist in the Local Storage (configure this behavior from the Restore Wizard, before triggering the restore activity). Data from the Local Storage Cache cannot be restored until it has been transferred to DS-System.

DS-Client performs basic checks to ensure the validity of the files from the local storage cache on transfer to DS-System. If DS-Client determines that a file is corrupt, it removes the file information from the DS-Client database and determines if the files needs to be backed up again in the next backup session.

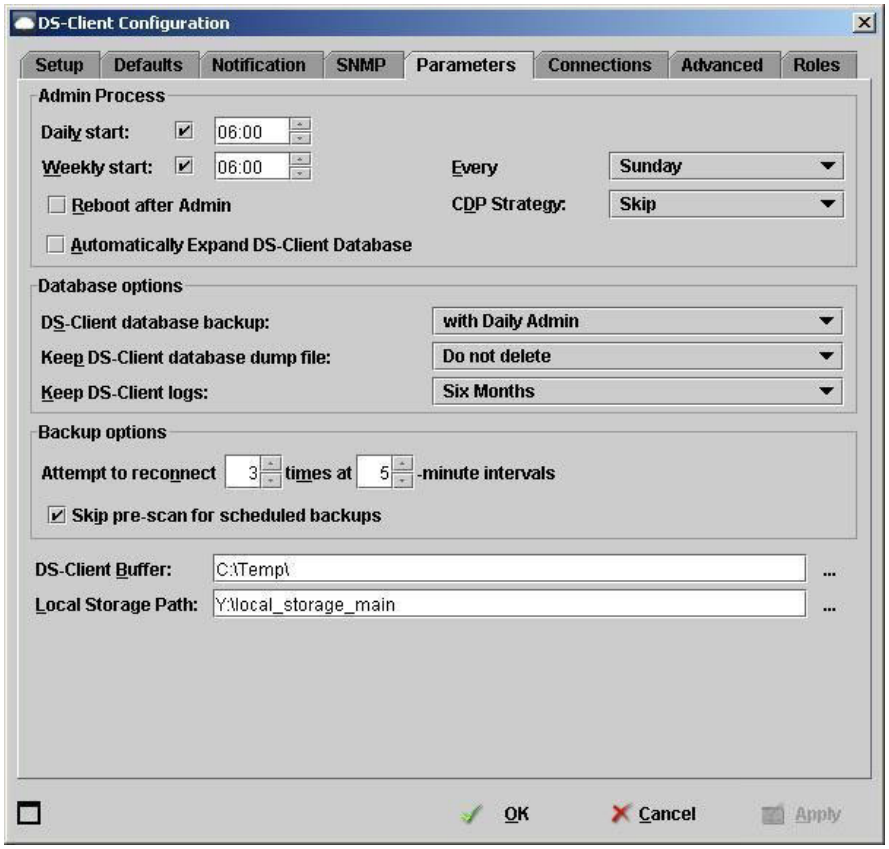
If a backup set is marked as out-of-sync and DS-Client cannot connect to DS-System to perform synchronization, then DS-Client cannot run backup to the local storage cache. DS-Client administrators must ensure that sufficient local storage disk space is available to accommodate all data in the local storage or local storage cache for all the configured backup sets. If data exists in the local storage cache for a selected backup set, that data must first be transferred to DS-System, and only afterwards can DS-Client perform subsequent backups for that backup set directly to DS-System. Suspending a backup set configured with the local storage cache will not allow the local storage cache copy process to be triggered and to connect to DS-System to move the data.

12.4.4 Setting the default local storage path

By default, the default local storage path is not configured. This means none of the local storage options are available. Once configured, **Save on Local Storage** appears in the New Backup Set Wizard, and **Use Local Storage** appears in the Backup Set Properties dialog box (Options tab).

To set the default local storage path:

1. On the **Setup** menu, click **Configuration**.
2. In the **DS-Client Configuration** dialog box, click **Parameters**.



3. In the **Local Storage Path** box, type the default path to use.

NOTE: Ensure that the DS-Client service account has read/write access to the local storage path.

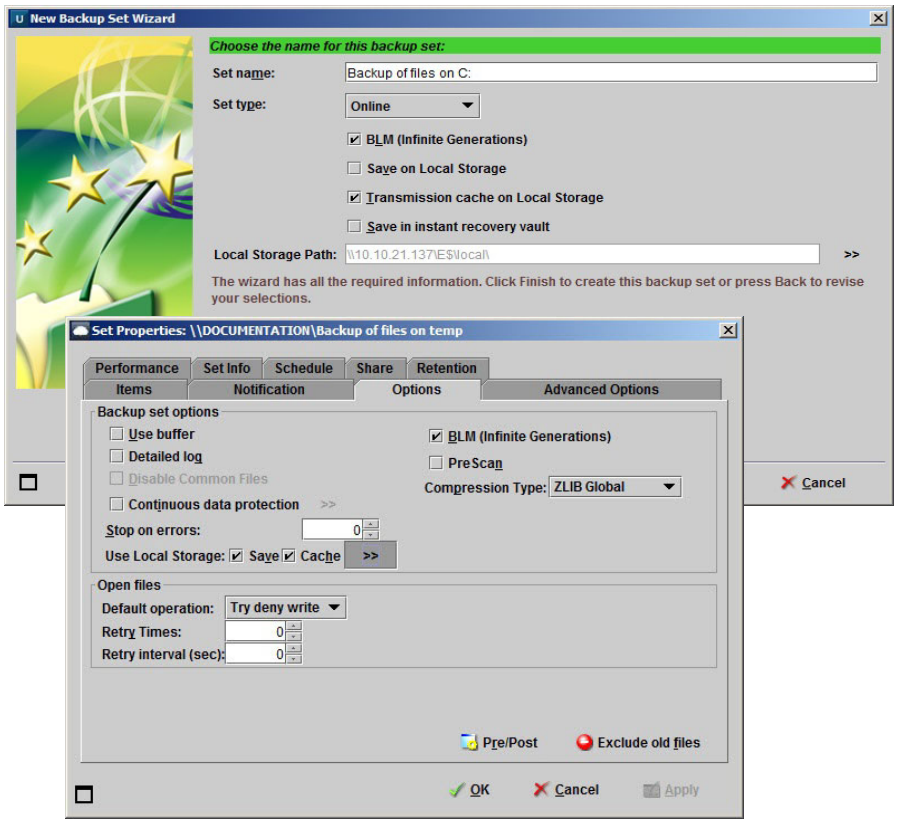
4. Click **OK** to save the changes.

12.4.5 Configuring a backup set with local storage

Once configured, the next backup session sends data to local storage.

To configure a backup set with local storage:

1. Browse the Backup Sets tree, select the required backup set
2. On the **Sets** menu, point to **Backup Sets**, and then click **Properties**.
3. In the **Backup Set Properties** dialog box, click **Options**.



NOTE: For new backup sets, this feature is activated on the last tab of the New Backup Set Wizard (Choose the name for this backup set).

4. Beside **Use Local Storage**, select the **Save** check box.

   By default, this backup set will use the default local storage path set in Section 12.4.4, “Setting the default local storage path”, on page 447.

NOTE: When creating a new backup set, you select the **Save on Local Storage** check box on the last New Backup Set Wizard page (Choose the name for this backup set).

- To specify a different local storage path for this specific backup set, click **>>**, and then type it in the **Path** box. Then, click **OK**.

5. Click **OK** to save any modifications.

12.4.6 Configuring a backup set to use the local storage cache

The Local Storage Cache feature extends the capability of the local storage (local attached disk or UNC path) to provide a 'cache' if the connection between DS-Client and DS-System is interrupted during a backup session. This lowers the chances of missing a backup session.

For backup sets using this option, DS-Client sends data to the Local Storage Cache in the following situations:

- The connection between DS-Client and DS-System is lost during a backup activity and the connection cannot be re-established after the configured number of retries. (To change the number of retries, configure the **Attempt to reconnect** settings. See Section 3.1.5, "Configuring the parameter settings", on page 25.)
- DS-Client cannot establish a connection with DS-System for a scheduled or on-demand backup activity.
- The backup activity is stopped from the DS-System-side and DS-Client fails to reconnect to DS-System based on the configured number of retries.
- (Windows DS-Client only) The backup activity starts and data still exists in the Local Storage Cache for the backup set.

If a DS-Client tries to connect to a DS-System and cannot establish the connection, DS-Client will process the data and save it in the Local Storage Cache. Once DS-Client can re-connect to DS-System, it triggers a Local Storage Cache Copy process to send to DS-System each generation of the required files in the required format (master / delta / regular). For interrupted backups, DS-Client runs a synchronization activity and then proceeds with the Local Storage Cache Copy process.

NOTE: DS-System considers the Local Storage Cache Copy process to be a backup activity, and applies the same priority and backup set locking rules to it.

Data accumulates in the Local Storage Cache until DS-Client reestablishes the connection to DS-System.

To configure a backup set to use local storage cache:

1. Browse the Backup Sets tree, select the required backup set.
2. On the **Sets** menu, point to **Backup Sets**, and then click **Properties**.

3. In the **Backup Set Properties** dialog box, click **Options**.
4. Beside **Use Local Storage**, select the **Cache** check box.

   By default, this backup set will use the default local storage path set in Section 12.4.4, “Setting the default local storage path”, on page 447.

   NOTE: When creating a new backup set, you select **Transmission cache on Local Storage** check box on the last New Backup Set Wizard page (Choose the name for this backup set).

   - To specify a different local storage path for this specific backup set, click the **[>>]** button.

     Data that is cached by this feature is saved in this local storage path in a sub-folder called `\Cache`.
5. Click **OK**.

12.5 Multitenant DS-Clients

12.5.1 About Multi-Tenant DS-Clients

The Multi-Tenant feature allows you to assign a backup set to a specific customer when creating a new backup set or updating the properties of an existing backup set. When you assign a backup set to a customer, the backup set is displayed under the customer name in the Backup Sets tree. By default, administrators and backup operators have access to all existing customers in DS-Client and can assign backup sets to these customers as required. Regular users only have access to customers within their own group or to customers who have been assigned to them by an administrator.

After you have assigned a backup set to a specific customer, you can generate one of the following reports for the customer:

- Backup Groups Report (This type of report is available to administrators only.)
- Backup Items Report
- Backup Sets Report
- Backup Trends Report
- Backup Users report
- Backup / Restore Report
- Restore Activities Report
- Restorable Volume Report

- Statistical Summary

12.5.2 Activating the Multi-Tenant feature

To use the Multi-Tenant functionality, you must enable the Multi-Tenant feature. Only an administrator can enable the Multi-Tenant feature.

1. Click **Setup** menu, click **Configuration**.
2. In the **DS-Client Configuration** dialog box, click the **Advanced** tab.
3. In the **Category** box, select **Miscellaneous**.
4. In the **Parameter** box, select **Multi-Tenant**.
5. In the Value box, select **Yes**.
6. Click **Apply**. DS-Client enters Multi-Tenant mode. In the Backup Sets tree, existing backup sets that have not been categorized under any customer are displayed under Unspecified Customer.

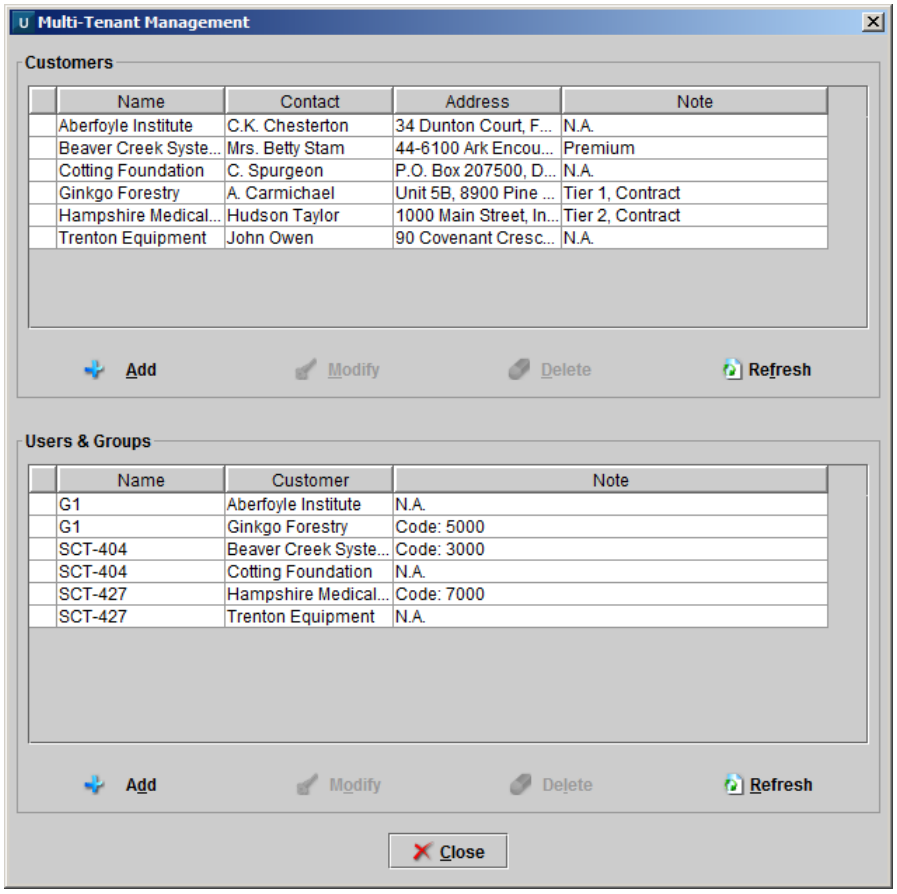
12.5.3 Configuring a Multi-Tenant DS-Client

To use the Multi-Tenant feature, you must configure customers and assign the customers to a user or group.

NOTE: The users and groups to which you want to assign customers must already exist on the DS-Client machine and must have been configured in DS-Client. For more information, see Section 3.1.7, “Configuring the user and group settings”, on page 29.

To configure the Multi-Tenant feature:

1. On the **Setup** menu, click **Multi-Tenant**. The **Multi-Tenant Management** dialog box appears.



F1 Help: Multi-Tenant Management

2. Under **Customers**, do the following:

   a) To add a new customer, click **Add**. To edit an existing customer, select the customer, and then click **Modify**.

      F1 Help: Customer Information

   b) In the **Name** box, type a name for the customer.

   c) In the **Contact** box, type the name of the contact person associated with this customer.

   d) In the **Address** box, type the mailing address of the customer.

   e) In the **Note** box, optionally type any additional information about the customer.

   f) Click **OK**.

3. Under Users & Groups, do the following:

a) To assign a new user or group to a customer, click **Add**. To edit an existing user or group assignment, select the user or group, and then click **Modify**.

   F1 Help: Users & Groups Information

b) In the **Name** list, select a user or user group.

c) In the **Customer** list, select the customer that you want to assign to the user or group.

d) In the **Note** box, optionally type any additional information about the user or group.

e) Click **OK**.

4. When you are finished, click **Close**.

12.6 Snapshot Manager

12.6.1 About Snapshot Manager

NOTE: This feature integrates the DS-User with Storage volumes to manage their native 'SnapVault' feature. DS-Client does not process any data from the storage.

[Linux DS-Client only]

Your service provider should enable this tool from DS-System.

You can use the DS-User as a tool to transfer volumes\qtrees to another volume without having to use the scripting required by native Storage management software.

NetApp License Requirements:

To use this functionality, you must have the following NetApp licenses:

- For the source NetApp Storage, a SnapVault ONTAP Primary license is needed.
- For the destination NetApp Storage, a SnapVault ONTAP Secondary license is needed.

If the source and the destination volumes are on the same filer, then the two licenses are required on the same filer: SnapVault ONTAP Primary and SnapVault ONTAP Secondary.

What happens when Snapshot Transfer runs?

The initial transfer from source to destination is triggered immediately after the snapshot transfer is created. Each subsequent scheduled or on-demand "Transfer" will perform an incremental transfer (only the changes since the last update, as

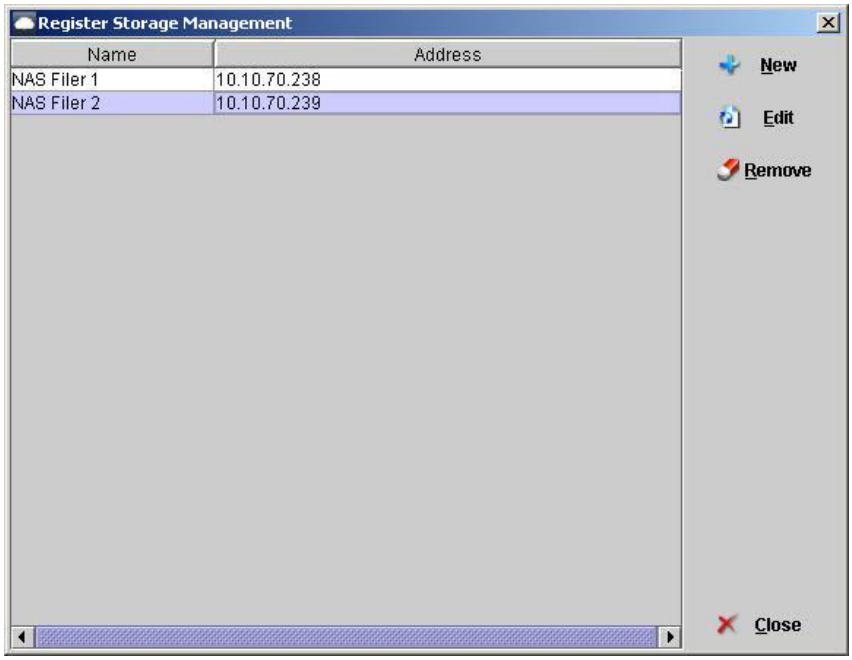
determined by the Storage's management software). After completion of each scheduled or on-demand data transfer, a new snapshot will be created for the destination volume. After the new snapshot is created on the destination volume, the Snapshot Retention policy is applied to the volume's snapshots.

12.6.2 Configuring storage for snapshot transfer

The DS-Client must be configured to connect to each storage that will be used for snapshot transfer. This section assumes the storage device(s) are running and can be accessed by the DS-Client.

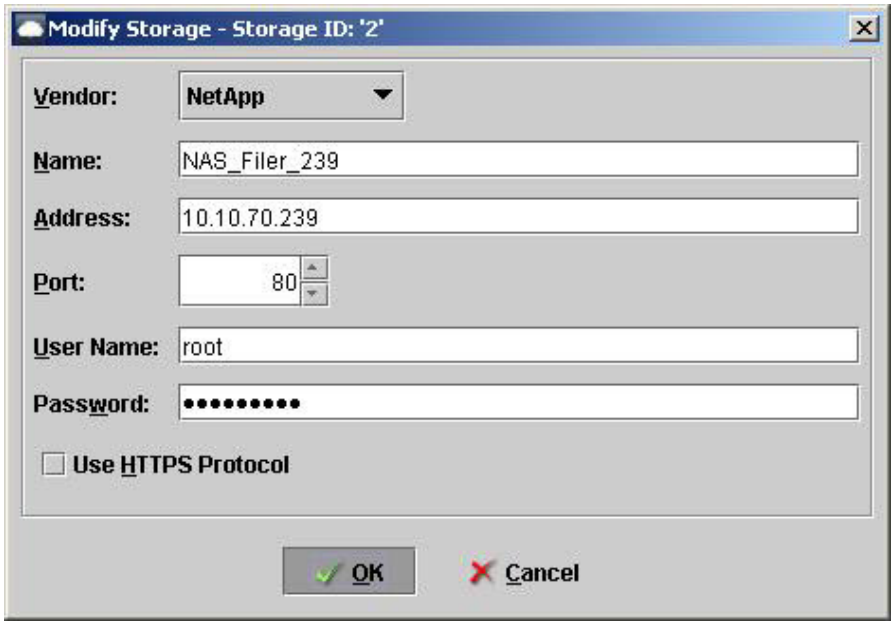
1. On the **Snapshot Manager** menu, click **Register Storage**.

   The **Register Storage Management** dialog box appears.



   F1 Help: Snapshot Transfer - Register Storage Management

2. To add a new storage, click **New**. To edit an existing Registered Storage, select it, and then click **Edit**.



If you have just clicked **New**, the **New Storage** dialog box appears.

If you have just clicked **Edit**, the **Modify Storage** dialog box appears.

F1 Help: Snapshot Transfer - New / Modify Storage

3. Configure the storage connection information, and then click **OK**.

   DS-Client will immediately verify that it can communicate. If successful, the storage is added to the list.

12.6.3 Configuring snapshot retention policies

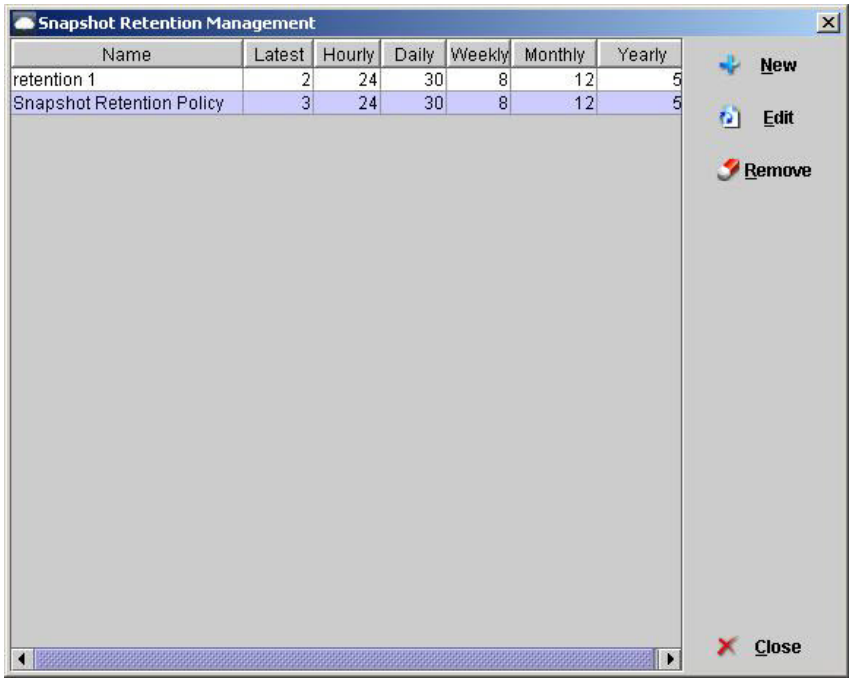
Configuring snapshot retention policies:

[Optional, but recommended]

You should configure the list of retention policies the DS-Client can apply to the snapshots taken by the Snapshot Manager. Each snapshot transfer that is configured can be assigned to one retention policy.

1. On the **Snapshot Manager** menu, click **Snapshot Retention**.

   The **Snapshot Retention Management** dialog box appears.

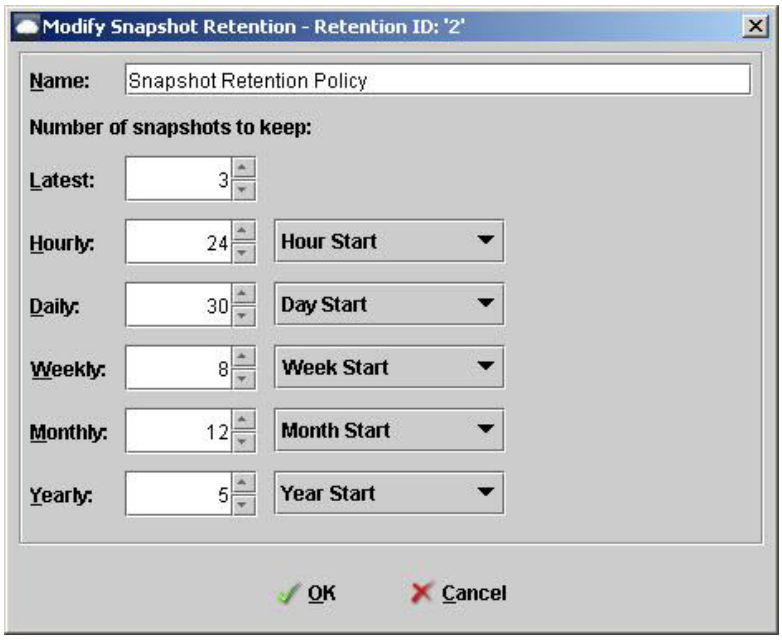


F1 Help: Snapshot Transfer - Snapshot Retention Management

2. To add a new Retention Policy, click **New**. To edit an existing Retention Policy, select it, and then click **Edit**.

   If you have just clicked **New**, the **New Snapshot Retention** dialog box appears.

   If you have just clicked **Edit**, the **Modify Snapshot Retention** dialog box appears.



F1 Help: Snapshot Transfer - New / Modify Snapshot Retention

3. Configure the **Retention Policy**.
4. Click **OK** to save the Snapshot Retention Policy.

   A Retention Policy is applied at volume-level, meaning that all snapshot transfers for the same volume will have the same Retention Policy

IMPORTANT: Once retention is enforced, deleted snapshots cannot be restored.

12.6.4 Configuring snapshot schedules

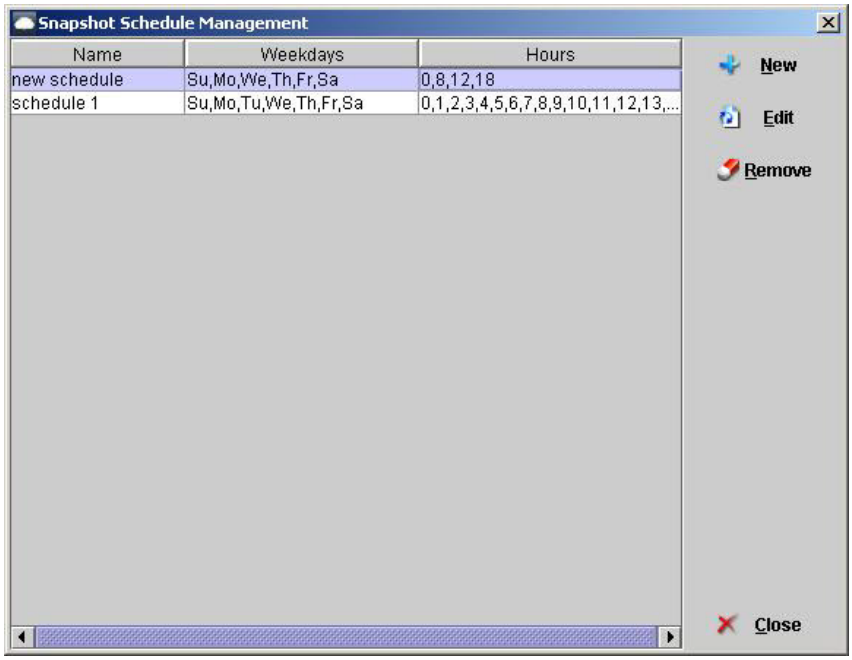
Configuring snapshot schedules:

[Optional, but recommended]

Configure the list of schedules the DS-Client can use for snapshot transfer. Each snapshot transfer that is configured can be assigned to one snapshot schedule.

1. On the **Snapshot Manager** menu, click **Snapshot Schedule**.

   The **Snapshot Schedule Management** dialog box appears.

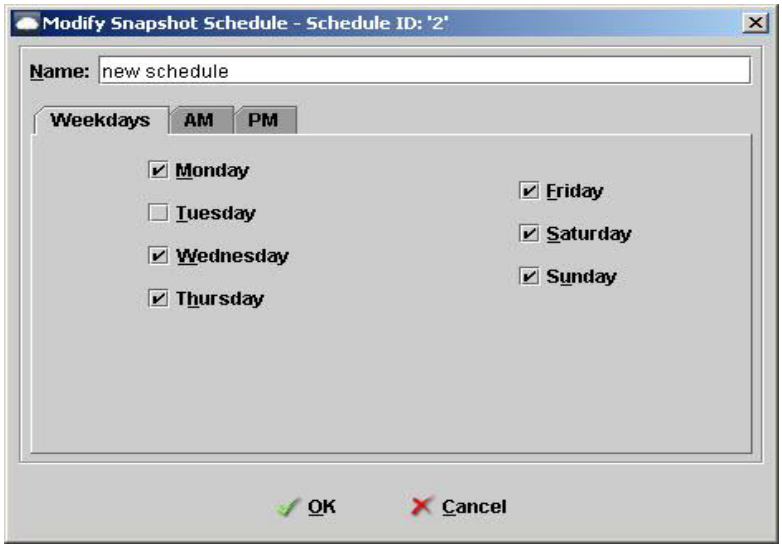


   F1 Help: Snapshot Transfer - Snapshot Schedule Management

2. To add a new Snapshot Schedule, click **New**. To edit an existing Snapshot Schedule, select it, and then click **Edit**.

   If you have just clicked **New**, the **New Snapshot Schedule** dialog box appears.

If you have just clicked **Edit**, the **Modify Snapshot Schedule** dialog box appears.



F1 Help: Snapshot Transfer - New / Modify Snapshot Schedule

3. Configure the **Snapshot Schedule**.
4. Click **OK** to save the Snapshot Schedule.

   A schedule is applied at volume-level, which means that all snapshot transfers for the same volume will have the same schedule.

12.6.5 Configuring snapshot transfer management

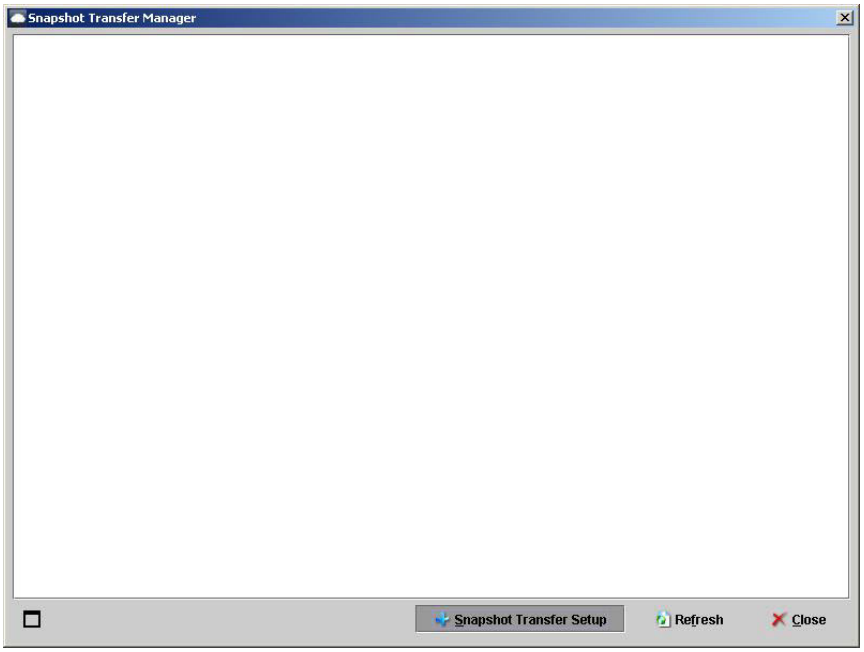
Configuring a snapshot transfer:

NOTE: At the end of the Snapshot Transfer Setup Wizard, the initial data transfer is run from source to destination. After the data is transferred, a snapshot is created. Each subsequent transfer that is run will do two things: 1) Any missing data (the differential) will be transferred from the source to the destination so that both have the same data. 2) After the data transfer is complete, a snapshot is created to record the state of the data at that point in time.

DS-Client must be configured to connect to each Storage that will be used for snapshot transfer. The following steps assume that the Storage device(s) are running and can be accessed by DS-Client.

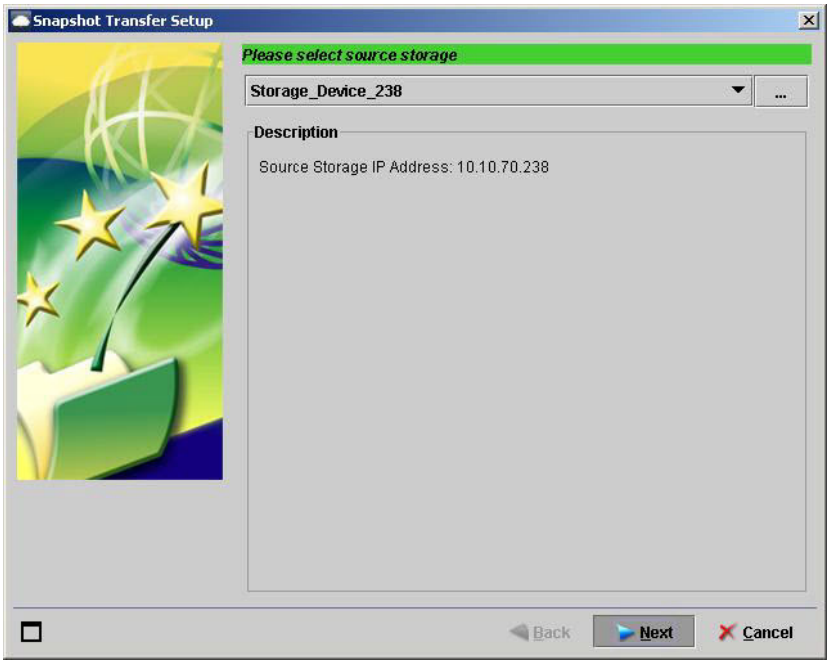
1. On the **Snapshot Manager** menu, click **Snapshot Transfer**.

   The **Snapshot Transfer Manager** dialog box appears.



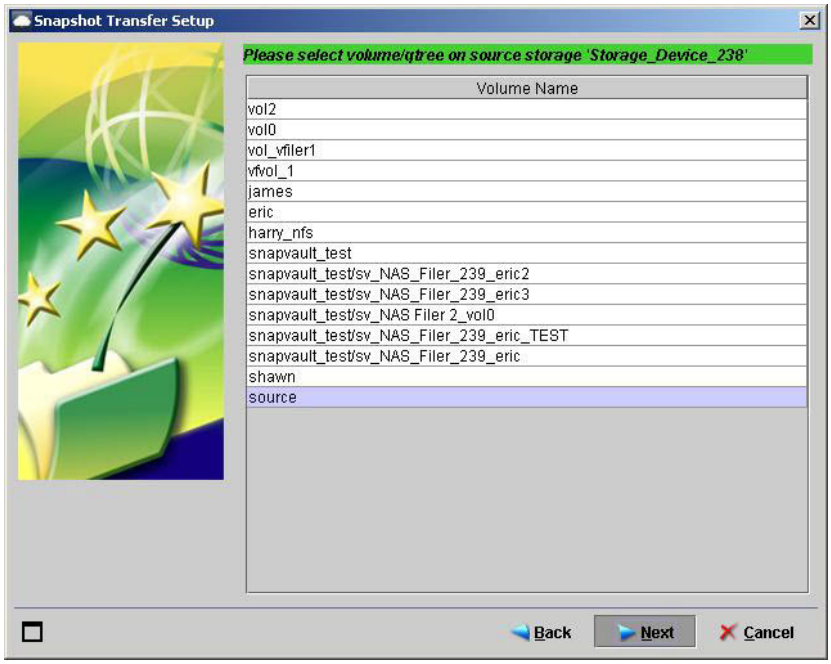
F1 Help: Snapshot Transfer Manager

2. To add a new Snapshot Transfer configuration, click **Snapshot Transfer Setup**.



F1 Help: Snapshot Transfer Setup Wizard - Select Storage

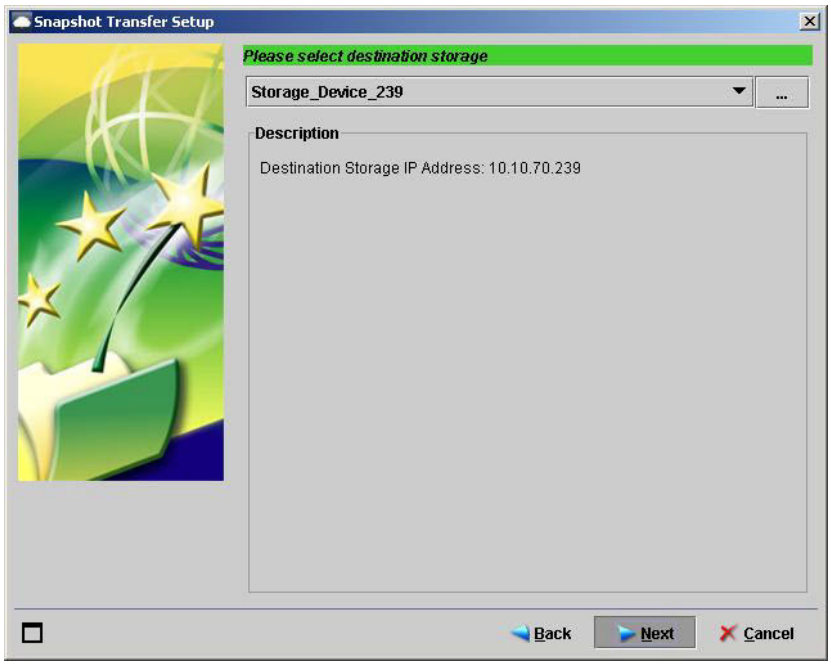
3. In the **Select Source Storage** page, select the source storage from which the volume data will be read, and then click **Next**.



F1 Help: Snapshot Transfer Setup Wizard - Select volume/qtree

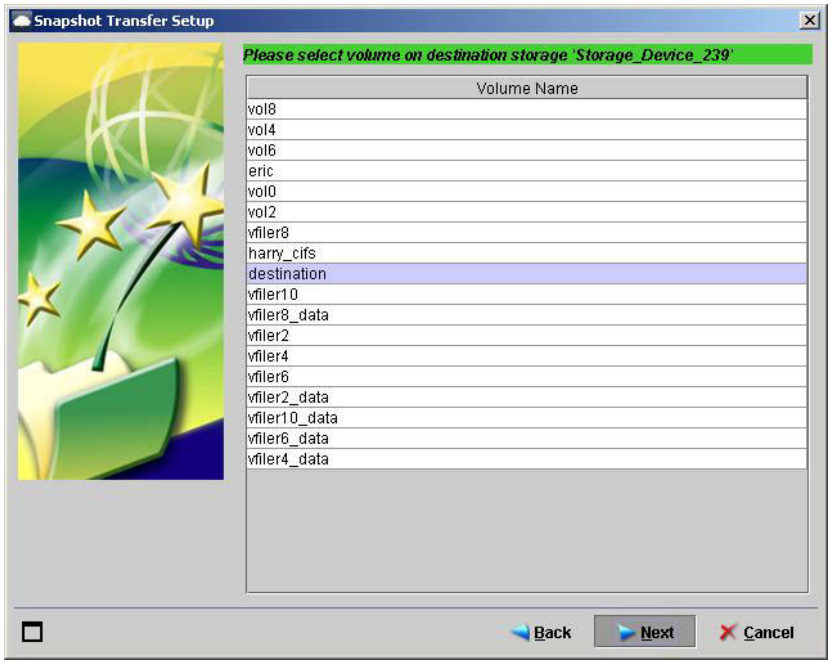
4. In the **Select Volume/qtree** page, select the **volume/qtree** on the **source** Storage that will be protected, and then click **Next**.

NOTE: Although all existing volume/qtrees appear in this list, you cannot select a replicated qtree or volume containing a replicated qtree as the source.



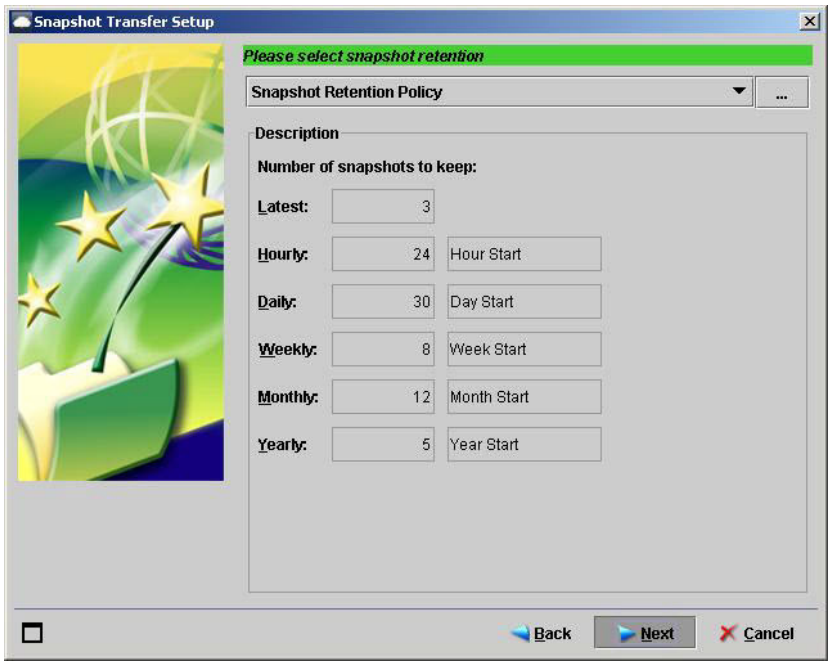
F1 Help: Snapshot Transfer Setup Wizard - Select Storage

5. In the **Select Destination Storage** page, select the **destination** Storage, where the data will be copied, and then click **Next**.



F1 Help: Snapshot Transfer Setup Wizard - Select volume/qtree

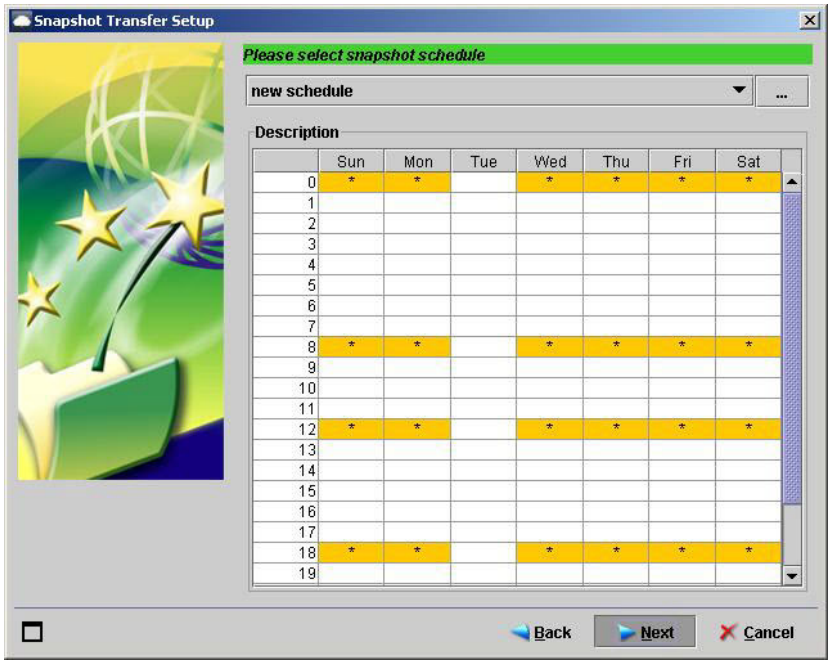
6. In the **Select Volume** page, select the volume on the **destination** Storage where the data will be copied, and then click **Next**.



F1 Help: Snapshot Transfer Setup Wizard - Select Snapshot Retention

NOTE: If you create a new snapshot transfer on a destination volume where a Retention Policy is already defined, the Select Snapshot Retention dialog box will not appear. This dialog box appears only for the first snapshot transfer created on a destination volume.

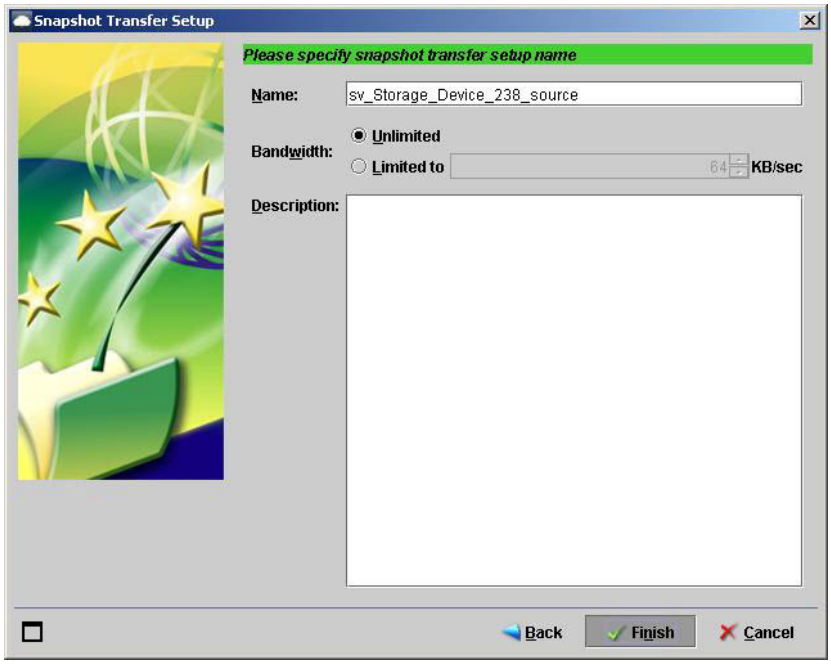
7. (Optional) The **Select Snapshot Retention** page, select a Snapshot Retention Policy for the destination volume, and then click **Next**.



F1 Help: Snapshot Transfer Setup Wizard - Select Snapshot Schedule

8. (Optional) In the **Select Snapshot Schedule** page, select a Snapshot Schedule for the destination volume, and then click **Next**.

NOTE: If you create a new snapshot transfer on a destination volume where a Retention Policy is already defined, this dialog box will not appear. This dialog box appears only for the first snapshot transfer created on a destination volume.



F1 Help: Snapshot Transfer Setup Wizard - Specify Snapshot Transfer Setup Name

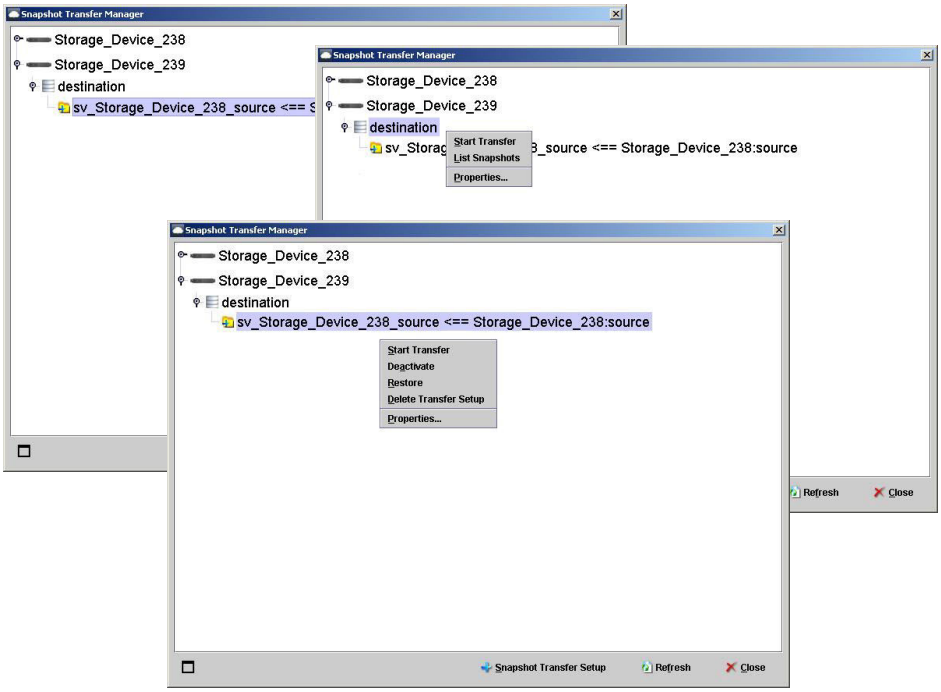
9. In the **Specify Snapshot Transfer Setup Name** page, type a name for this configuration, and (optionally) a Bandwidth Throttle and a Description.
10. Click **Finish**.

    The initial transfer from source to destination is triggered immediately after the snapshot transfer is created.

12.6.6 Managing snapshot transfers

Managing snapshot transfers:

The **Snapshot Transfer** configuration appears as a tree item in the **Snapshot Transfer Manager**.



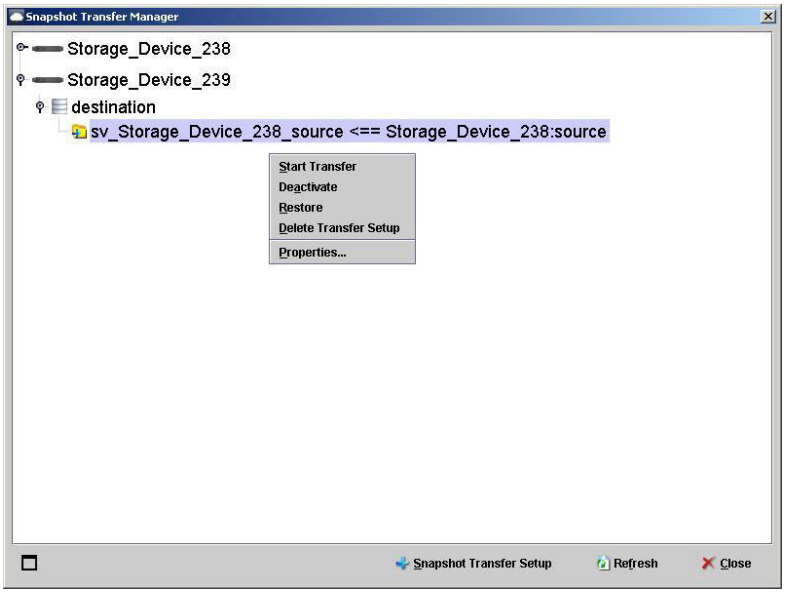
You can select the items and right-click at different levels to access the item-options.

12.6.7 Restoring snapshot transfers

Restoring snapshot transfers:

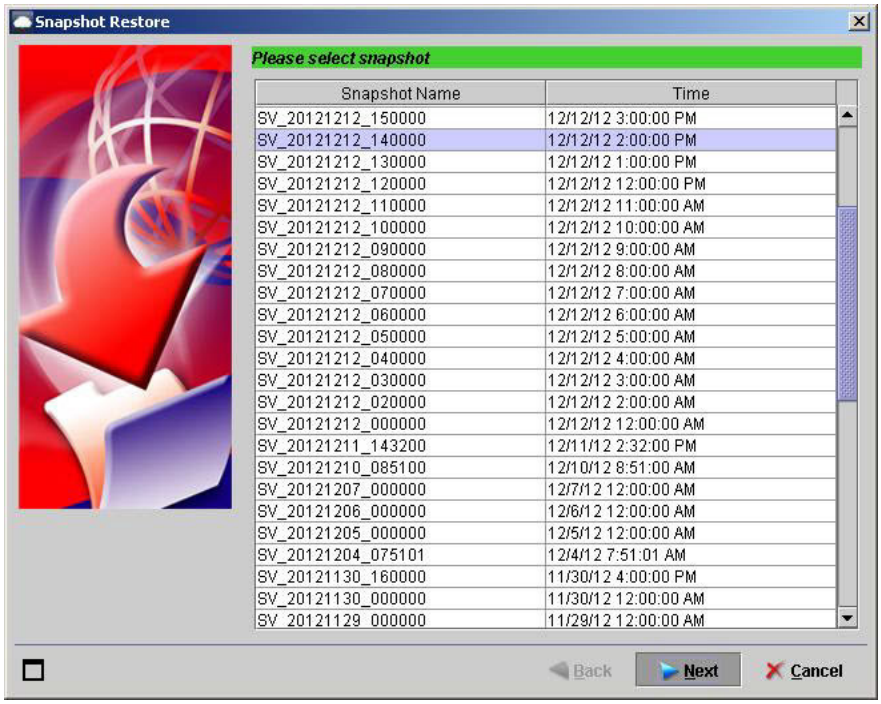
With the Restore Snapshot Transfer feature you can restore a specific snapshot from an existing Snapshot Transfer configuration to a new volume (either on the same or a different Storage Device).

1. On the **Snapshot Manager** menu, click **Snapshot Transfer**.



2. In the **Snapshot Transfer Manager** dialog box, browse and select the required snapshot transfer, right-click and select **Restore**.

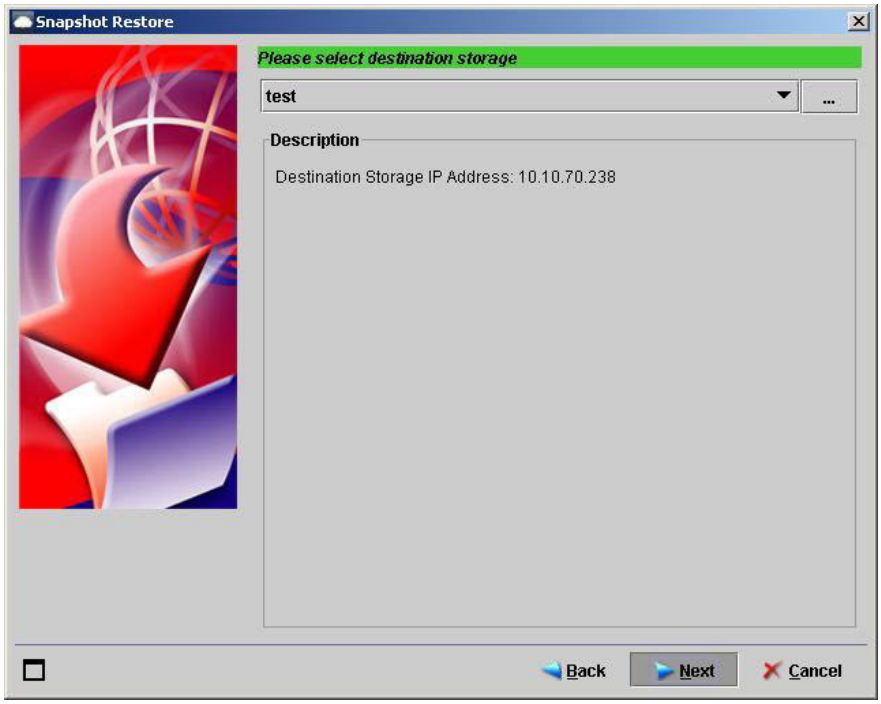
   The list of snapshots for the selected snapshot transfer appears.



F1 Help: Snapshot Restore - Select Snapshot

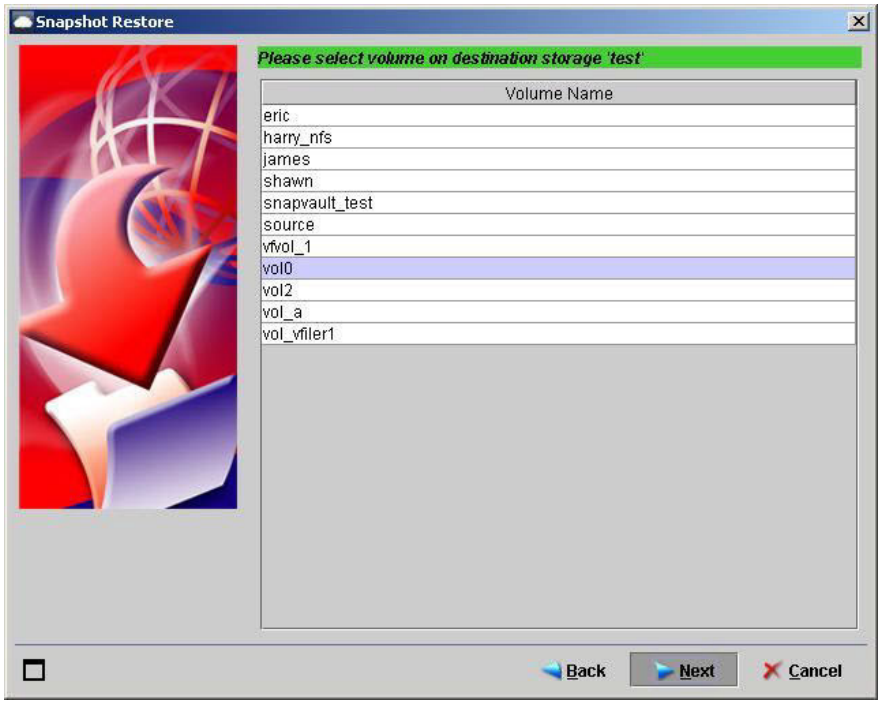
3. Select the snapshot you want to restore, and then click **Next**.
4. Select the destination storage where you want to restore this snapshot, and then click **Next**.

   The Storage must already be defined (**Snapshot Manager** > **Register Storage**).



F1 Help: Snapshot Restore - Select Destination Storage

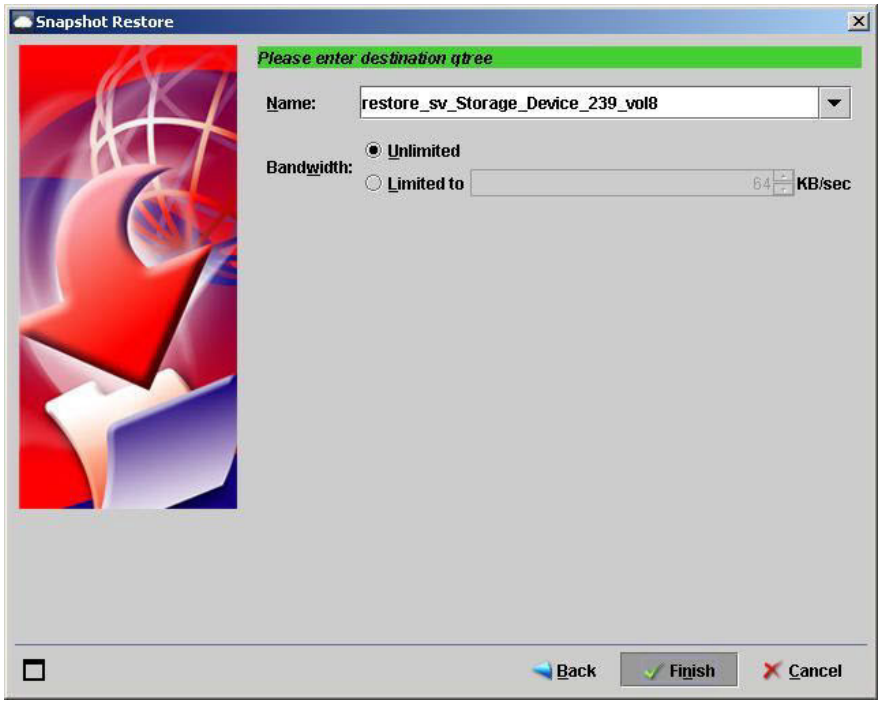
5. Select the volume on the destination storage that you want to use, and then click **Next**.



F1 Help: Snapshot Restore - Select Volume on Destination Storage

6. Select the destination “qtree” name. You can also type a new “qtree” name if you want to create it.

The drop-down list shows the available “qtrees” in the destination volume that can be used for restore.



F1 Help: Snapshot Restore - Enter destination qtree

7. Optionally, you can specify a throttle to limit the bandwidth usage on the Storage Device(s).
8. Click **Finish**.

   The restore starts immediately.

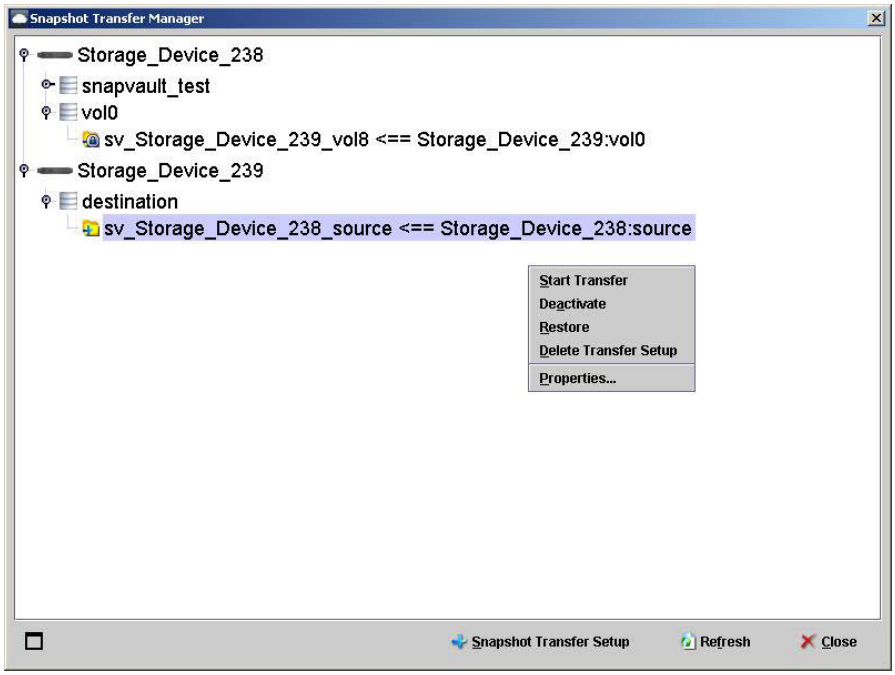
12.6.8 Deactivating a snapshot transfer

Deactivating a snapshot transfer:

Deactivating a snapshot transfer will stop any new incremental data transfers for the selected snapshot transfer. This will break the source mapping from the destination that appears in the Snapshot Transfer Manager list.

1. On the **Snapshot Manager** menu, click **Snapshot Transfer**.
2. In the **Snapshot Transfer Manager** dialog box, select the required snapshot transfer, right-click and select **Deactivate**.

   A confirmation dialog box appears.



3. Click **Yes** to confirm.

   Once deactivated, no new incremental data transfers will occur for this snapshot transfer until it is reactivated.

You can perform restores from a deactivated snapshot transfer. All snapshots in the destination remain, even when deactivated.

12.6.9 Reactivating a snapshot transfer

Reactivating a snapshot transfer:

This option to re-activate a snapshot transfer, along with the Restore feature (see Section 12.6.7, “Restoring snapshot transfers:”, on page 466), allows you to stop transferring snapshots of the source to destination when necessary. This is useful, for example, if you need to change the source storage hardware or location. After the hardware or location has been replaced, you can re-activate the snapshot transfer, which will continue to append to the existing snapshots in the destination.

Before re-activating a snapshot transfer:

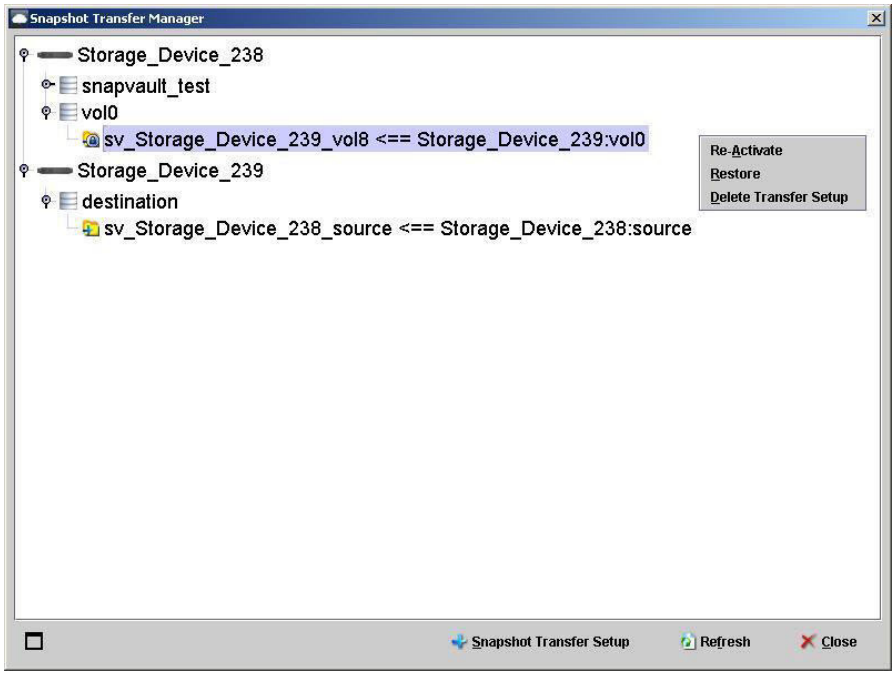
When a snapshot transfer has been de-activated, the mapping from the source to the destination is broken.

If you choose to re-activate a snapshot transfer, you must re-map the source. To do this, you must select a source that contains at least one common snapshot with what exists on the destination volume/qtree.

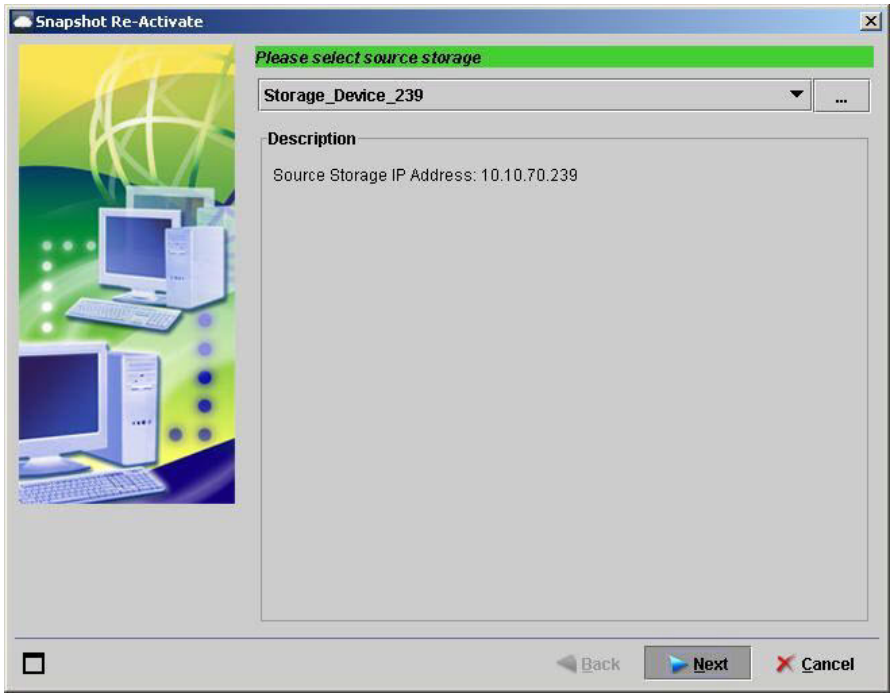
The Storage Device will automatically select the latest common snapshot (between the source and destination) to synchronize and use for the differentials on subsequent snapshot transfers.

To reactivate a snapshot transfer:

1. On the **Snapshot Manager** menu, click **Snapshot Transfer**.
2. In the **Snapshot Transfer Manager** dialog box, select the required snapshot transfer, right-click, and select **Re-activate**.

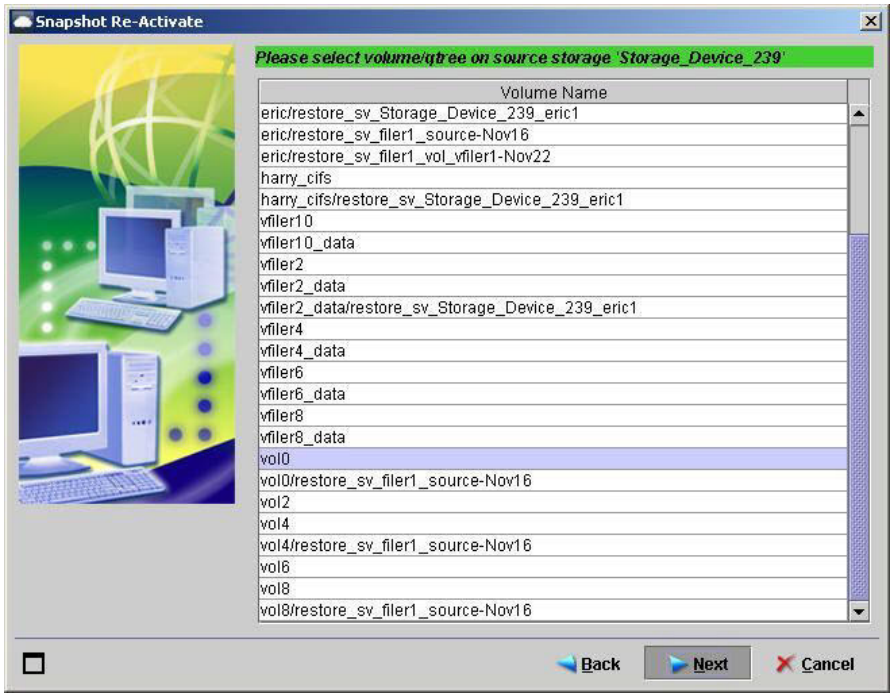


3. Select the source Storage Device, and then click **Next**.



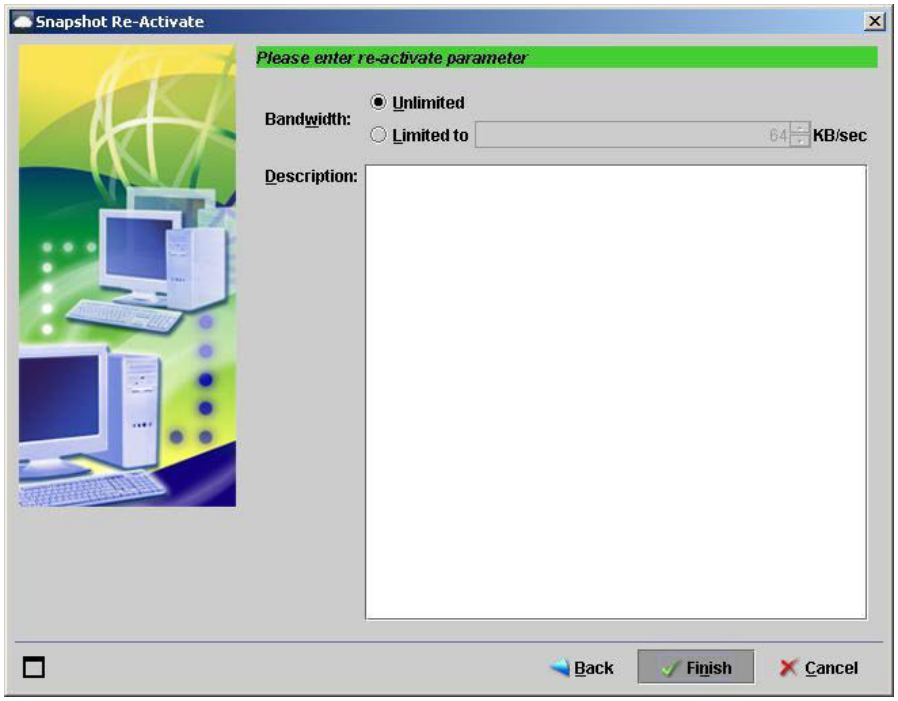
F1 Help: Snapshot Re-Activate - Select Source Storage

4. Select the volume/qtree on the source Storage Device, and then click **Next**.



F1 Help: Snapshot Re-Activate - Select volume/qtree on Source Storage

5. If required, you can set a bandwidth throttle.



F1 Help: Snapshot Re-Activate - Select volume/qtree on Source Storage

6. Click **Finish**. If re-activation is successful, a new snapshot will be transferred to the destination storage.

13 Using the LAN Storage Discovery Tool

13.1 About the LAN Storage Discovery Tool

LAN Storage Discovery is a DS-Client tool that helps analyze your LAN storage by scanning the shares on your LAN. This is useful to identify duplicate files on the network or shares that are contained within other shares. Additional LAN Storage Discovery reports can also be generated using the information from the file summary.

Analyzing your LAN storage before initial backup is very useful. The most important information is the redundancy (duplication) and the frequency of data changes. The LAN Storage Discovery Tool provides you with a clear view of the data on your network.

To analyze your LAN, you must first discover the shares using a list of credentials you provide and then select the share list you want to scan is select. Tools to manage and monitor the discovery and scan processes are also provided.

The scan process is run by DS-Client and can be scheduled. You can generate several reports to analyze the scanned information for things such as duplication, data growth trends, file access, and file type distribution. You can also generate summary and detailed reports as well as export the reports to file.

13.2 LAN Storage Discovery best practices

The LAN Storage Discovery process can be disruptive because DS-Client must connect to each target share, read the files in the share, and prepare a signature for each file to report on common files, largest file sizes, file types, etc. Consider the following when using the LAN Storage Discovery Tool:

- To avoid interruptions to normal work flow, schedule LAN Discovery to run after business hours and set an **End Time** for the schedule.

  Shares that have been recently scanned will not be in priority sequence for scanning. Only shares that have not been scanned will receive priority for the scanning process when the schedule is triggered again.

- It is recommended that you prepare a special Domain Administrator account that can access all the shares that need to be scanned. This will simplify the configuration of credentials required on the DS-Client and thereby reduce the potential for connection errors during LAN Discovery (DS-Client will try to use each of the credentials provided to connect to each share it tries to discover).

  If using a Domain Administrator account is not an option, then you can create the same local Administrator account (user name and password) on each server that will be scanned.

- After the share discovery process has finished, a share list that can include duplicate shares (shares that are included in other shares) is displayed. Retain the duplicate shares with the option **disabled**, since you do not need to scan those files twice.
- Ignoring small files can reduce the network load and the total time required for the Scan Shares process.
- Adjust the number of threads used to scan the shares. If the number is higher, the network will be busier, but the total time for the scan share process will be less than if the number of threads is smaller.
- Use a Windows DS-Client to scan a Windows network, and a Linux client to scan a Linux network.

During a Scan Shares process, the network and I/O of the scanned machines and the DS-Client database server will normally remain under a constant heavy load.

13.3 Scanning for shares on the LAN (Windows)

The first step in the LAN Storage Discovery process is to scan your LAN for available shares. You must configure the range (extent) of your LAN that will be analyzed. This range is a collection of items. Each item can be a network provider, a domain, or a computer. A list of credentials can be provided for the discovery / scanning process.

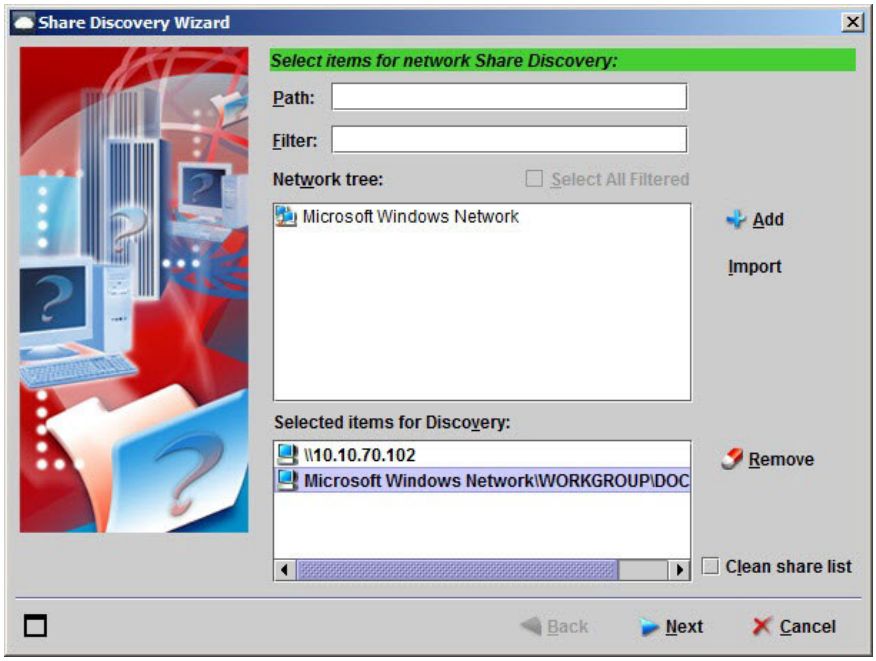
If the shared path can be retrieved, the discovery process automatically analyzes the overlapping of shares, if the shared path can be retrieved. By default, the overlapped shares will be disabled for scanning by default to avoid false duplication counting.

LAN Storage Discovery on Windows DS-Client supports the following:

- Microsoft Windows Network
- NetWare Services
- NFS

To discover Windows shares on your LAN:

1. On the **Tools** menu, point to **LAN Storage Discovery**, and then click **Share Discovery**.



F1 Help: Select items for network share discovery

2. In the Share Discovery Wizard, specify the computers on your network whose shares you want to discover in one of two ways:

   - To add items individually, do one of the following:

     a) Browse the **Network Tree** and select a computer, and then click **Add**.

     b) Specify the IP address or computer name of the item you want to scan in the **Path** field, and then click **Add**.

     The item appears in the **Selected items for Discovery** list.

   - For large scan lists, it can be faster to import from a text file. To import a list of items from a text file, do the following:

     c) Prepare a text file with a simple list of computer IP addresses / names.

     d) Click **Import** and browse for the text file.

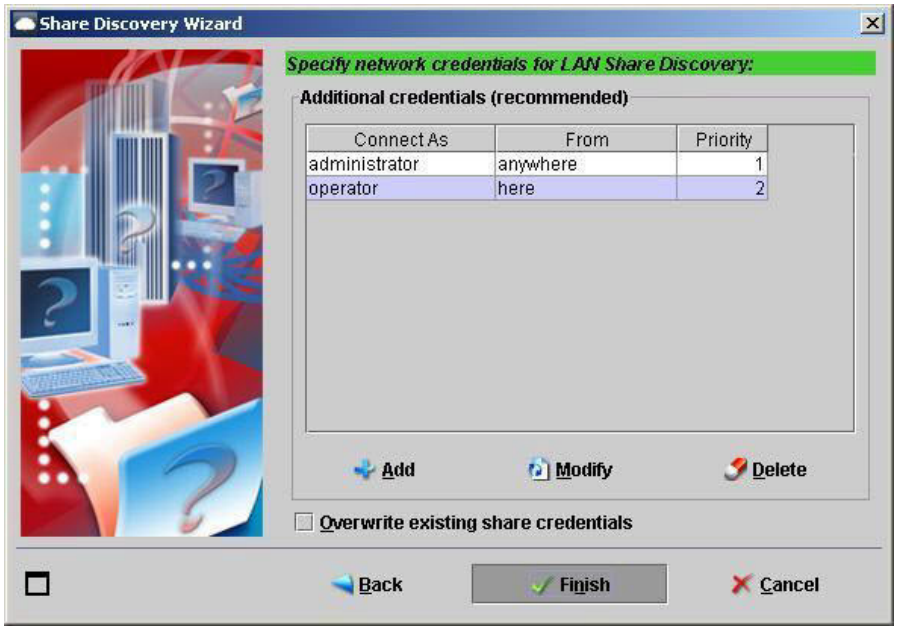
     Once you open the file, Windows DS-Client will ping each address in the list and check the connectivity.

     e) You can skip or include all the addresses that failed to respond.

     The imported items appear in the **Selected items for Discovery** list.

3. To remove any previously scanned shares with a scanned size of “0”, select **Clean share list**.

4. Once you add all the network items you want to scan, click **Next**.

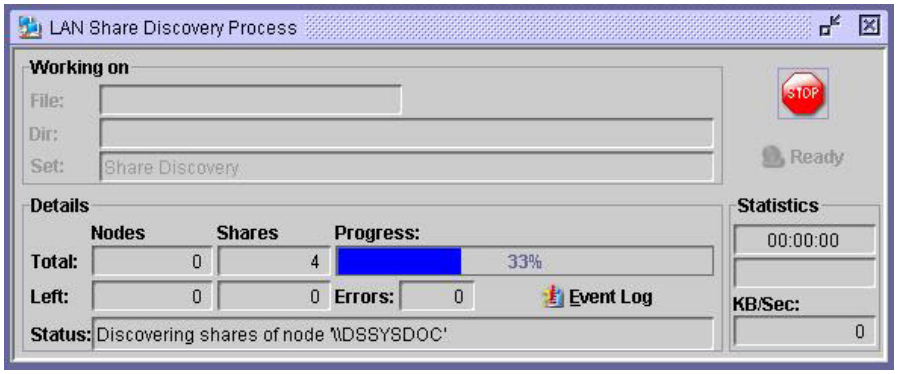


F1 Help: Specify network credentials for LAN Share Discovery

5. In the **Additional Credentials** section, click **Add**.

F1 Help: Set Credentials

6. In the **Set Credentials** dialog box, type the credentials, and then click **OK**.
7. Input all the credentials you want to use for Share Discovery.
8. When the settings have been configured as required, click **Finish**.



The LAN Share Discovery Process window appears. When the process is complete, a list of the discovered shares will appear in **Tools** > **LAN Storage Discovery** > **Scan Shares: Share List** (see Section 13.5, “Configuring scanned shares”, on page 481).

13.4 Scanning for shares on the LAN (Linux or Mac)

The first step in LAN Storage Discovery process is to scan your LAN for available shares.

LAN Storage Discovery on Linux and Mac DS-Clients supports the following:

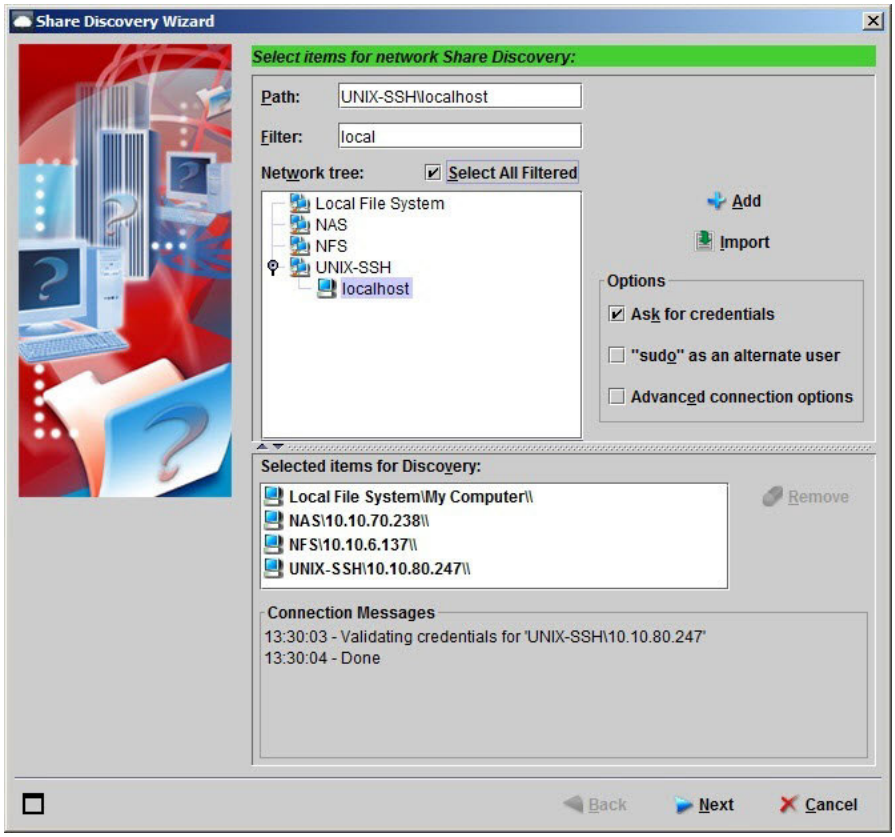
- NAS
- NFS
- SSH

NOTE: Soft links and device files will be silently skipped. Hard links will be treated as regular files. If two hard links point to the same file, they will be considered as duplicates of each other.

To discover Linux or Mac shares on your LAN:

1. On the **Tools** menu, point to **LAN Storage Discovery**, and then click **Share Discovery**.

   The Share Discovery Wizard appears. This wizard helps you select which file system protocols and computers to scan. Once complete, a list of all the shares visible will be available for the Scan Shares process.



F1 Help: Select items for network share discovery (Linux DS-Client)

2. Specify the items on your network whose shares you want to discover in one of two ways:

   - To add items individually, do one of the following:

     a) In the **Path** box, specify the IP address or computer name of the item you want to scan. You must include the connection protocol before the IP address or computer name (for example: `UNIX-SSH\10.123.45.6` or `UNIX-SSH\localhost`).

     a) Browse the **Network Tree**.

     Once the protocol is specified in the **Path** box, the **Options** box displays any extra connection options that are available to that protocol.

     b) Choose any connection option(s), and then click **Add**.

     Popup connection boxes will appear depending on your selection.

   - For large scan lists, it can be faster to import from a text file. To import a list of items from a text file, do the following:

     a) Prepare a text file that specifies the protocol before the IP / name in this format:

     ```
     NAS\IP_address
     ```

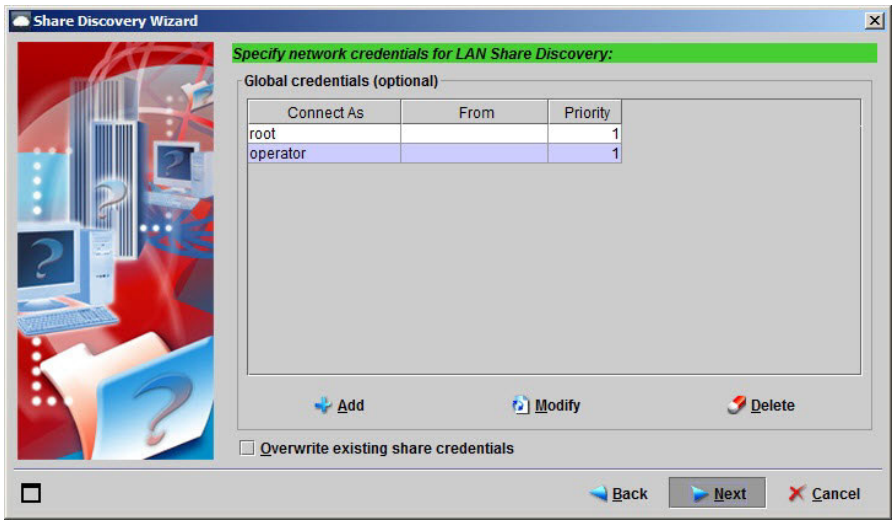
```
NFS\IP_address
UNIX-SSH\IP_address
```

b) Click **Import** and browse for the text file.

Once you open the file, Linux DS-Client will try to ping each address in the list to check connectivity. The imported items will appear in the **Selected Items for Discovery** list.

3. When you have added all the network items for scanning, click **Next**.

   The wizard switches to the **Network Credentials** page.



F1 Help: Specify network credentials for LAN Share Discovery

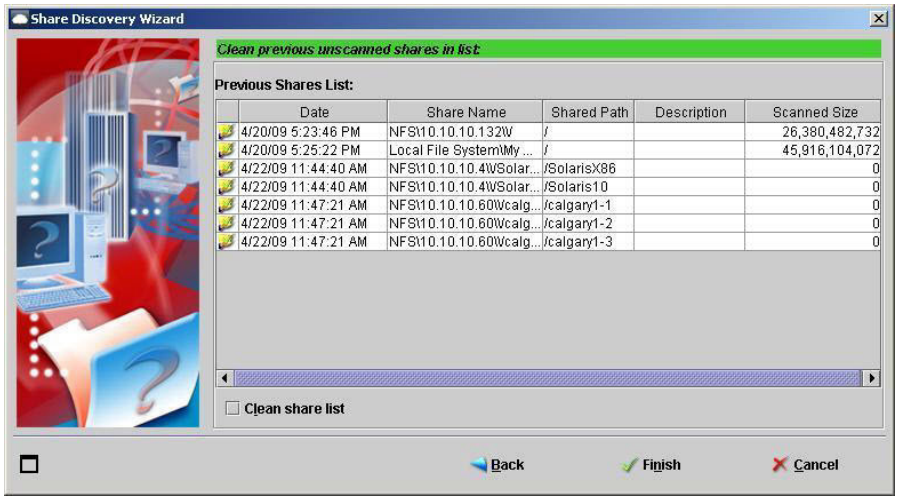
In the **Global Credentials** section, you have the option of supplying additional (global) credentials that will be applied in order of priority, if the credentials supplied on the first wizard tab fail.

4. If you want to add additional global credentials to be applied in order of priority, click **Add**. In the **Set Credentials** dialog box, enter the credentials, and then click **OK**.

   F1 Help: Set Credentials

5. Enter all the additional credentials you want to use for **Share Discovery**, and then click **Next**.

   The Wizard switches to show a list of shares from the previous Share Discovery scan.



F1 Help: Clean previous shares in list (Linux DS-Client)

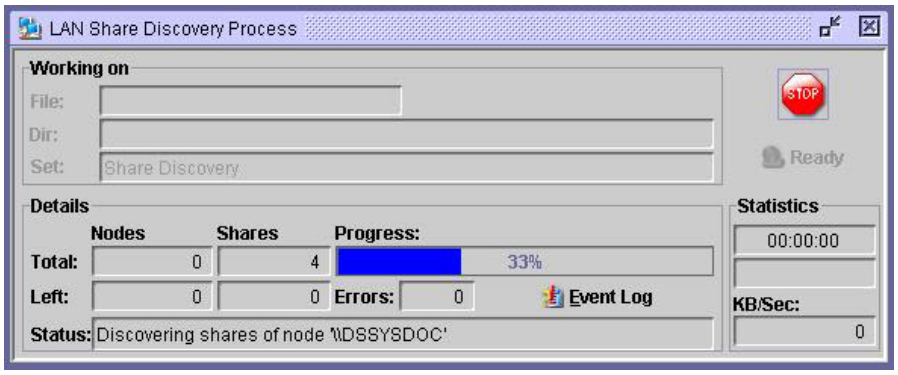
This dialog box shows a summary of the previous (Scan Shares) scan.

6. If you want any previously scanned shares with a scanned size of “0” to be removed automatically from the current Scan Shares List, select **Clean share list**.

   If the previous page **Selected Items for Discovery** contains them, the removed shares will be added again.

7. Click **Finish**.

   The LAN Share Discovery Process window appears.



When the process is complete, a list of the discovered shares will appear in **Tools** > **LAN Storage Discovery** > **Scan Shares: Share List** (see Section 13.5, “Configuring scanned shares”, on page 481).

13.5 Configuring scanned shares

After you have run a Share Discovery process, a share list is generated with the credentials to connect to each share. Discovered shares are automatically enabled or disabled depending on if they are already included in other shares or if a connection cannot be established.

Each subsequent Share Discovery process that is run will add newly discovered shares to this Discovered Share list. You can manually remove specific shares from this list manually.

NOTE: The **Clean shares list** option (from the Share Discovery Wizard) applies only to shares with a 'Scanned Size' of "0" from the last Scan Shares process.

The scan process is applied to the list of shares found by the discovery process. The discovery process automatically disables shares in the following scenarios:

- If the share is covered by other shares.
- If not enough credentials were provided to retrieve all necessary information from the share.
- If the share is not supposed to be scanned. For example, read-only media such as a DVD.

NOTE: You can manually change the status from enabled to disabled or vice versa.

By default, the credentials used to discover the share are also set as the scan credentials for that share by the discovery process. However, the credentials used for scanning can be changed for particular shares from DS-User.

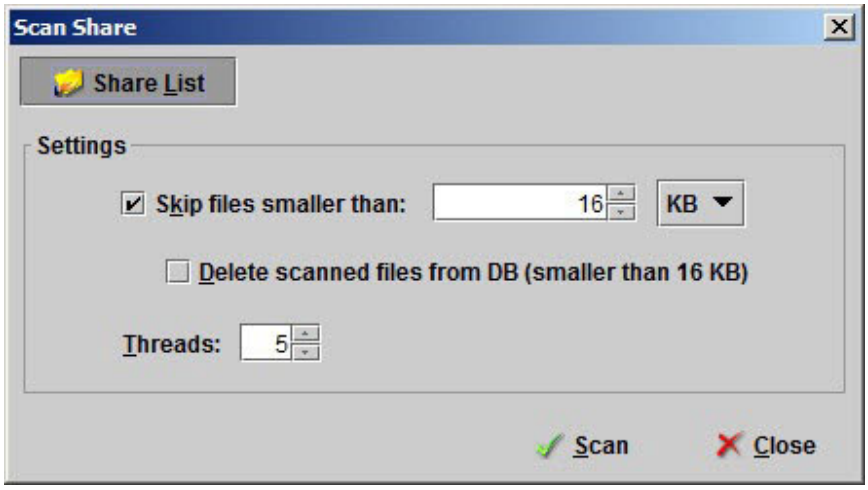
The scanning of a share to follow a reparse point (Microsoft Windows only) is configurable from DS-User.

To speed up the scanning process, you can configure the system to skip files that are smaller than a specific size. The number of scanning threads is also configurable to provide scalability.

The scan process can be scheduled or started on demand. The best practice is to schedule it to run several times over a period, such as a few weeks, to get more accurate statistical information on data growth and changes. This helps with the estimation of storage and other requirements before going into production.

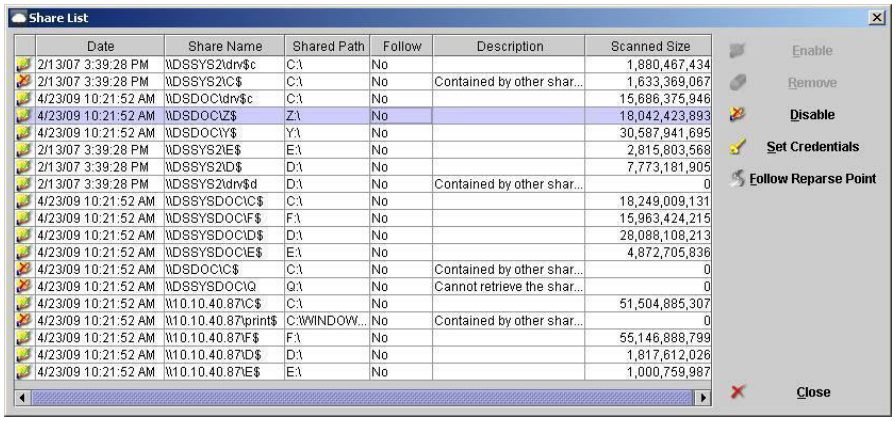
To edit the scan settings:

1. On the **Tools** menu, point to **LAN Storage Discovery**, and then click **Scan Shares**.



F1 Help: Scan Shares

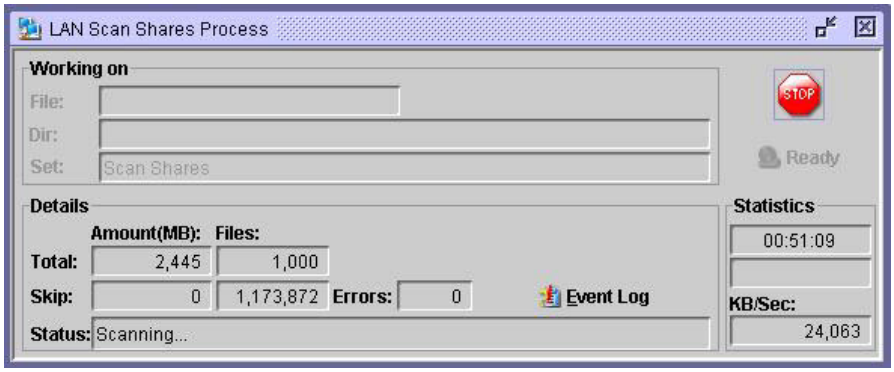
2. In the Scan Share dialog box, click **Share List**.



F1 Help: Share List

3. In the **Share List** dialog box, you enable and disable shares on the LAN to scan. Click **Close** to exit this dialog box.

4. Click **Scan** to perform a scan on demand, or use a new or existing schedule to automate scanning.



NOTE: The first scan processes all shares. In subsequent scans, you can disable/enable shares based on your requirements. For example, if you want to do a quick scan of only one share.

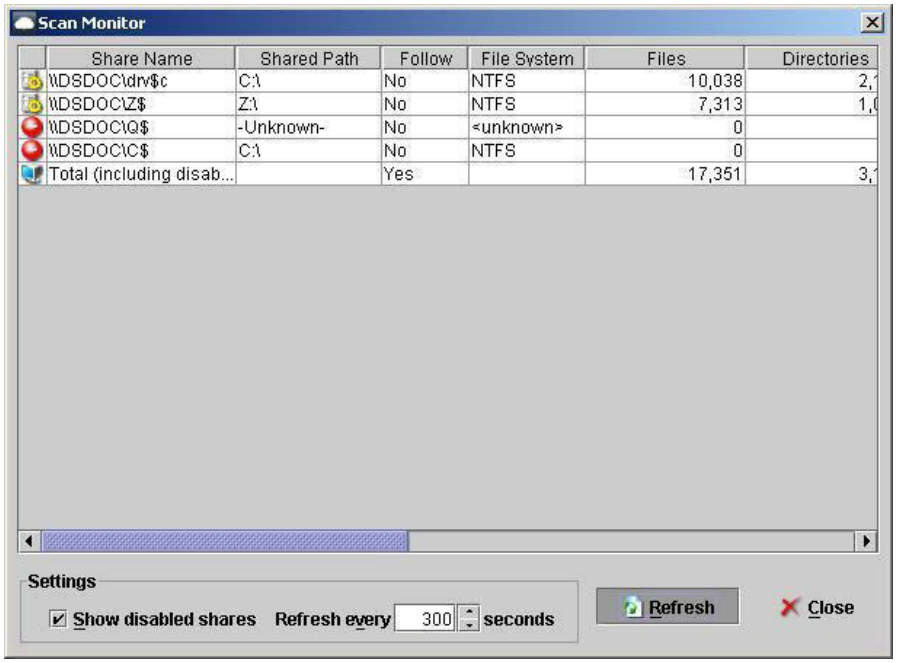
- To monitor the Scan Process, see Section 13.6, “Monitoring scanned shares”, on page 484.
- To analyze the scan results, see Section 13.10, “Generating a LAN File Summary report”, on page 489.

13.6 Monitoring scanned shares

The Scan Monitor shows real-time information about shares you are scanning. It is updated at the specified refresh intervals.

To monitor share scanning:

1. On the **Tools** menu, point to **LAN Storage Discovery**, and then click **Scan Monitor**.



F1 Help: Scan Monitor

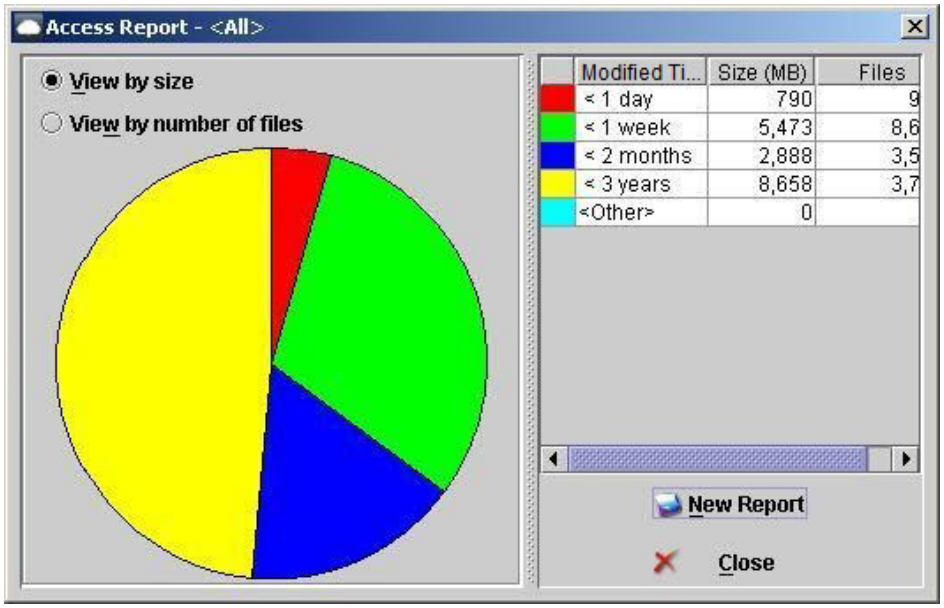
2. To display all shares found on the scanned networks, click **Show disabled shares**.
3. To change the refresh rate, type a number in the **Refresh every ... seconds** box.

13.7 Generating an Access report

An Access report provides a customized view of the File Summary information that sorts files by the time they were last accessed. The report is based on a specified interval (days, weeks, months, or years).

To view the Access report:

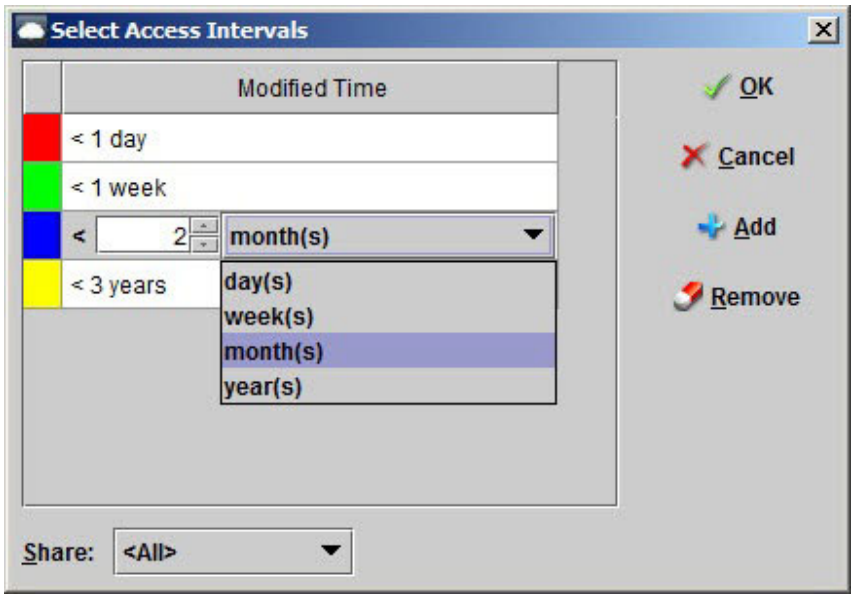
- On the **Tools** menu, point to **LAN Storage Discovery**, and then click **Access**.



F1 Help: Access Report

1. To specify the report intervals, click **New Report**.

   The **Select Access Intervals** dialog box appears.



   F1 Help: Select Access Intervals

2. Click **Add**.

   A new **Access Time** line appears.

3. Select the time interval.

4. Continue for all the Access Time intervals required.

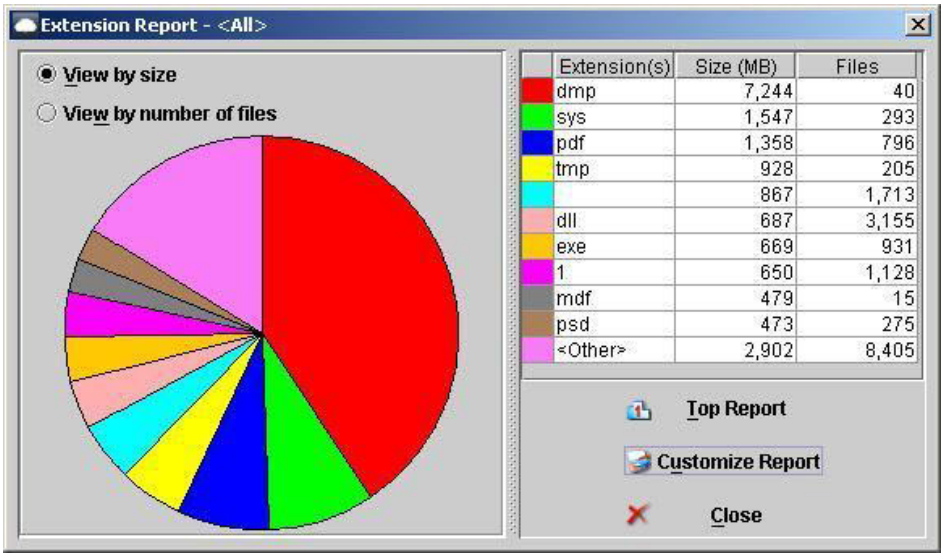
5. Click **OK** to scan and return the results in the Access Report dialog box.

13.8 Generating an Extensions report

An Extensions Report provides a customized view of the File Summary information that sorts files by their extensions. The Top Report displays the top extensions ordered by size or by file numbers for a specified range (a share or all shares). The Customized Report displays a list of specific extensions ordered by size or by file numbers for a specified range (specific shares).

To view the Extensions report:

- On the **Tools** menu, point to **LAN Storage Discovery**, and then click **Extensions**.



F1 Help: Extension Report

1. To search for the most frequent file extensions, do the following:

   a) Click **Top Report**.

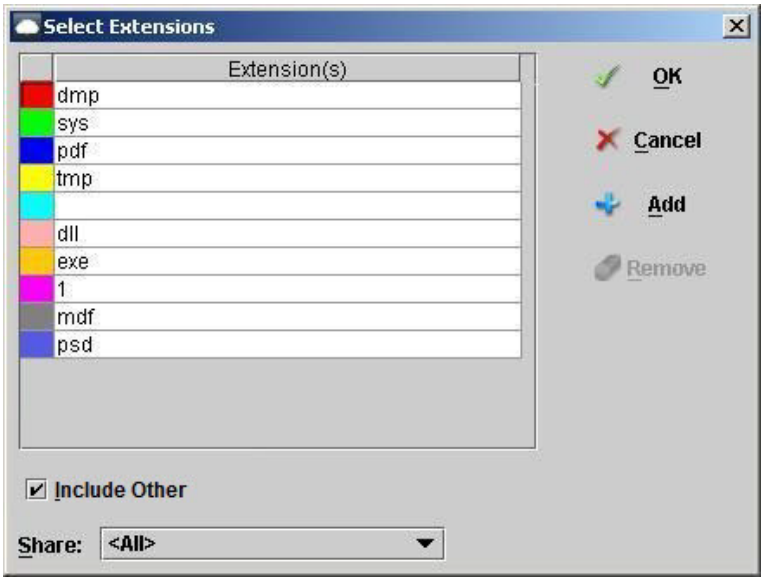
   F1 Help: Select Extensions (Top Report)

   b) In the **Select Extensions (Top Report)** dialog box, fill in all the fields.

c) Click **OK** to scan and return the results in the **Extension Report** dialog box.

2. To search for selective file extensions, do the following:

a) Click **Customize Report**.



F1 Help: Select Extensions (Customize Report)

b) In the **Select Extensions** dialog box, click **Add**. A new extension line appears.

c) Enter the extension (without a period “.”).

d) Repeat for as many extensions you want.

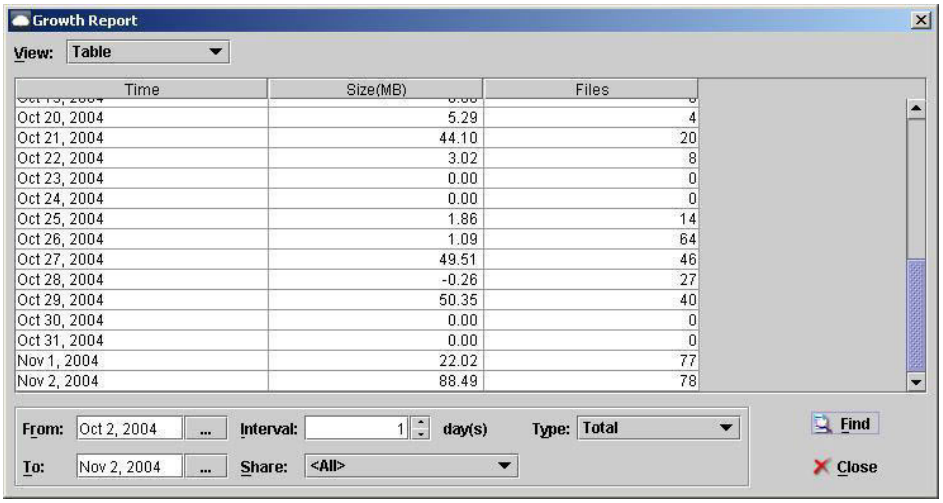
e) Click **OK** to scan.

13.9 Generating a Growth report

A Growth Report provides a customized view of the File Summary information that sorts files by growth (positive and negative) over time (days). This report shows the data patterns on the LAN or a specific share. You provide the period for analysis: intervals (in days), range (specific shares), and type (total or new). The report displays the files and size for each interval that falls within the specified period.

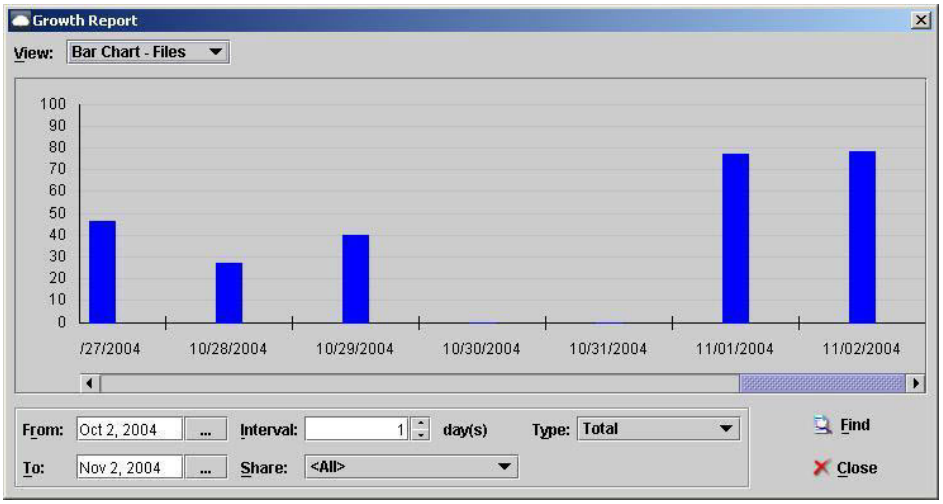
To generate a Growth report:

- On the **Tools** menu, point to **LAN Storage Discovery**, and then click **Growth**.



F1 Help: Growth Report

You can change the view to different types of charts (Bar, Line) from the **View** box.



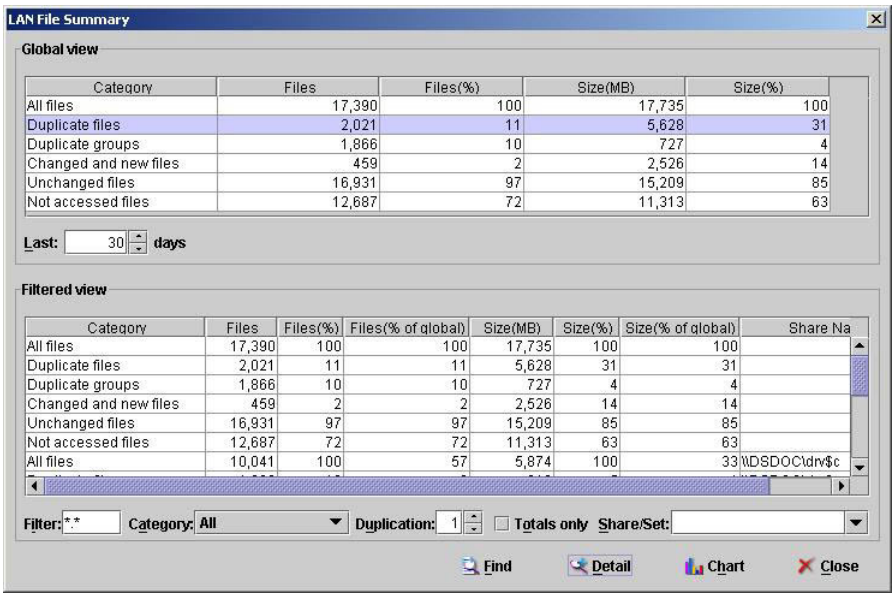
13.10 Generating a LAN File Summary report

A LAN File Summary Report provides a detailed view of the files on the LAN. Filters are also available so that it is possible to analyze a particular group of files.

NOTE: The file summary results can generate a number of reports that describe the data trends on the LAN. One-click reports can be generated to HTML, CSV, and XLS files.

To view a LAN File Summary report:

1. On the **Tools** menu, point to **LAN Storage Discovery**, and then click **LAN File Summary**.



F1 Help: Online / LAN File Summary

2. Click **Find**. The following information is displayed:

Report	Description
Global view	An overview of the total files and size for the following categories: • All files • Duplicate files • Duplicate groups • Changed and new files • Unchanged files • Not accessed files The changed / unchanged, new, not accessed are determined by the parameter 'last n days'. The default is last 30 days.

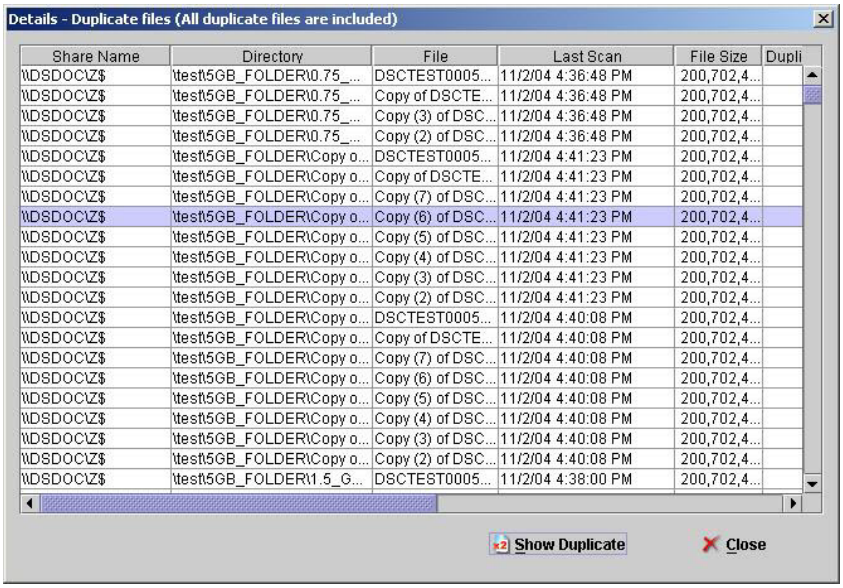
Report	Description
Filtered view	This is similar to the global view. However, it is for each share based on the specified condition. This condition is the combination of the following: • 'Last n days': to determine changed/unchanged, new, not accessed. • Filter: like '*.c*' on file name • Duplication: Only the files with duplicates equal to or greater than the specified number will be counted. • Share: Specify a group of shares to be considered.
Show Details	Show the detailed information of the files corresponding to the selected row from the global / filtered view.
Charts	Show the pie charts for the selected row from the global / filtered view. The charts could be based on size or file numbers for all categories (Duplicated, Unchanged, etc.).
Show Duplicates	Show all files that are duplicated with the selected file.

3. To view detailed information about the files, do the following:

   a) Select a row in the global or filtered view, and then click **Detail**. The following information is displayed:

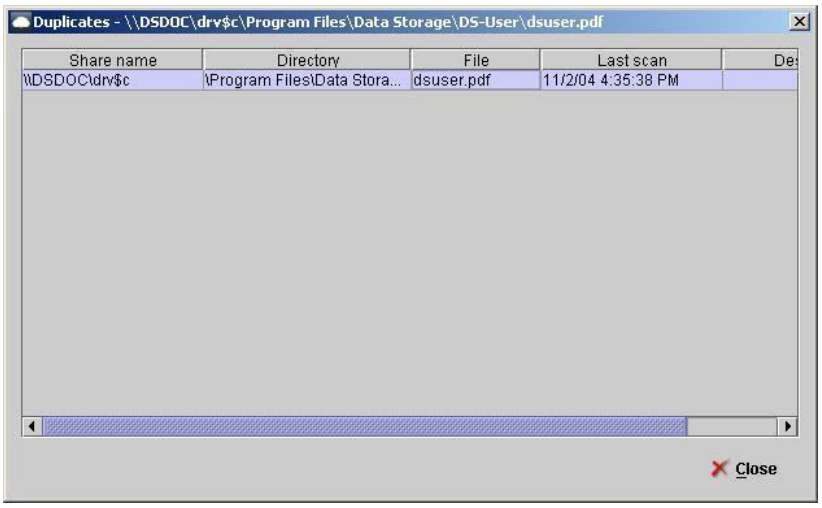
File List	
Backup Set / Share Name	Name of the backup set or share.
Directory	Directory.
File	Filename.
Backup Time / Last Scan	Backup time (online files) or last scan time (LAN).
File Size	Size in bytes.
Duplication	Level of duplication of the file (e.g. 10 means ten duplicates of the file exist Online or on the LAN).
Duplicate ID	Each file is scanned and an ID is generated for it. Any duplication (multiple instances of the same file elsewhere on the LAN or Online) will be identified by the same ID.
Last Modified (LAN File Summary Only)	Time the file was last modified.
Last Accessed (LAN File Summary Only)	Time the file was last accessed.
Description	Any additional details.
Show Duplicates	Opens the Show Duplicates dialog box for the highlighted file. Allows you to view all the duplicates of a single file. Highlight a file in the list, and then click the Show Duplicates button.

NOTE: The Details dialog box is limited to a maximum of 50,000 files. If the scan returns more than this number, the results are sectioned.



F1 Help: Details

b) To view all the duplicates of a single file, select a file in the list, and then click **Show Duplicates**.



F1 Help: Duplicates

NOTE: Note: The duplication level is important since it indicates the level of redundancy of LAN data. You should monitor backup sets to ensure this duplication is considered.

c) To exit, click **Close**.

4. To view a chart of the files, do the following:

a) Select a row in the global or filtered view, and then click **Chart**.

b) In the **View type** box, select the category you want to view.

c) Select whether you want to view a chart based on **Files** or **Size**.

d) To exit, click **Close**

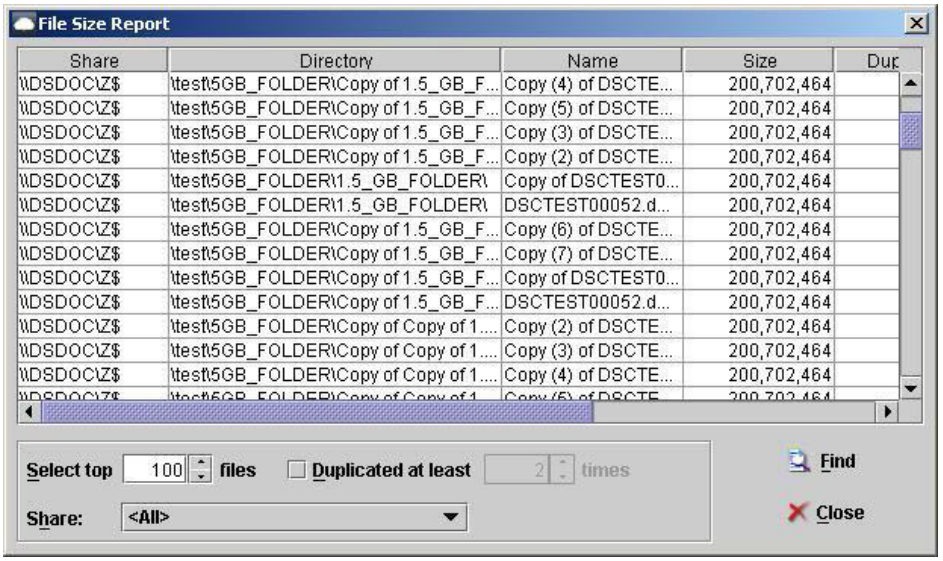
5. When you are finished, click **Close**.

13.11 Generating a File Size report

A File Size Report lists the top 100 (default) largest files whose duplicate count is at least equal to the given value for the specified

To view the File Size report:

- On the **Tools** menu, point to **LAN Storage Discovery**, and then click **Large Files**.



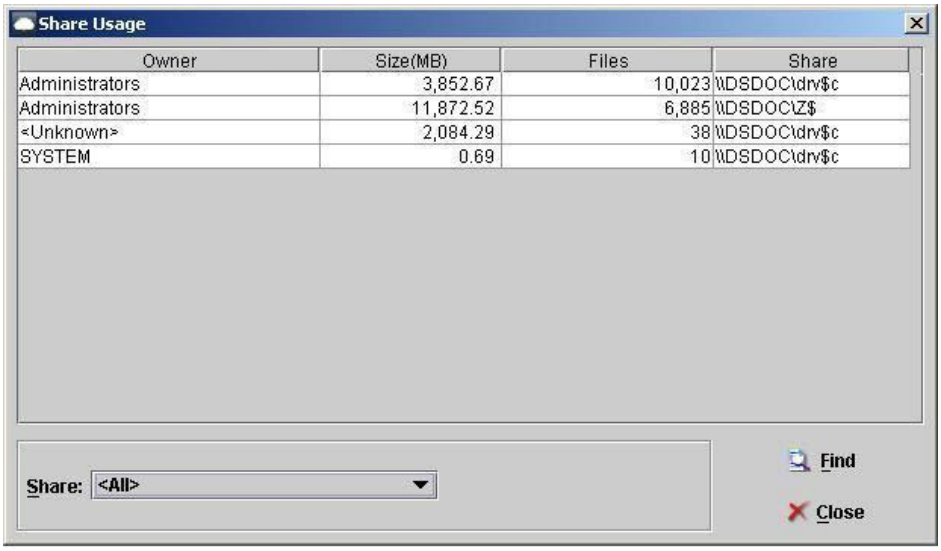
F1 Help: File Size Report

13.12 Generating a Share Usage report

A Share Usage Report provides a customized view of the File Summary information grouped by owner for the specified shares.

To view the Share Usage report:

- On the **Tools** menu, point to **LAN Storage Discovery**, and then click **Share Usage**.



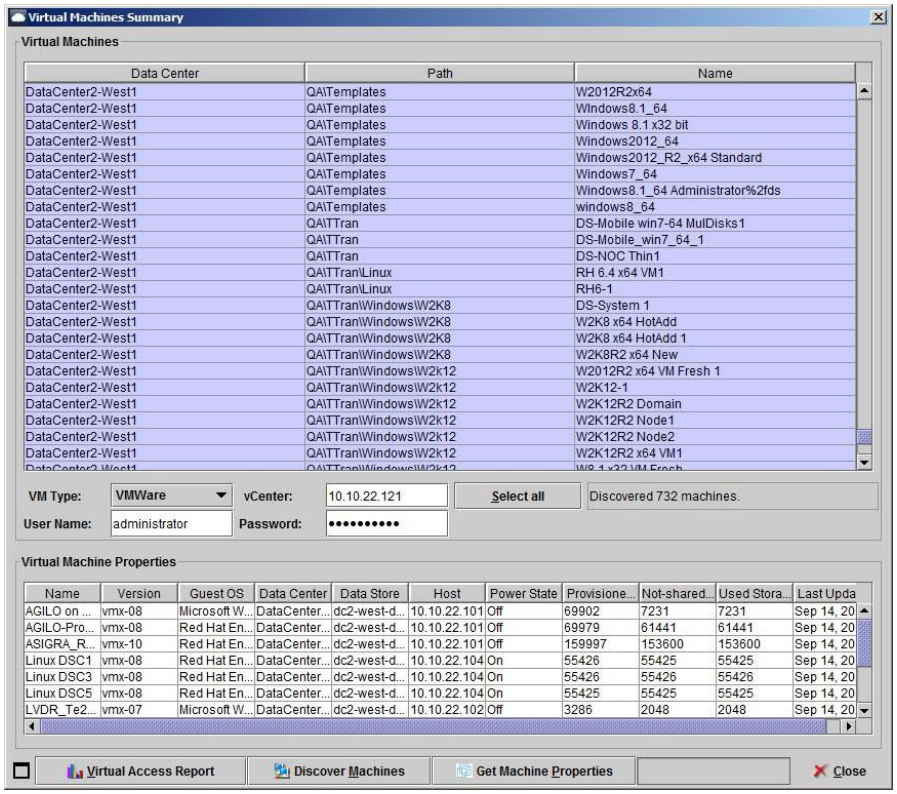
F1 Help: Share Usage Report

13.13 Generating a Virtual Machines Summary report

This tool scans the virtual machines in a VMware vCenter Server or Microsoft Hyper-V host on your LAN and generates a list of the virtual machines available for backup.

To view the Virtual Machines Summary report:

1. On the **Tools** menu, point to **LAN Storage Discovery**, and then click **Virtual Summary Report**.



F1 Help: Virtual Machines Summary

2. In the **Virtual Machines Summary** dialog box, do one of the following:

   - To scan a VMware vCenter Server:

     a) In the **VM Type** box, select **VMware**.

     b) In the **vCenter** box, type the IP address of the vCenter Server that you want to scan.

     c) In the **User Name** and **Password** boxes, enter the credentials of a user with sufficient privileges on the vCenter Server to list all its virtual machines.

     d) Click **Discover Machines** to scan the vCenter Server.

   - To scan a Hyper-V host (from a Windows DS-Client):

a) In the **VM Type** box, select **Hyper-V.**

b) In the **Host** box, type the IP address of the Hyper-V host you want to scan.

c) In the **User Name** and **Password** boxes, enter the credentials of a user with sufficient privileges on the Hyper-V host to list all its virtual machines.

d) Click **Discover Machines** to scan the Hyper-V host.

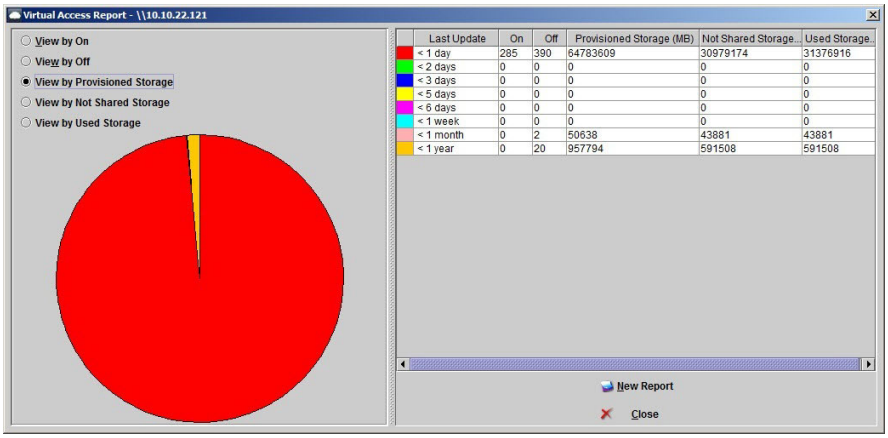
The **Virtual Machines List** is populated with the virtual machines discovered by the scan.

3. To select virtual machines that you want to scan for more detailed machine information, click **Select All** or use CTRL+SHIFT+ mouse-click.

   The **Virtual Machines Properties List** section will show extended details of each selected machine.

4. To sort the information from the Virtual Machines Properties List, click **Virtual Access Report**.

   The **Virtual Machines Summary** dialog box appears.



F1 Help: Virtual Machines Access Report

5. To select time intervals to use for sorting the report information, click **New Report**.

13.14 Exporting reports

The one-click generated reports are automatically generated in HTML and Microsoft Excel format. Many of them can be customized. The following reports are generated:

Report	Description
Share Usage	Reports the total files and size (all and duplicated) for each share.
Largest Files	List top n (default is 100) largest files. Also report the percentage size compared to the entire LAN.
Largest Duplicates	List top n (default is 100) largest duplicate files. Also report the total duplicate file number and the percentage of this number as well as the total size of the top n files comparing to the entire LAN.
Ownership (Windows DS-Client only)	Reports the total storage occupied by each owner for each share as well as the total.
File Type Distribution	Select top n (default is 10) file types, sorted either by space or file number (default is by space). For each file type, select top m (default is 100) largest files from the entire LAN.
Partition Size (Windows DS-Client only)	For each partition, report the total, free, and used space.
Access Report / Dormant Files	For each share, and each interval (These intervals are configurable. By default, 5 intervals are provided: <1 Day, >1 Day, >1 Week, >1 Month, >1 Year), report the top n (default is 100) largest files whose last access time is within the specified interval. There is also a summary report of the total size and files for each interval of each share.
Growth and Modified Files	Reports how many files and size created/modified for each share, each day over the specified period (default is 14 days).
SQL Server Size (Windows DS-Client only)	For each computer, how much space (total, free, used) are for SQL Server.
Exchange Server Size (Windows DS-Client only)	Report all .edb and .pst files.
Index of Generated Reports	An index of all generated reports.
All Duplicate Files	A list of all duplicate files. By default this report will not be generated.

Table 1 One-click generated reports

To generate and export LAN Storage Discovery reports:

1. On the **Tools** menu, point to **LAN Storage Discovery**, and then click **Generate Reports**.
2. In the **Generate Reports** dialog box, select the report that you want to export. You can select multiple reports.
3. To specify the options that are applicable to a report, click the report, and then make your selections on the right.

4. To place a copy of all the exported reports in a .ZIP file that can be uploaded to the DS-NOC, select **Package all reports for DS-NOC when generating reports**.
5. Click **Generate** to start exporting the selected reports.
6. When prompted, select the location on the LAN for saving the reports.

   F1 Help: Generate Reports
7. Go to the export location and click `index.html` to view the reports.

14 Using the Unprotected LAN Resource Discovery Tool

14.1 About the Unprotected LAN Resource Discovery tool

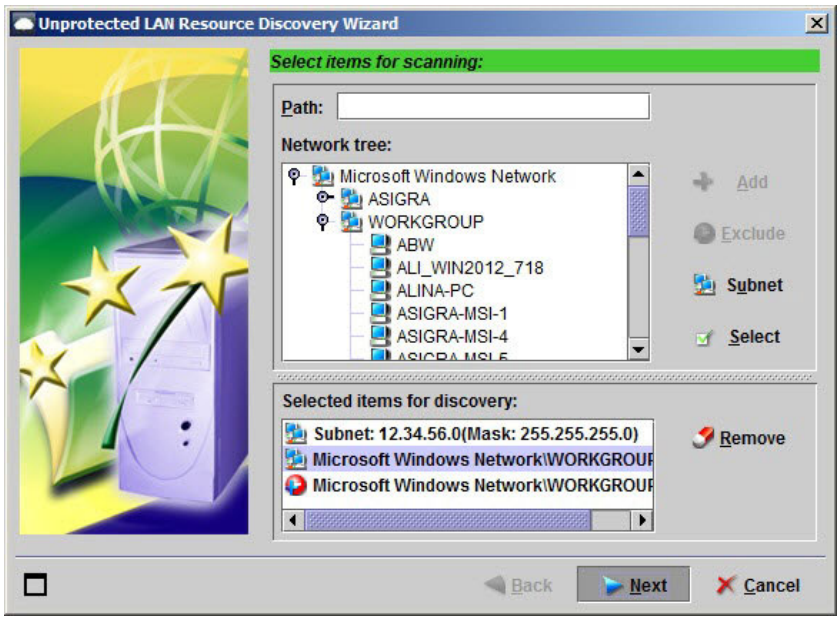
You can use the Unprotected LAN Resource Discovery Tool to scan shares on your LAN to generate a list of nodes or shares that are not currently part of any backup set on DS-Client. This is useful to identify new shares that require backup protection.

NOTE: A scan can only detect unprotected resources for the current DS-Client.

14.2 Scanning for unprotected LAN resources

You can select the networks, workgroups, domains, and computers you want to scan. After completion, a list of all the shares that the DS-Client does not currently backup is generated. You can choose to have the wizard automatically create backup sets for these computers.

1. On the **Tools** menu, point to **Unprotected LAN Resource**, and then click **Discovery**. The Share Discovery Wizard appears.



F1 Help: Select items for scanning

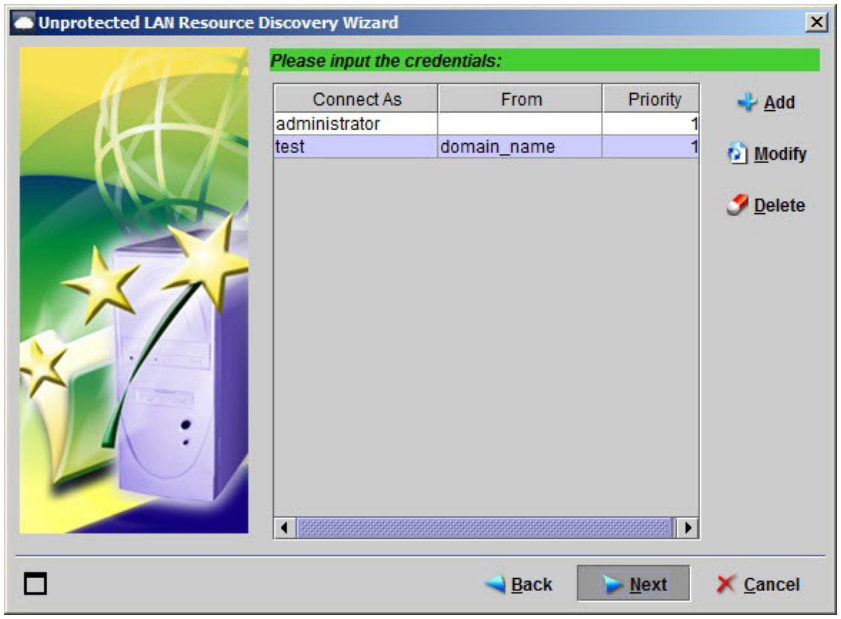
2. From the Network tree, select a network item, and then do one of the following:

- To add the highlighted item to the scan, click **Add**.
- To exclude the highlighted item from the scan, click **Exclude**. The item's parent must already be in the Selected Items for Discovery list.
- To add or exclude a specific subnet, click **Subnet**. The **Add/Exclude Subnet** dialog box appears.

  F1 Help: Add / Exclude Subnet
- To add or exclude scan items that were discovered by the previous scan, click **Select**. The **Add/Exclude item from scanning result** dialog box appears.

  F1 Help: Add / Exclude item from scanning result

3. After adding the network items to scan, click **Next**. The **Input Credentials** dialog box appears.



F1 Help: Input the credentials

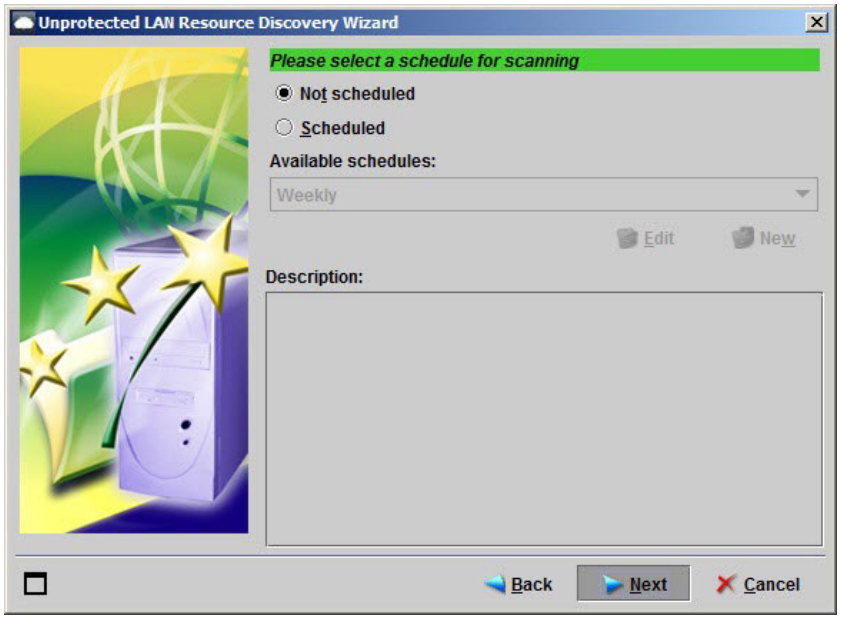
4. To add a new credential, click **Add**. To modify an existing credential, select it from the list, and then click **Modify**. The **Set Credentials** dialog box appears.

NOTE: You must add at least one set of credentials.

F1 Help: Set Credentials

5. Enter the credentials, and then click **OK**.
6. Repeat until you have input all the credentials you want to use for the Share Discovery, and then click **Next**.

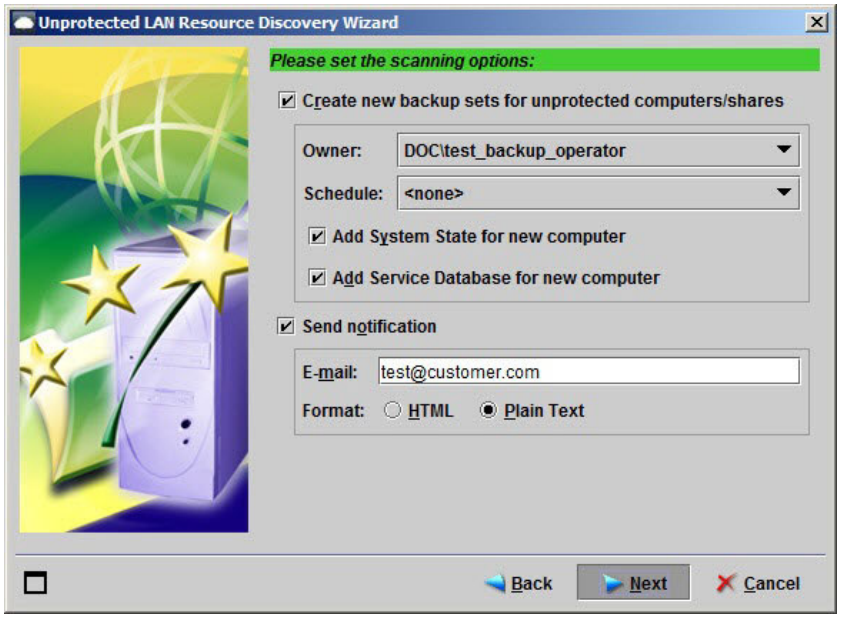
   The **Select a Schedule** page appears. This setting is optional. The default is **Not scheduled**.



F1 Help: Select a schedule for scanning

7. Click **Next**.

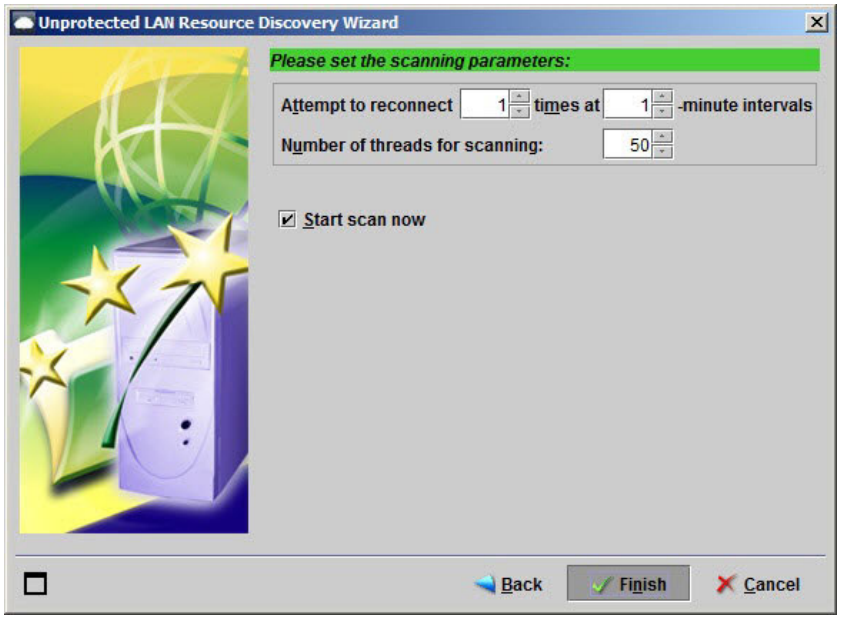
   The **Select Scanning Options** page appears. These are additional options that apply once any unprotected network resource(s) have been discovered.



F1 Help: Set the scanning options

8. Click **Next**.

   The **Select Scanning Parameters** page appears.



F1 Help: Set the scanning parameters

9. To scanning to start immediately after you complete the wizard, click **Start Scan Now**.
10. Click **Finish**.

    The scan settings are saved. If you selected Start Scan Now, a process monitor window appears.

14.3 Viewing the list of unprotected LAN resources

You can see the list of unprotected computers and shares that have been discovered in the most recent scan for unprotected LAN resources. Unprotected computers and shares are computers and shares that are not currently backed up by the DS-Client.

To view the list of unprotected computers:

1. On the **Tools** menu, point to **Unprotected LAN Resource**, and then click **Node Summary**.

NOTE: The **Unprotected LAN Resource Node Summary** dialog box appears and only displays the results of the most recent scan.

F1 Help: Unprotected LAN Resource Node Summary

2. To filter the results that are displayed, in the **Server type** list, select a category, and then click **Refresh**.
3. To email the results of the scan, click **E-mail** and then do the following:

a) In the **Send E-mail** dialog box, type the email address to which you want the results of the scan to be sent to. Separate multiple addresses with a semi-colon or a comma.

b) Select the format in which you want the results to be sent.

c) Click **OK**.

4. To exclude a computer from the next scan, select the computer, and then click **Exclude**.

5. To see a list of unprotected shares on a computer, select the computer, and then click **Share**. Then continue in step 2 on Section 14.3, “To view the list of unprotected shares:”, on page 503.

   F1 Help: Unprotected LAN Resource Share Summary

6. To see a list of the backup sets that have been automatically created in the last scan process, click **Backup Set**.

   F1 Help: New Backup Sets Summary

7. When you are finished with the list of unprotected computer or nodes in the **Unprotected LAN Resource Node Summary** dialog box, click **Close**.

To view the list of unprotected shares:

1. On the **Tools** menu, point to **Unprotected LAN Resource**, and then click **Share Summary**.

   NOTE: The **Unprotected LAN Resource Share Summary** dialog box appears and only displays the results of the most recent scan.

   F1 Help: Unprotected LAN Resource Share Summary

2. To filter the results that are displayed, do the following:

   - To see results of a specific computer, in the **Server name** list, select the computer, and then click **Refresh**.
   - To see unprotected shares only, in the **Share type** list, select **New shares only**, and then click **Refresh**.
   - To see protected shares only, in the **Share type** list, select **Protected shares only**, and then click **Refresh**.

3. To email the results of the scan, click **E-mail** and then do the following:

   d) In the **Send E-mail** dialog box, type the email address to which you want the results of the scan to be sent to. Separate multiple addresses with a semi-colon or a comma.

   e) Select the format in which you want the results to be sent.

   f) Click **OK**.

4. To exclude a share from the next scan, select the share, and then click **Exclude**.
5. To see a list of the backup sets that have been automatically created in the last scan process, click **Backup Set**.

   F1 Help: New Backup Sets Summary
6. When you are finished with the list of unprotected shares in the **Unprotected LAN Resource Share Summary** dialog box, click **Close**.

15 Knowledge Base: Backup

The Knowledge Base contains articles on specific areas of DS-Client operation.

15.1 Best practices: Initial backup

Creation Date: December 04, 2007
Revision Date: December 04, 2007
Product: DS-Client

Summary

This article describes the best practices for the initial backup of data.

See Also:

Section 12.1, “Initial backups”, on page 421

DS-Client-side best practices for Initial Backup

When running initial backups the following aspects need to be taken into account:

- The path specified must accommodate the size of the incoming data.
- The file system on the initial backup buffer must be able to handle the size of the incoming files (e.g. FAT32 has a 4GB file size limitation).
- When running several initial backups at the same time, ensure the device where initial buffer is located can handle the I/O load. If too many initial backup processes are sending data to the same path at the same time, the sessions might stop and the related errors will be reported.
- All Initial backup sets written to the same Initial Backup Path must be “completed” before the physical media is sent to your service provider (to verify, on the **Initial Backup** menu, click **Status**).
- Always check the DS-Client Activity Log and the Event Viewer at the end of every initial backup session to ensure that no errors are reported.
- If the initial backup session is interrupted, it can be resumed but you must synchronize the backup set (in the Backup Sets tab, select the backup set, and then on the **Sets** menu, point to **Backup Sets**, and then click **Synchronize**). To resume, start another backup session. The other option is to reset the backup set as “Incomplete” (on the **Initial Backup** menu, click **Status**, select the backup set and then click **Mark Incomplete**), then re-run the Initial Backup from the beginning.

15.2 Backup / restore of UNIX file systems

Creation Date: August 15, 2008
Revision Date: January 21, 2015
Product: DS-Client (Linux)

Summary

If you have UNIX servers on your network, install a Linux DS-Client to perform backup / restore.

This article describes known issues with “NAS, UNIX-SSH, NFS, Local File System” backup sets from a Linux DS-Client.

For instructions to create this kind of backup set, see: Section 6.11, “NAS, UNIX-SSH, NFS, or Local File System backup sets (Linux or Mac)”, on page 238

Excluded directories

When backing up any target UNIX machine (either the local file system, via UNIX-SSH, or using NFS), the following directories are always excluded from backup (even if selected in a backup set):

- `/proc`
- `/sys`
- `/dev`
- `/devices`
- `/selinux`

These directories constitute pseudo-file system(s), which do not contain physical files or do not contain persistent data.

If excluded directories are skipped during a backup, a warning appears in the Event Log for that activity.

Excluded directories for SSH backups of SOLARIS machines:

In addition to the above general UNIX directory exclusions, the following directories are excluded from UNIX-SSH backup sets of SOLARIS machines:

- `/system/contract`
- `/system/object`

and

- `<zone>/system/contract`
- `<zone>/system/object`

- `<zone>/proc`

NOTE: The zoneFS path can be shown with the "`zoneadm list`" function.

Backup of hard links

Hard links are created in Unix-based file systems with the '`ln`' function. In general, if you want to perform backup and restore of hard links, you must create a backup set that includes all files that are linked through hard links.

If even one linked file (from a hard link group) is not included in a backup set, the backup will not be able to record all the hard link information. Similarly, for a restore, if only some of the hard-linked files are selected for restore, the restore will only link the hard linked files that are restored.

If only want to restore one file and preserve any existing hard-links, use the **Fast** restore option. Note: this also changes the data of other linked files not restored.

- By default, the **Backup hard links** option is selected for any new backup sets. This means the backup will record file and hard link information during backup, so that the hard links to be restored.
- If the option **Backup hard links** is not selected for a backup set, this means any backed up hard link will be backed up and restored as a separate (individual) file. In this case, the backup set will not contain any hard link information.
- Even with the option **Backup hard links** selected, you must create a backup set that includes all the hard linked files. Otherwise a warning will appear in the Event Log for the backup activity and if you restore from that backup, your existing hard links will be broken. The same applies if you perform a partial restore of hard linked files.

Restoring hard links

Restoring hard links assumes the backup contains all hard linked files and file information. (For example: If the source computer has 5 files that are hard linked, your backup set must contain those same 5 files and the backup set must have the "Backup hard links" option selected.) The restore behavior depends on the "Restore Method" selected in the Restore Wizard's "Select restore options" page:

- **Save / Use Buffer**: This is the default restore method, which will restore the selected hard linked file(s) and recreate the hard links for those restored files.
- **Fast**: This method allows you to selectively restore the hard link data (inode information) from a single file while preserving the existing hard link information on the restore target. After restore, this effectively changes the data of the other linked files (that were not restored).

15.3 Backup / restore of Microsoft Exchange Server in a database availability group (DAG)

Creation Date: May 13, 2011
Revision Date: February 16, 2018
Product: DS-Client (Windows)

Summary

This article describes how to back up and restore data in a Microsoft Exchange Mailbox Server in a database availability group (DAG) using a Microsoft Exchange Server (VSS-aware) backup set.

The approach that is described here requires a separate backup set for each node of the DAG. The alternative is to make the configuration on the **Database Availability Group (DAG) options** page, however there are prerequisites to fulfill before it will work. For instructions, see Section 6.19.2, “Creating a Microsoft Exchange Server (VSS-aware) backup set”, on page 283.

Backing up a Microsoft Exchange Server in a DAG

A DAG consists of two to sixteen Exchange Mailbox servers as members of the group. Each Mailbox server is a member in a DAG and contains any combination of active and passive mailbox database copies.

To back up data in a mailbox server in a DAG:

1. Using the New Backup Set Wizard, create a Microsoft Exchange Server (VSS-aware) backup set.
2. Provide the Mailbox server’s IP or computer name.
3. Skip the **Database Availability Group (DAG) options** page. (You can click **Next**, even while the page waits to receive the DAG source information.)
4. Select **Microsoft Information Store** to add the Mailbox server as a backup item.
5. Make selections to specify what to back up:
   - To back up the entire Mailbox server, including active and passive mailbox database copies on the server, select both of the following check boxes:
     - **Backup active database**
     - **Backup passive database**

     All mailbox databases copies are backed up even if their statuses change from active to passive or vice versa.
   - To back up only active database copies on the server, select **Backup active database** only.

At the time of the backup, if the status of a mailbox database copy has changed from active to passive, the database copy will not be backed up.

- To back up only passive database copies on the server, select **Backup passive database** only.

  At the time of the backup, if the status of a mailbox database copy has changed from passive to active, the database copy will not be backed up.

Restoring the Exchange Server part of DAG

You can restore active and passive database copies to the original location or to an alternate location using **VSS Restore** or **File Restore**.

To restore active and passive database copies to a Recovery Database (RDB), use **File Restore**.

Migrating Microsoft Exchange backup sets

DS-Client supports migration of standalone Microsoft Exchange Server backup sets to DAG backup sets. It does not support migration from DAG to standalone.

15.4 Backup / restore of Microsoft SQL Server (all versions)

Creation Date: April 30, 1997
Revision Date: June 29, 2016
Product: DS-Client (Windows)

Summary

The DS-Client software allows you to perform online backups of Microsoft SQL Server databases.

See also:

- Section 6.10, “Microsoft SQL Server database backup sets (Windows)”, on page 227
- Section 6.10.3, “Restoring a Microsoft SQL Server database backup set”, on page 233
- Section 6.10.3.7, “Restoring Microsoft SQL Server data to an alternate location”, on page 235

Security and user accounts

The DS-Client software requires either one or two user accounts to successfully backup an Microsoft SQL Server. The number depends on the setup of the Microsoft SQL Server:

Network user account	This account is used when connecting to the computer where the Microsoft SQL server is running. This account must have sufficient permissions (e.g. member of the Administrator Group).
Database user account	This is a database user account. If the Microsoft SQL server is configured for integrated security access, this account is not required and the network user account will be used for both network and database access.

Backup dump devices

Depending on the Microsoft SQL Server's version and the configuration of the backup set, DS-Client will use different backup/restore methods:

Dump to disk file	Databases will be dumped directly to a disk file either on the Microsoft SQL Server computer, or to an accessible UNC path (remote location). The file name will be in the form 'database.y', where 'y' is an internal number. After the database is dumped, the dump file will be backed up like a regular file and then removed. The backup set's configuration should provide the path for the dump location. You can enter a UNC path directly in the “Dump Path” field when you select the dump location.
Dump to DS-Client buffer	Databases will be dumped directly to a disk file on the DS-Client computer in the DS-Client buffer directory (this directory location is set up in the DS-Client Configuration dialog box - Parameters tab). You can use this option if you do not have enough space on the Microsoft SQL Server computer.
DS-Client Pipe	The database is dumped through a pipe. During backups, the Microsoft SQL server writes to the pipe, and the DS-Client service reads from the pipe and sends data to the DS-System. The pipe is created on the Microsoft SQL Server computer. Use this method if your database is too big to be dumped to a file with either of the above options. **NOTE:** You should only use this option if you have a consistently fast and reliable connection to the DS-System.
Backup Transaction Log	The database must be configured with FULL or BULK_LOGGED recovery mode, otherwise this option will have no effect. • If selected, DS-Client will dump the Transaction Log and send it along with the database(s) to DS-System. • To view the transaction logs from the Restore Wizard, select the Advanced Option “Latest generation of all data”, and then click **Show Files** to display the files. Backed up log files have a *.log extension.

Using DBCC

DS-Client service can run a Database Consistency Check (DBCC) after the database is dumped. DBCC will check the database and the database allocation (`checkdb`, `checktable`, and `checkalloc` options). If you are using the DS-Client Pipe option, DBCC is performed before the dump. In either case, the DS-Client service can be instructed not to perform the backup if DBCC errors are found.

Database backup policy

DS-Client supports additional backup options for Microsoft SQL Server. These options can help reduce the backup time for very large databases (where the dump takes up significant time).

You can configure the backup set to perform differential or incremental database backups (after the backup of a full dump).

- Differential backups contain all the changes to the database since the last full dump.
- Incremental backups contain only the changes to the database since the last backup.

Database backup policy requirements:

- Windows DS-Client only.
- For **Full dump + incremental** backup, each target database's model must be `full recovery` or `bulk-logged recovery`.

Full dump always	[Default] This is the default behavior for all Microsoft SQL Server backups. • Each backup of the SQL Server performs a full dump of each database.
Full dump + differential backup	Performs a full dump of the database on first backup, followed by differential backups until another full backup is needed (*). • The database can be selected with or without the Backup Transaction Log option.
Full dump + incremental backup	Performs a full dump of the database on first backup, followed by incremental backups until another full dump is needed (*). • The database should be selected without the Backup Transaction Log option. (Even if selected, this option will be ignored if this backup policy is selected.) • The database's Recovery Model must be: 'full' or 'bulk_logged'.
Transaction Log Only backup	Use this database backup policy in combination with a separate VSS-aware or Classic Microsoft SQL Server backup set that performs Full database backups for the same database(s). When using this database backup policy, you must do the following: • Ensure the integrity of the sequence of the transaction logs in relation to the Full database backups performed by the other Microsoft SQL Server backup set. • Select the option to keep all generations within a specific period and specify that period. • Set the retention settings to keep **0** generations.
(*) A full dump is needed (other than first time) when: • a database has been backed up by another backup set (or manually from the SQL tools); • a database has been restored (either from another database or an earlier generation); • the database properties have been modified (recovery model switched to 'simple'); • local storage cache is used for the backup set (This can occur for 'Online' backup sets with the option 'Transmission cache on local storage', but only when a generation must actually 'pass through' the local storage cache. If the connection to DS-System is down, then a full dump occurs and is written to the local storage cache. After that dump, DS-Client continues with the selected database backup policy.) • the DS-Client requires a Master generation (configured in the "MasterGenerations" value of the DS-Client Advanced Parameters - **Setup** > **Configuration** > **Advanced**).	

NOTE: The DS-Client can take advantage of the differential or incremental backup policy if the backup set (of the SQL database) is the only process that backs up that target. If another backup set is used to backup the database (or the internal SQL commands are used to perform manual backups / dumps), then the backup policy requires the next backup to be a full dump.

Database backup policy Full Backup Schedule Over-ride rules:

These rules are optional. They allow greater control when a Full Backup can occur (e.g. not during business hours).

IMPORTANT: Full dumps can be delayed, but a full database dump needs to be performed at regular intervals to protect the integrity of the database backup. By default, DS-Client allows a full backup to be skipped a maximum of 120

consecutive times. The advanced parameter **MaxNonFullDumps** defines this number. For more information, see Section 3.1.8, “Configuring the advanced settings”, on page 33.

- If you are using any skip full backup rule, you should force a full backup before this maximum interval occurs. Use the **Full every...** option(s) to specify when.

Advantages and disadvantages of different database backup policies

Choosing the best database backup policy method depends primarily on the backup window and how often the backups need to be run. For example, a customer who needs to backup a 400GB database might not be able to backup every hour using the **Full dump always** policy; however, the backup can be able to accommodate an incremental or differential dump every hour.

The following table lists the advantages and drawbacks of each respective DB backup policy:

Backup Policy	Advantages	Disadvantages
Full dump always	• No restrictions on the number of backup sets backing up a particular Microsoft SQL Server.	• Dump time required for each backup.
Full dump + differential backup	• Less dump time of the data from the Microsoft SQL Server, therefore less data transmitted from the source Microsoft SQL Server to the DS-Client (over LAN) and possible storage savings on the DS-System because of the size of the incremental / differential generations. • Even when a Full dump is required, DS-Client still processes “incremental forever” and sends only the delta changes to DS-System.	• Only one backup set can backup the target Microsoft SQL Server, since the backup set must maintain the record of differential backups. No manual backups from the SQL tools can be performed (otherwise a Full backup is required).

Backup Policy	Advantages	Disadvantages
Full dump + incremental backup	• Less dump time of the data from the Microsoft SQL Server, therefore less data is transmitted from the source Microsoft SQL Server to the DS-Client (over LAN) and possible storage savings on the DS-System because of the size of the incremental/ differential generations. • Even when a Full dump is required, DS-Client still processes “incremental forever” and only sends the delta changes to DS-System.	• Only one backup set can backup the target Microsoft SQL Server, since the backup set must maintain the record of incremental backups. No manual backups from the SQL tools can be performed (otherwise a Full backup is required). • Configuration requirements: Database Recovery Model must be ‘full’ or ‘bulk_logged’, which means that more processing will occur on the Microsoft SQL Server and more data and logs will be stored.
Transaction log only backup	• Offers more granular control by allowing you to restore the target database to a specific point in time. • Shorter backup time required because the backup of transaction logs requires less data transfer.	• Requires two steps in the restore process: (1) restore a full database using a Microsoft SQL Server (Classic or VSS-aware) backup set, and (2) restore transaction logs from a Microsoft SQL Server (Classic) backup set.
Backup using VSS (Separate VSS-aware backup set)	• Avoids the dump time for the data.	• More data is transmitted between source Microsoft SQL Server and DS-Client.

Restoring Databases

A database that was backed up using the **dump to disk file** option can be restored only using the same method (for example: you cannot restore such a backup using “DS-Client Pipe“).

The file name generated by the restore using the **dump to disk file** option will be in the form `database.y`, where `y` is an internal number.

Using the Transaction Log Only database backup policy

The database backup policy **Transaction Log Only** in a Microsoft SQL Server (Classic) backup set is one part of a combined solution that allows you to restore a target database to a specific point in time, offering more granular control in the restore process. The backups of transaction logs also require less data transfer time.

This combined solution requires the collaboration of two backup sets:

- A Microsoft SQL Server (Classic or VSS-aware) backup set based on the database backup policy **Full dump always**

- A Microsoft SQL Server (Classic) backup set based on the database backup policy **Transaction Log Only**.

NOTE: When using a Microsoft SQL Server backup set based on the **Transaction Log Only** database backup policy, you must do the following: (1) ensure the integrity of the sequence of the transaction logs in relation to the Full database backups performed by the other Microsoft SQL Server backup set, (2) select the retention option **Keep all generations for the last [specific period]** and specify that period, and (3) configure the time-based retention setting **Keep most recent generations** to **0**. The backups of transaction logs update the same files over time and do not result in multiple generations, and those files become obsolete after every full dump.

To restore transaction logs to a target database, you need to perform two steps in this order:

1. Restore the full database using the Microsoft SQL Server backup set configured for **Full dump always** and leave the target database in `RESTORING` mode.
2. Restore transaction logs to the target database using the Microsoft SQL Server (Classic) backup set configured for **Transaction Log Only**.

NOTE: Transaction logs can only be restored to the target database after the database has first been restored in full.

Backup / restore of a Microsoft SQL Server cluster

You can use the virtual node as the “Path” to back up a Microsoft SQL Server Cluster. You can create a Microsoft SQL Classic or VSS-aware backup set for it using the its virtual node as long as DS-Client can meet two requirements:

DS-Client must be able to resolve the following for the Microsoft SQL Cluster:

- Virtual node, specifically its IP address
- Individual nodes, specifically their names and IP addresses
- The Windows cluster’s name, specifically its IP address

  DS-Client must be able to connect to the nodes listed above.

15.5 Backup / restore using UNIX-SSH

Creation Date: June 30, 2006
Revision Date: January 21, 2015
Product: DS-Client (Linux & Mac)

Summary

This article covers various backup/restore issues for backup sets using the UNIX-SSH protocol. This is the type of connection DS-Client opens to the target computer. To backup or restore, DS-Client must run the corresponding script on the source / target computer in either PERL or PYTHON languages.

For instructions to create this kind of backup set, see: Section 6.11, “NAS, UNIX-SSH, NFS, or Local File System backup sets (Linux or Mac)”, on page 238

SSH requirements

- The backup source machine must be a Unix system. (For supported operating systems, see the Installation and Support Matrix.)
- The source machine must have an OpenSSH compatible server installed and started.
- The source machine must have either Perl5 (core function, 5.6 or beyond) installed, or Python (2.4) installed. [Alternatively, you can use the DIRECT option to run a specific script/binary located on the source machine.]
- The SSH approach cannot scan the LAN to get an initial machine list. You must type the IP address of the source machine in the **Path** box (for example: `UNIX-SSH\10.20.30.100`). The user or administrator can also put the initial machine list into the file **hostlist_ssh** located in the installation path (usually `/opt/CloudBackup/DS-Client/etc`). The following is a sample:

```
#================ sample hostlist_ssh begin =================
# format: (comments must begin with '#')
# name_or_IP_address[:port] [shortdescription] (less than 20 chars)
10.20.30.101 [Computer 1]
10.20.30.102 [Computer 2]
10.20.40.33 [Server A]
10.20.40.34:2233 [Server B] # SSH server running on port 2233
#================ sample hostlist_ssh end ==================
```

- If PERL or PYTHON is not installed in the default path (usually /bin, /usr/bin, ...) on the source machine, you must enter the exact path in the **Advanced connection options** dialog box.

SSH limitations

Due to a PERL limitation, UNIX-SSH backup sets cannot back up files with a <tab> symbol at the end of the file name.

If backup of a file with this type of name fails, the following error message will appear in the Event Log:

```
Open for read failed (cannot open file <file_with_path> for
reading: No such file or directory)
```

SUDO errors

If either of the following errors occur, the backup source computer might require an update to its “sudoers” file.

Trying to log on via SSH using sudo as an alternate user option results in the following error:

```
User Change failed ()
```

Attempting to run `ssh <ip> sudo -u <user name> perl/python` from a terminal window results in the following error message:

```
sudo: sorry, you must have a tty to run sudo
```

Solution:

1. Log on as **root** on the backup source machine.
2. Use the **visudo** command to edit the `/etc/sudoers` file.
3. Disable the following line:

   ```
   Defaults    requiretty
   ```

   NOTE: To disable this line, either delete the whole line or comment it out (put a “#” at the beginning of the line).

4. Save and exit the editor.

   SSH should now work properly with the “sudo as an alternate user” feature.

15.6 Backup / Restore of NFS

Creation Date: December 10. 2007
Revision Date: February 17, 2010
Product: DS-Client (Linux & Mac)

Summary

This article discusses various backup/restore issues for NFS backup sets using the “NAS, UNIX-SSH, NFS, Local File System” backup type.

For instructions to create this kind of backup set, see: Section 6.11, “NAS, UNIX-SSH, NFS, or Local File System backup sets (Linux or Mac)”, on page 238

Configuring a source machine for backup through NFS using Linux DS-Client

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NOTE: The following are suggestions that do not take into consideration network security requirements. Consult your network administrator and NFS documentation for full details.

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1. To backup a source machine that supports NFS (version 3 or higher), the NFS source machine must be configured to export the NFS share (assuming the source machine is an NFS server).
2. To verify if the source server is exporting the NFS share, run the following command on DS-Client:

   ```
   Shell> rpcinfo –p NFS_server_address
   ```

3. If it is working, “nfs” should be listed in the output, and you should be able to connect to the NFS share via Linux / Mac DS-Client. Otherwise continue with step 4.
4. You only need to edit /etc/exports to get NFS to work with DS-Client. This file is on the source machine, and contains a list of entries. Each entry indicates a volume that is shared and how it is shared. Check the man pages (man exports) for a complete description of all the setup options for the file, although the description here will probably satisfy most requirements.

   - An entry in `/etc/exports` will typically look like this:

     ```
     directory machine1(option11,option12)
     ```

     For example:

     ```
     / 192.168.1.250(rw,no_root_squash)
     ```

The above line allows the DS-Client machine with the IP address 192.168.1.250 to have read and write access to the / folder. If the option 'no_root_squash' is selected, then 'root' on the DS-Client machine will have the same level of access to the files on the NFS share as 'root' on the NFS server.

5. Save the file and restart the NFS daemon with the following command:

   ```
   Shell> /etc/init.d/nfs restart
   ```

   Now, the DS-Client machine should be able to connect to the NFS share.

15.7 Backup / restore of Oracle database servers

Creation Date: March 12, 2003
Revision Date: December 01, 2015
Product: DS-Client

Oracle backup set overview

This following summarizes the DS-Client capabilities to back up and restore online Oracle databases.

Functionality
On a scheduled or an on-demand basis, the DS-Client will instruct the Oracle's Recovery Manager (RMAN) to access the Oracle Server via IP (LAN, WAN, etc) and use the Oracle-supplied functions to perform a database backup (through Pipe or using dump files). The data is then compressed, encrypted and transmitted to the DS-System. The first time this action is performed, the entire database is dumped and transmitted (creating a "master"). During subsequent backups, only the changes are transmitted (creating a "delta"). DS-Client never accesses the Oracle database data files directly and therefore, there is never an issue with open and locked database files. The database does NOT have to be taken off-line to perform the backup.

Security
During the Oracle server backup (as with all backups), the database credentials (sysdba username and password) are entered and stored in the DS-Client database, using AES128 encryption. The backup data is encrypted with a security algorithm that is secure up to AES-256 (256-bit) with a private key known only by you (the customer). Your service provider will never have access to this information. The DS-System uses a one-way hash to validate encryption keys, however the hash cannot be used to recover the encryption keys.

Items available for backup/restore	
• individual tablespaces • control file • archived logs	Whole database backup: • Backup all items (individual tablespaces, control file, and archived logs) in one oracle database backup set. • Create a File system backup set to back up only init<sid>.ora and pwd<sid>.ora.

Options for backup
• Logical Corruption Check • Backup Only Current Archived Logs • Truncate Transaction Logs

Possible items to restore	
Original restore (restore to the original Oracle server)	**Alternate restore (restore to another Oracle server)**
• individual tablespaces • control file + tablespaces + archived logs • Whole database (including files init.ora & pwd.ora)	• All possible options in Original restore • Restore only the dump files

Options for restore
• Restore only dump files • Create temp tablespace

NOTE: You must install the **full** Oracle client on the DS-Client that performs backup / restore of the target Oracle Express server. Do not install the Oracle Express client on the DS-Client.

Backup and restore of Oracle database servers using Windows DS-Client

For off-line database backup / restore, the operations and requirements are the same as File system backup and restore. You can use the 'Pre/Post' function to Stop/Start Oracle Server before/after backup and restore. (If your database is in NOARCHIVE mode, then you must perform off-line backup of the database.)

The following requirements must be met to perform online backup and restore of Oracle database servers.

General Requirements
• The user who performs Oracle Backup / Restore should have knowledge about the Oracle database file structure and instance management. • The DB Administrator / Backup Operator must know the name of the Service when creating a new backup set. (You cannot browse the database(s) for names, therefore you must know the exact name in advance.) • The credentials used for backup / restore of the Oracle database must have the **sysdba** privilege. • You can not use an IP address to specify a computer for backup / restore. Only the computer name is allowed.

DS-Client Computer Requirements
• Oracle Client must be installed. It must be the same version as the Oracle Server you want to backup. If you want to backup different versions of Oracle servers, you must install each corresponding version of Oracle client on the DS-Client computer. • Configure the 'Net service Name' for this Oracle Client to connect to each Oracle Server you want to backup or restore. If the Oracle Instance is a shared server, set the Connection Type as **Dedicated Server**. This is the TNS alias that is specified in the "tnsnames.ora" file on your Oracle client. • For Oracle 12c, you must configure a separate 'Net service Name' to access the Oracle Server at CDB-level or PDB-level. CDB-level will give access to the entire container database (Root and all pluggable databases). PDB-level will give access to only the specific pluggable database named. • Recovery Manager (RMAN) utility must be installed.

Oracle Server Requirements
• [32-Bit Windows Platforms] **orasbt.dll** must be copied to the target Oracle Server's computer. Place it in the path \%SYSTEMROOT%\SYSTEM32 (System Root path). You can find this file in the DS-Client installation directory. • [64-Bit Windows Platforms] **orasbt_x64.dll** must be copied to the target Oracle Server's computer. Rename it to **orasbt.dll**, then place it in the path \%SYSTEMROOT%\SYSTEM32 (System Root path). You can find this file in the DS-Client installation directory. • Oracle Instance must be running in "ARCHIVELOG MODE" (this allows online backup of the database). • Set the CONTROL_FILE_RECORD_KEEP_TIME initialization parameter to slightly longer than the period (in days) between backups of the whole Oracle database (all tablespaces, control files, and archive logs). • RMAN has a limitation of how many archived logs can be backed up at one time. Increase the "redo log file" size to reduce the number of archived logs. • If you are using DS-Client Buffer or DS-Client Pipe as the dump path for backup, make sure both the "OracleServiceXXXX" and "Oracle TNSListener" services use the "administrator" account. [For Oracle 12c, the Oracle Installation User (Oracle owner) must be a member of the Windows operating system's "Administrators" Group.]

Backup Requirements
• The Oracle database should be in Open state when you perform the online backup. • To perform full or alternate restore of an Oracle database, the backup must be a full Oracle database backup (all tablespaces, archived log files, and control file). In addition, you must have a backup of the password file and the init file. • The password file (e.g.c:\oracle\ora92\database\pwd<instance>.ora) and the init file (e.g. c:\oracle\admin\<instance>\pfile\init.ora) should be backed up in a File system backup set. • You do not need to place online tablespaces in backup mode when performing backups.

Restore Requirements
There are the following requirements and limitations: • To restore the Control File, start the database in **nomount (started)** state. • To restore Tablespaces without the Control File, start the database in **mount** state. Otherwise, change the tablespaces offline. • Tablespaces can be restored, however the logs will be applied to the present (unless DBPITR is performed). This means they will not be as when backed up. • The control file should only be restored when performing DBPITR (Database Point In Time Recovery). After restoring, the database will be opened with the “RESETLOGS” option. By doing this, you will not be able to restore any tablespaces backed up after that point in time (unless you restore the control file). • When performing a DBPITR, all the files backed up in that particular session must be restored. • For full restore to the original location, the requirements are the same as for Alternate Location Restore, except the ‘target computer’ is the original computer. • Before performing a DBPITR, if the backup and flash_recovery_area have different reset log times, you must rename the flash_recovery_area directory. After performing the restore, shutdown and manually restart the Oracle database (see Oracle Note: 286964.1).

Alternate Location Restore Requirements
The Oracle Server (target restore server) must satisfy the requirements listed in the sections above. In addition, the following apply for Alternate Restore: • The backup should be a full Oracle database backup. You should also have a backup of the password file and the init file (this will be in a File system backup set). • The target restore computer should have an Oracle database service Instance of the same name. • The target restore computer should have the same tablespace path as the original backup (this can be created when setting up the database). – This is because of Oracle limitations and specifications. All the information about file structure is recorded in the Control File and the Oracle Database as a whole. • Restore the (File system) backup of the password file and the init file to the alternate computer. This is a separate backup set of the password file and the init file from the original backup computer. • Restore the full Oracle database backup. • If you choose a different dump path, only dump files are restored to that path. You must use RMAN to restore your Oracle database manually.

Backup / restore of Oracle database servers using Linux DS-Client

For off-line database backup and restore, the operations and requirements are the same as File system backup and restore. You can use the ‘Pre/Post’ function to stop and start the Oracle Server before and after backup or restore.

The following requirements must be met to perform online backup and restore of Oracle database servers.

General requirements:

- The user who performs Oracle Backup / Restore should have knowledge of the Oracle database file structure and instance management.

- The DB Administrator / Backup Operator must know the name of the Service when creating a new backup set. (You cannot browse the database(s) for names, therefore you must know the exact name in advance.)
- The credentials used for backup / restore of the Oracle database must have the **sysdba** privilege.

DS-Client computer requirements:

DS-Client must be running on a supported Linux platform listed in the **Installation and Support Matrix**.This can be found on the Installation DVD in the following path: \Documentation\Release_Information

- Oracle Client must be installed on the machine running the DS-Client (this must be a full installation created from the Oracle Installer). It must be the same version as the Oracle Server to backup.
- You must configure the 'Net service Name' for this Oracle Client to connect to each Oracle Server you want to backup or restore. This is the TNS alias that is specified in the "tnsnames.ora" file on your Oracle client.
- For Oracle 12c, you must configure a separate 'Net service Name' to access the Oracle Server at CDB-level or PDB-level. CDB-level will give access to the entire container database (Root and all pluggable databases). PDB-level will give access to only the specific pluggable database named.
- If the Oracle Instance is a shared server, set the Connection Type as "Dedicated Server" using Net Manager.
- Recovery Manager (RMAN) utility must be installed.
- The remote Oracle database server hostname must be configured in /etc/hosts file on the Linux DS-Client computer.

Oracle Server requirements:

- Oracle Instance should be running in "ARCHIVELOG MODE" (this allows online backup of the database).
- Set the CONTROL_FILE_RECORD_KEEP_TIME initialization parameter to slightly longer than the period (in days) between backups of the whole Oracle database (all tablespaces, control files, and archive logs).
- RMAN has a limitation of how many archived logs can be backed up at one time. Increase the "redo log file" size to reduce the number of archived logs.
- Oracle Server should be a certified product.
- To use DS-PIPE for backup and restore, a library file must be copied to $ORACLE_HOME/lib on the Oracle server. This file must correspond to the Oracle server's platform. The files are found in the DS-Client installation directory in the sub-folder /Misc/Oracle_Classic_Library:
  - **libobk.so**

This file is for Linux 32-bit Oracle database. Copy this file to **$ORACLE_HOME/lib** on 32-bit Linux Oracle Server.

- **libobk-64.so**

  This file is for Linux 64-bit Oracle database. Copy this file to **$ORACLE_HOME/lib** on 64-bit Linux Oracle Server and make a soft link **ln -s libobk-64.so libobk.so**.

- **libobk.a**

  This file is for AIX Oracle database. Copy this file to **$ORACLE_HOME/lib** on AIX Oracle server.

- **libobk_ia64.sl**

  This file is for HPUX Itanium Oracle database. Copy this file to **$ORACLE_HOME/lib** on HPUX Itanium Oracle Server and make a soft link **ln -s libobk_ia64.sl libobk.so**

- **libsbt64.so**

  This file is for Solaris (9 & 10) 64-bit Oracle database. Copy this file to **$ORACLE_HOME/lib** on Solaris 64-bit Oracle server and make a soft link **ln -s libsbt64.so libobk.so**

NOTE: For Solaris 11 Oracle servers, you must take the **libsbt64.so** file found in the **/Misc/Oracle_Classic_Library/Solaris11** sub-folder.

- **libsbt32.so**

  This file is for Solaris 32-bit Oracle database. Copy this file to **$ORACLE_HOME/lib** on Solaris 32-bit Oracle server and make a soft link **ln -s libsbt32.so libobk.so**

Backup requirements:

- The Oracle database should be in Open state when you perform the online backup.
- To perform full or alternate restore of an Oracle database, the backup must be a full Oracle database backup (all tablespaces, archived log files, and control file). In addition, you must have a backup of the password file and the init file.
- The init file (e.g. admin/<instance>/pfile/init<instance>.ora) and password file (e.g. $ORACLE_HOME/dbs/orapw<instance>) should be backed up in a File system backup set. A backup of the password file is necessary for any full or alternate restore of the Oracle database.
- You do not need to place online tablespaces in backup mode when performing backups.
- For Oracle backup using NFS protocol, you must enter the user account of ‘root’ for the network credentials.

- For Oracle 12c: By default, **threaded execution** is OFF on the Oracle server. If threaded execution is enabled, DS-Client using DS-PIPE will fail to back up the controlfile.

Restore requirements:

There are the following requirements and limitations:

- To restore the Control File, start the database in **nomount (started)** state.
- To restore Tablespaces without the Control File, you must start the database in **mount** state. Otherwise, you must change the tablespaces offline.
- Tablespaces can be restored, however the logs will be applied to the present (unless DBPITR is performed). This means they will not be as when backed up.
- The control file should only be restored when performing DBPITR (Database Point In Time Recovery). After restoring, the database will be opened with the “RESETLOGS” option. By doing this, you will not be able to restore any tablespaces backed up after that point in time (unless you restore the control file).
- When performing a DBPITR, all the files backed up in that particular session must be restored.
- For full restore to the original location, the requirements are the same as for Alternate Location Restore, except the ‘target computer’ is the original computer.
- Before performing a DBPITR, if the backup and flash_recovery_area have different reset log times, you must rename the flash_recovery_area directory. After performing the restore, shutdown and manually restart the Oracle database (see Oracle Note: 286964.1).

Alternate location restore requirements:

The Oracle Server (target restore server) must satisfy the requirements listed in the sections above.

In addition, the following apply for Alternate Restore:

- The backup must be a full Oracle database backup. You must also have a backup of the password file and the init file (this will be in a File system backup set).
- The target restore computer must have an Oracle database service Instance of the same name.
- This is to simplify the process of recovery. You must modify the initial file manually if you use a different Instance name.
- The target restore computer must have the same tablespace path as the original backup (this can be created when setting up the database).

  - This is because of Oracle limitations and specifications. All information about file structure is recorded in the Control File and the Oracle Database as a whole.
- Restore the (File system) backup of the password file and the init file to the alternate computer. This is a separate backup set of the password file and the init file from the original backup computer.
- Restore the full Oracle database backup.
- If you choose a different dump path, only dump files are restored to that path. You must use RMAN to restore your Oracle database manually.

15.8 Backup / restore of MySQL database servers

Creation Date: December 08, 2007
Revision Date: March 26, 2018
Product: DS-Client

Summary

This article covers various backup/restore issues for MySQL database backup sets.

For instructions to create this kind of backup set, see:

- Section 6.13.3, “Creating an Oracle MySQL database backup set (Windows DS-Client)”, on page 252
- Section 6.13.4, “Creating an Oracle MySQL database backup set (Linux DS-Client)”, on page 254

The following requirements must be met to perform backup / restore of MySQL database servers.

General requirements:

The user who performs MySQL backup / restore should have knowledge about the MySQL database structure.

DS-Client computer requirements:

- DS-Client backs up MySQL Server using the MySQL utilities ‘mysqldump’ and ‘mysql’. DS-Client’s **mysqldump** and **mysql** utilities must be compatible with the MySQL version running on the source machine (MySQL server).

The following requirements depend on the type of DS-Client you are using:

- **Windows DS-Client**: The **mysql** utility must be listed in the PATH environment variable of the DS-Client computer. (If you must edit this variable, stop and restart the DS-Client service after making the change.)
- **Linux DS-Client**: The **mysql** utility must be listed in the PATH environment variable of user ’root’ on the DS-Client computer.
- **Mac DS-Client**: The path to the **mysql** utility must be added to the following file on the DS-Client computer:

  `/etc/rc.common`

Specifying credentials using logon paths (Linux DS-Client)

When using Linux DS-Client, you can specify the server credentials for a MySQL database backup set by referring to a logon path for security and convenience. Each logon path represents specific connection and authentication details, such as the host name, user name, and password.

Defining logon paths:

Before specifying the server credentials for a MySQL database backup set in Linux DS-Client using a logon path, do the following:

1. Use the MySQL Configuration Utility (mysql_config_editor) to define all the logon paths that you need. For each logon path, you must define the following:

   - Name of the logon path
   - Host name
   - User name
   - Password

   IMPORTANT: To avoid conflict with the ports that you specify in DS-Client, do not define ports for the logon paths.

   The logon path information is stored in the encrypted **.mylogin.cnf** file. For more information, refer to MySQL documentation.

   IMPORTANT: To enable DS-Client to access the MySQL Server successfully, you must ensure that the logon paths you have defined are valid.

2. Copy the **.mylogin.cnf** file to the DS-Client installation folder.

   This is the default location: /opt/CloudBackup/DS-Client

   IMPORTANT: Always ensure that the **.mylogin.cnf** file in the DS-Client installation folder contains the logon paths that are required by your MySQL database backup sets. Updates to the **.mylogin.cnf** file are not accessible to DS-Client unless the updated file is in the DS-Client installation folder.

Referring to a logon path in a MySQL database backup set:

After you have defined the logon path and ensured that the appropriate **.mylogin.cnf** file is in the DS-Client installation folder, you can refer to the logon path when specifying credentials for a MySQL database backup set in Linux DS-Client.

- To refer to a logon path, type the following text in the **User Name** box in the **Ask for database credentials** dialog box:

  ```
  --login-path=<login path name>
  ```

where `<login path name>` is the name that is specified for the logon path.

NOTE: You can access the **Ask for database credentials** dialog box in the New Backup Set Wizard when creating a new MySQL database backup set or on the **Connection Options** tab when modifying a backup set's properties.

DS-Client will access the MySQL Server using the connection and authentication information of the logon path that you refer to.

Connecting to MySQL using non-standard ports

To back up a MySQL Server that is using non-standard ports, you must specify the port number when creating the MySQL backup set.

For Windows DS-Clients:

- You must specify the port numbers when creating the MySQL backup set.

1. On the **Sets** menu, click **New Backup Set**.
2. Select **MySQL**, and then click **Next**.
3. In the **Select a MySQL Server to backup** dialog box, you must specify the IP address of the server and the port number in the **Path** box, in the following format:

   `\\IP_address:Port_Number`

   For example, if you want to connect to a MySQL instance at IP address 10.20.30.111 using the port number 3310, you would type the following line into the Path field:

   `\\10.20.30.111:3310`

NOTE: If you do not specify a port number, Windows DS-Client uses "3306" as a default.

For Linux / Mac DS-Clients:

- You can specify the port numbers when creating the MySQL backup set:

1. On the **Sets** menu, click **New Backup Set**.
2. Select **MySQL**, and then click **Next**.
3. In the **Select the source for this backup set** dialog box, select **Ask for database credentials**.
4. Click **Next**. In the **Ask for database credentials** dialog box, you can configure the port number that the MySQL server uses.

- You can also change the port number by editing the backup set properties (**Backup Set Properties** > **Connection Options** > **Ask for database credentials: Port Number**).

Displaying the MySQL backup set type in the New Backup Set Wizard

If you do not see the MySQL backup set type option when you open the New Backup Set Wizard (**Sets** > **New Backup Set**), your DS-Client might not be configured to support it. Make sure the following requirements are met:

For Windows DS-Client:

- MySQL client software is installed.
- The folder that contains the MySQL utilities (such as: mysqldump.exe and mysql.exe) is in the PATH environment variable of the DS-Client computer. To verify if the path is included, launch a command window on DS-Client computer, and in the command prompt, run the command 'path'.

For Linux DS-Client:

- MySQL client software is installed.
- The folder that contains the MySQL utilities (such as: `mysqldump` and `mysql`) is in the search PATH of the DS-Client. To verify, edit the `/etc/init.d/dsclient` and in the line PATH, make sure the folder is listed.

For Mac DS-Client:

- MySQL client software is installed.
- The folder that contains the MySQL utilities (such as: `mysqldump` and `mysql`l) is in the search PATH of the DS-Client. The path to the mysql utility should be added to the following file on the Mac DS-Client computer: `/etc/rc.common`.

Database dump configuration

You have the option to specify the path of the MySQL database dump app that you want to use (either when creating a new backup set or editing an existing one). If you do not specify a path when creating the backup set, DS-Client will pick one on its own and this will be displayed in the Backup Set Properties dialog box, on the Connection Options tab.

Backup / restore of MySQL in a cluster

Backing up and restoring a MySQL cluster database is the same as standalone MySQL database backup and restore.

Restoring stored routines to a MySQL database

MySQL added the capability to backup stored routines from its release version 5.0.13.

To restore backed up stored routines, the user who performs the restore (MySQL database user) must have the following privileges for the MySQL database:

- Grant
- Create_Routines
- Alter_Routines

15.9 Backup / restore of DB2 database servers

Creation Date: December 24, 2004
Revision Date: March 27, 2015
Product: DS-Client (LINUX)

Backup / restore of DB2 database servers (Linux DS-Client)

The following requirements must be met to perform backup / restore of DB2 Database Servers.

General Requirements:

- The user who performs DB2 backup and restore should have knowledge about the DB2 database structure and instance management.
- The DB Administrator / Backup Operator must catalog the remote node and database name before creating a new backup set. You cannot browse the database(s) for names, therefore you must have the exact name. Restores must also catalog the remote node and database name prior to running the (restore) process.
- The credentials used for backup / restore of the DB2 database must have the SYSADM, SYSCTRL, or SYSMAINT authority.
- The account used to connect to the DB2 Client Instance must exist on the DS-Client computer. This is the user specified in the “Ask for database credentials” of the DB2 backup set (**Backup Set Properties** > **Connection Options**).

DS-Client computer requirements:

- DB2 Client should be installed on the machine running the DS-Client. This DB2 Client must be the same version as the DB2 Servers being backed up.
- Specify the DB2 Client library directory on DS-Client. This is done in the DS-Client Configuration dialog box’s Advanced Tab (see Section 3.1.8, “Configuring the advanced settings”, on page 33):

  1. On the **Setup** menu, click **Configuration**.
  2. In the **DS-Client Configuration** dialog box, click **Advanced**.
  3. In the **Category** box, select **Miscellaneous**.
  4. In the **Parameter** box, select **DB2 Client Library Directory**.
  5. In the **Value** box, enter the path where the DB2 Client libraries are located on the DS-Client.
  6. Click **Apply**.
  7. Stop and start the DS-Client daemon.

     The DB2 node and database must be cataloged so that the DB2 client can connect to each DB2 server you want to back up or restore.

DB2 server requirements:

- DB2 Server should be a certified product.
- You must ensure that the TCP/IP Service name is properly represented in the DB2 instance configuration file; otherwise, you can encounter errors when creating a DB2 database backup set.

  1. Open the DB2 instance configuration file.
  2. Ensure that the parameter SVCENAME is set to the appropriate service name, corresponding to the correct port number.

Backup requirements

- The DB2 database must not be in use when you perform an off-line backup, otherwise an error will be reported.
- When you create a DB2 backup set, in the **Select the source for this backup set** dialog box, specify the DB2 server hostname or type its IP address in the **Path** box. This must be the same as the one used in the catalog command.
- Linux DS-Client should have read and write privileges to access the transaction log directory on the DB2 database computer (for example `~db2inst1/db2inst1/NODE0000/SQL00005/SQLOGDIR/`).
- Online backups are available only for databases configured with the “logarchmeth1” value set to either **logretain** or **userexit**.
- The backup set must specify that the backup is online or off-line, as determined by the DB2 database configuration settings. (DO NOT CHANGE THIS PROPERTY. If you change this DB2 configuration, make a new backup set with the new option setting.)
- It is recommended not to change the online option setting for a demand backup. If it is changed, you must make a record of the change and the date (manually on paper or other format), so that the information is available if a restore is performed.

Restore requirements

- The DB2 database must not be in use when you perform the restore. This requirement applies to all DB2 backup sets (whether configured for online or off-line backup).
- The DB2 database must be configured for online or off-line restore. This setting must match the **Backup Set Properties** > **Options** setting that was used for the backup.
- The user ID of the calling application or process is used for client-side authorization. More details are available at the following links:

http://publib.boulder.ibm.com/infocenter/db2luw/v9r7/topic/com.ibm.db2.luw.apdv.api.doc/doc/r0001446.html

http://publib.boulder.ibm.com/infocenter/db2luw/v9r7/topic/com.ibm.db2.luw.apdv.api.doc/doc/r0001458.html

15.10 Backup / restore of PostgreSQL database servers

Creation Date: November 08, 2006
Revision Date: April 23, 2013
Product: DS-Client (LINUX)

Summary

This article covers various backup/restore issues for PostgreSQL database backup sets.

For instructions to create this kind of backup set, see: Section 6.17, “PostgreSQL database backup sets (Linux or Mac)”, on page 266

The following requirements must be met to perform backup / restore of PostgreSQL Database Servers.

General requirements:

- The user who performs PostgreSQL backup / restore should have knowledge about the PostgreSQL database structure.
- Configure each PostgreSQL database to be able to connect to other PostgreSQL instances:
  - In <pg_data_path>/postgresql.conf, add the line “listen_addresses='*' as follows:

    ```
    # CONNECTIONS AND AUTHENTICATION
    listen_addresses='*'
    ```

    where <pg_data_path> is the path to the configuration files (usually "/var/lib/pgsql/data" for the free installation from www.postgresql.org, or "/usr/local/pgsql/data" for the commercial package from www.commandprompt.com.

DS-Client computer requirements:

- The **psql** and **pg_dump** utilities must be listed in the PATH environment variable of the user 'root' on the DS-Client computer.
- The DS-Client computer's **psql** and **pg_dump** utilities must be compatible with the PostgreSQL version running on the source machine (PostgreSQL server).
- Configure the PostgreSQL database on the DS-Client computer to be able to connect to other PostgreSQL instances as described in the General Requirements above.

PostgreSQL server requirements:

- PostgreSQL Server should be a certified product.
- Configure each target PostgreSQL database to be able to connect to other PostgreSQL instances (to perform backup and restore) as described in the General Requirements above.

Database dump configuration

You have the option to specify the path of the PostgreSQL database dump app that you want to use (either when creating a new backup set or editing an existing one). If you do not specify a path when creating the backup set, DS-Client will pick one on its own and this will be displayed in the Backup Set Properties - Connection Options tab.

Connecting to PostgreSQL using non-standard ports

To back up a PostgreSQL Server that is using non-standard ports, you must specify the port number when creating the PostgreSQL backup set.

- You can specify the port numbers when creating the PostgreSQL backup set:
  1. On the **Sets** menu, click **New Backup Set**.
  2. Select **PostgreSQL**, and then click **Next**.
  3. In the **Select the source for this backup set** dialog box, select **Ask for database credentials**.
  4. In the credentials dialog box, enter the port number that the PostgreSQL Server is configured to use.
- You can also change the port number by editing the backup set properties: **Backup Set Properties** > **Connection Options** > **Ask for database credentials: Port Number**

Restore requirements

- The PostgreSQL database must not be in use when you perform the restore. This requirement applies to all restores (to original or to alternate location).
- The PostgreSQL server where you are restoring must be compatible with the version of the PostgreSQL server that was backed up. This is only an issue if the target restore server is different (Alternate Restore Location), or has been upgraded since the backup.

  In general, backups of databases residing on an older DB instance can be restored on a newer DB instance (but not the other way around).

15.11 Backup / restore of Microsoft SharePoint Server (DS-Recovery Tools)

Creation Date: January 18, 2008
Revision Date: October 11, 2018
Product: DS-Client (Windows) with DS-MLR Service (DS-Recovery Tools)

Summary

This article contains additional information for backup and restore of Microsoft SharePoint Server using the DS-Recovery Tools. It also describes how to configure a DS-Recovery Tools installation to log events for a backup activity.

For instructions to create this kind of backup set, see: Section 6.9, “Microsoft SharePoint Server backup sets (Windows)”, on page 224.

Logging DS-Recovery Tools for SharePoint activities (troubleshooting)

There are two configuration files in the DS-Recovery Tools installation directory:

- **dsrcvtools.cfg** — The main configuration file, containing the path to the log configuration file and sharepoint.dll.
- **logconf.cfg** — The configuration for logging. By default, debug logging is disabled. There are some examples inside the file “logconf.cfg”.

Sample “dsrcvtools.cfg” file:

```
DS-Recovery Tools Ports : 4408
Log Configuration : C:\Program Files\CloudBackup\DS-Recovery Tools\logconf.cfg
BackupLibs : share_point
share_point : C:\Program Files\CloudBackup\DS-Recovery Tools\SharePoint.dll
```

Sample “logconf.cfg” file:

```
“C:\Program Files\CloudBackup\DS-Recovery Tools\evlog.txt” {
    filter {
        severity = debug;
    }
}
```

NOTE: This sample “logconf.cfg” will dump all the debug information from the DS-Recovery Tools service to the “evlog.txt” file.

If you configure the DS-Recovery Tools service to dump a “debug” log, this will create a very large text file. Note there will be a significant performance impact if you do this. This feature is available for troubleshooting purposes to assist your service provider’s Technical Support Team.

Restore considerations

The following considerations should be made for Item-Level backup and restore using the Microsoft SharePoint Server backup type using the DS-Recovery Tools installation on the target Microsoft SharePoint Server:

- **Web applications** — Backup of a SharePoint web application will back up all its sites. On Item-Level Restore, users can restore each site separately. Users cannot restore any sub-site, lists or list items in the site separately.
- **Sites** — Backup of a SharePoint site will back up the whole site. On Item-Level Restore, users can only restore the whole site. Users cannot restore any sub-site, lists or list items in the site separately.
- **Sub-sites** — Backup of a SharePoint sub-site will back up the whole sub-site. On Item-Level restore, users can only restore the whole sub-site. Users cannot restore any lists or list items in the site separately.
- **Lists** — Backup of a SharePoint list will back up the whole list. On Item-Level Restore, users can only restore the whole list. Users cannot restore specific list item(s) in the list separately.

15.12 Backup / restore of Microsoft SharePoint Server farm configuration (DS-Recovery Tools)

Creation Date: January 21, 2013
Revision Date: March 27, 2018
Product: DS-Client (Windows) with DS-MLR Service (DS-Recovery Tools)

Summary

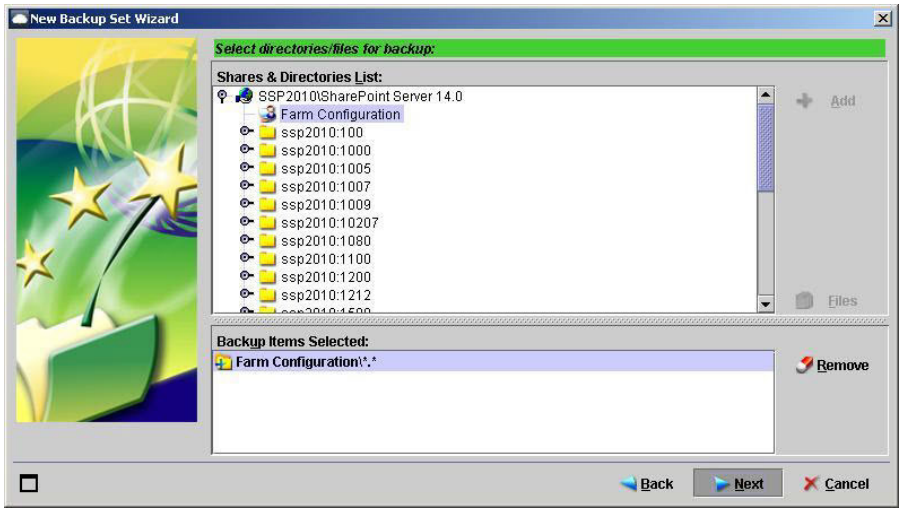
DS-Client supports backup and restore of the Farm Configuration for Microsoft SharePoint Server (Standalone Farm or Multi-Server Farm).

For instructions to create this kind of backup set, see: Section 6.9, “Microsoft SharePoint Server backup sets (Windows)”, on page 224.

How to backup

The DS-Client displays the Farm Configuration backup item for Microsoft SharePoint Servers if they are in that configuration.

1. On the **Sets** menu, click **New Backup Set**.
2. In the **New Backup Set Wizard** dialog box appears.
3. Select **Microsoft SharePoint Server**. (This is the one using the DS-Recovery Tools service, not the VSS-aware backup set type.)
4. Browse and select the Microsoft SharePoint Server you want to backup.
5. On the Shares & Directories List page, select **Farm Configuration** and add it to the backup items selection.



6. Finish the wizard and perform a backup.

Supported farm configuration backup / restore items

The Farm Configuration backup item includes the following components that can be backed up and restored. All these settings can be verified using the SharePoint Central Administration application.

InfoPath Forms Services:

- Settings
- Data Connections
- Form Templates
- Exempt User Agents
- SharePoint Server State Service

Microsoft SharePoint Foundation Web Application

SPUserCodeV4

NOTE: These can be verified by using PowerShell commands, by first getting the values before performing a backup, then changing those values by using PowerShell, then performing a restore and then checking the values again.

- AbnormalProcessTerminationCount
- CPUExecutionTime
- CriticalExceptionCount
- IdlePercentProcessorTime
- InvocationCount
- PercentProcessorTime
- ProcessCPUCycles
- ProcessHandleCount
- ProcessIOBytes
- ProcessThreadCount
- ProcessVirtualBytes
- SharePointDatabaseQueryCount
- SharePointDatabaseQueryTime
- UnhandledExceptionCount
- UnresponsiveprocessCount

Microsoft SharePoint Server Diagnostics Service

Microsoft SQL Server Reporting Services Diagnostics Service

Microsoft SharePoint Foundation Diagnostics Service

What is not backed up in the farm configuration

Any configuration data that is tied to individual Web applications, content databases, site collections and everything under (contained within) them are not considered as part of a farm configuration.

Settings that are tied to server names or a specific SharePoint farm topology are also not backed up in the Farm Configuration.

Restore details

You can have many Microsoft SharePoint Servers in a single Active Directory domain, but they cannot have the same machine name or use the same URL.

A single server cannot have two SharePoint installations on that same server and cannot have more than one farm.

If you provide the same server name during restore (as was backed up), the configuration details will be restored to the same farm. In case of a multi server farm (multiple servers playing different roles within a SharePoint farm), you must specify the server name that hosts the Central Administration application for the farm.

If you want to restore a SharePoint Farm Configuration to an alternate location, the target server must be in the same domain as the backup source.

Restore limitations

You can only restore the “Farm Configuration” to same version of SharePoint. You can only restore to similar types of farms (e.g. single-server farm to single-server farm or multi-server farm to multi-server farm).

15.13 Backup / restore of Oracle-SBT

Creation Date: March 02, 2010
Revision Date: April 10, 2013
Product: DS-Client (Linux)

Summary

This article covers various backup and restore issues for the Oracle-SBT backup sets. “SBT” refers to the Oracle System Backup to Tape functionality. The Oracle-SBT backup set is a special configuration of DS-Client that allows a native Oracle-SBT process to be re-directed through DS-Client to DS-System (instead of to tape).

IMPORTANT: This backup set type requires manual command input from the Oracle Server itself. All backup and restore commands must be initiated from the Oracle Server side, either through RMAN command-line or through Oracle Enterprise Manager. Only Oracle database administrators should attempt to use this backup set type.

For instructions to create this kind of backup set, see: Section 6.14, “Oracle-SBT database backup sets (Linux)”, on page 256. Additional documentation is available from the DS-Client installation DVD in the folder:
`/Software/Tools/Oracle_SBT_Library`

Troubleshooting

Error:

The following error message can appear in the DS-Client Event Log when you restore from an Oracle-SBT backup set:

```
SBT restore canceled: Remote side stopped the restore of this
file before all data was transmitted.
```

Reason:

The RMAN restore successfully completed and the restored file is good. This error can happen when you perform a tablespace restore. Because the restore is performed by RMAN, RMAN will read the backed up backup set and determine which tablespace needs to be restored. If the backup set contains the same named tablespace, you will not see this error. If the backup set contains any different tablespaces, you will see this error (i.e. if you are performing a selective restore of less than all the tablespaces in the backup set).

Example: You restore a tablespace from a whole database backup set, RMAN will read the backup set and restore only the tablespace you need. After the tablespace is restored, the SBT channel is released and RMAN stops. However, DS-Client still expects RMAN to continue sending the whole database in the backup set. This causes the above error in the DS-Client Event Log.

15.14 Backup / restore of VMware VADP backup sets

Creation Date: April 26, 2010
Revision Date: April 18, 2018
Product: DS-Client (Linux and Windows)

Summary

This article covers various backup and restore issues for the VMware VADP backup sets.

For instructions to create this kind of backup set, see: Section 6.18, “VMware VADP backup sets (Windows or Linux)”, on page 269.

Backup of VMware VADP backup sets using CBT

DS-Client can use CBT (Changed Block Tracking) for VMware VADP backup sets. If enabled, DS-Client attempts to reconfigure the virtual machine to allow tracking of the blocks of data that have changed. This option can improve the speed of incremental backup activities, but can also slow down the virtual machine since it consumes additional resources.

When CBT is enabled, the first backup activity will scan the virtual machine.

- For ‘thick disks’, the scan will be of the entire virtual machine’s disks.
- For ‘thin disks’, the scan will only cover the space occupied by the disks.

Subsequent backup activities will track the changes for the virtual machine files and will only retrieve the blocks of data that have changes. These blocks will be processed for master/delta generations and sent and saved to DS-System and/or Local Storage.

If CBT fails to be enabled (even if configured for use in the backup set), DS-Client will continue its incremental backup activities by reading the entire data of the virtual machine disks, processing the data for master/delta generations and sending the backup data to DS-System.

Backup / restore of virtual machine in a cluster

Backup of virtual machines on clustered hosts (VMware cluster) should be done through the VMware vCenter Server. Make sure to enter the IP address of the vCenter Server when creating the backup set. Then you can browse and select the specific virtual machine cluster to backup.

If you back up an individual virtual machine in a VMware cluster by specifying the host IP address when creating the backup set, subsequent backups can fail, depending on the configuration of the cluster.

Normally, a VMware DRS (Distributed Resource Scheduler) cluster's automation level is configured to be Fully automated for High Availability. This means the individual virtual machines that make up the cluster will be dynamically assigned to the best suited host at startup. This means the virtual machine might be automatically moved to another host when the VMware cluster (or virtual machine) is restarted.

Since you can back up individual virtual machines in a VMware cluster (by specifying the host IP address when creating the backup set), if the virtual machine moves to another host, it will not be found by the backup set and errors will occur. However, if the virtual machine is selected through the vCenter Server, the location of the virtual machine is always known (even if it moves to another host).

If you have to back up a specific virtual machine in a VMware cluster (using a dedicated backup set to a specific host machine's IP address), you must configure the cluster to not move that virtual machine to different hosts.

- In the Virtual Center, edit the VMware DRS cluster settings: "Enable individual virtual machine automation levels".
- For the specific virtual machine that you want to back up, change its **Automation Level** setting to **Disabled**. This will prevent the vCenter Server from migrating the virtual machine.

NOTE: It is easier to create the backup set by specifying the vCenter Server's IP address as the source in the New Backup Set Wizard. This allows you to browse and select the specific virtual machine from the cluster and you will not need to change the automation settings for the cluster.

Locking of virtual machines during backup and restore

DS-Client automatically locks the target virtual machine during VMware VADP backups and restores. This will prevent any attempts to delete or migrate the target until the backup or restore process has completed.

Backup of fault tolerant virtual machines

DS-Client cannot back up virtual machines that have fault tolerance (FT) enabled since it depends on making a snapshot of the virtual machine to back it up and VMware does not support snapshot creation on FT virtual machines.

VMware has documented the full procedure for backup / restore of FT virtual machines using templates in their knowledge base article # 1016619.

Restore to alternate location (different VMware DataCenter connected to different vCenter Server)

DS-Client must have network access to the vCenter Server and all involved ESXi host(s).

Incremental virtual machine restore of VMware VADP backups

Incremental virtual machine restore for VMWare VADP backup sets is available only in Linux DS-Client.

Requirements for incremental virtual machine restore:

- You must select the **Attempt incremental restore** check box in the Restore Now Wizard when you start a restore session for a VMware VADP backup set. This configures the backup set for **Incremental** virtual machine restore. Otherwise, Linux DS-Client will perform **Full** virtual machine restore by default.

  In the first restore session after a VMware VADP backup set has been configured for Incremental virtual machine restore, Linux DS-Client will perform a Full virtual machine restore, and backup set information will be saved with the restored virtual machine. Then, when you configure a subsequent restore session for the backup set, the **Attempt incremental restore** check box is selected in the Restore Now Wizard, and Linux DS-Client will attempt Incremental virtual machine restore for the backup set in that restore session and onward until you clear the check box.

- The virtual machine must already exist in the target restore destination as a result of a previous virtual machine restore performed by DS-Client.

Recommended practices to aid successful incremental virtual machine restores:

When a virtual machine restored by DS-Client is powered on, VM configuration parameters will likely change. As a result, DS-Client will disallow an Incremental virtual machine restore and force a Full virtual machine restore in the next restore session. For more information, see Section 15.14, “VM configuration changes and incremental virtual machine restore:”, on page 550.

To aid a successful Incremental virtual machine restore in the next session, practice the following recommendations:

- To test a restored virtual machine, clone the virtual machine using VMware tools, and use the cloned virtual machine for testing. Do not test the restored virtual machine directly. This recommendation applies whether the most recent restore of a virtual machine was Incremental or Full.
- Do not power on a restored virtual machine manually or directly in the vCenter Server unless you have decided to use the restored virtual machine as a production machine.

VM configuration changes and incremental virtual machine restore:

Before initiating a restore for a VMware VADP backup set configured for Incremental virtual machine restore, DS-Client compares the backup generation to be restored and the virtual machine at the destination location. If DS-Client detects any differences in VM configuration parameters in a restore session, DS-Client will not perform an Incremental virtual machine restore but force a Full virtual machine restore instead.

FLR (File Level Restore) from VMware VADP backups

File Level Restore (FLR) allows you to restore individual files from a VMware VADP backup set.

NOTE: In the backup session immediately after the FLR feature is enabled, a full backup of the virtual machines is performed regardless of whether the CBT option is enabled for the backup set. All subsequent backups will be incremental.

Requirements:

The FLR option must be enabled in the New Backup Set Wizard or on the Option tab of the Backup Set Properties dialog box before performing the backup.

NOTE: To use FLR to restore from local storage when using a Linux DS-Client, you must enable both the FLR and CBT options when creating the backup set.

Limitations:

- FLR is not supported for BLM and Disc/Tape restores.
- FLR is not supported for Instant Recovery backup sets.
- When using a Windows DS-Client, FLR is not supported for Self-Contained backup sets.
- When using a Linux DS-Client, FLR can only restore to the local machine on which DS-Client is running. FLR cannot restore to a remote location through NAS, UNIX-SSH, or NFS.
- When using a Linux DS-Client, drive letter information will be missing in DS-User. Only Windows DS-Client with NTFS virtual machines will display drive letter information.
- FLR is supported when creating Online backup sets with the Save on Local Storage or Save in instant recovery vault option. However, when performing a File Level Restore (FLR) of an instant recovery backup set, the files are always restored from the DS-System online storage.

Supported partition types:

FLR is supported on Windows NTFS and Linux Ext4 file systems installed on one of the following Partition IDs for the target virtual machine:

Partition ID	Description
00h	Empty partition.
05h	Extended partition.
07h	Installable file system.
83h	Native Linux file system.
8Eh	Single disk Linux LVM

Table 1 Supported partition types

Notes:

- For the single disk Linux LVM partition type, FLR only supports the following logical volumes:
  - Linear
  - Mirror

  NOTE: You can check the type of the LVM volume by using the "`lvdisplay -m`" command in a Linux environment. Also note that FLR does not support any type of mixed mapping (for example, if you have a logical volume using both Linear and Stripe mapping).

- FLR can fail on corrupted partitions (for example, due to manual changes to a partition type name). To view the configuration of disk partitions of the target backup virtual machine, use any application that provides disk configuration information (like the Disk Management tool in Windows or the Disk Utility tool in Red Hat environments) and view the following:
  - partition name, type, and size
  - file system type
  - bootable and primary partitions
- In the case of an unsupported partition type, FLR shows an empty partition in the DS-User with the name starting with "Unsupported ... partition ...".

TROUBLESHOOTING: Backup of a migrated virtual machine using the CBT feature gets file fault error

Error:

A known issue for VMware VADP backup sets using the CBT feature occurs in a very specific scenario where an incorrectly configured virtual machine is backed up. The following steps describe the situation when this error occurs:

- Migrate a virtual machine using the vCenter Server.
- Back up the migrated virtual machine with a VMware VADP backup set using the CBT feature.
- When you backup, the following error appears:

```
Error opening file disk2000.vmdk for reading
QueryChangedDiskAreas: SOAP 1.1 fault: "":ServerFaultCode [no
subcode] "Error caused by file /vmfs/volumes/
4ac65eb0-8b20da10-c550-0030483062fe/rhel61thin-test/
rhel61thin-test.vmdk" Detail: <FileFaultFault
xmlns="urn:vim25" xsi:type="FileFault"><file>/vmfs/volumes/
4ac65eb0-8b20da10-c550-0030483062fe/rhel61thin-test/
rhel61thin-test.vmdk</file></FileFaultFault> (rhel61thin-test)
(VMware
VADP\10.20.30.111\\DataCenter\Test\rhel61thin-test\disk2000.vm
dk).
```

Reason:

This is because after migration, even though the virtual machine has a property setting of CTKenabled=true, it has not been properly reconfigured by the vCenter Server. If this error occurs, it means the virtual machine has a configuration problem and probably should not be used.

- If this error occurs you must fix the virtual machine with the fix described below.

Fix (after the file fault error is encountered):

One possible fix is to make a modification that triggers the vCenter Server to run a re-configuration cycle on the virtual machine. This can be done by performing the following steps:

1. Power off the target virtual machine.
2. Using the vCenter Server, select the virtual machine and select **Edit Settings**. The Virtual Machine Properties dialog box appears.
3. Select the Virtual Disk. In the section Mode, select **Independent**, and then click **OK**.
4. Select the virtual machine again, and then click **Edit Settings**. The Virtual Machine Properties dialog box appears.
5. In the Mode section, clear the check box **Independent**, and then click **OK**.

   The vCenter Server should perform a re-configuration of this virtual machine (this can take a few minutes). After re-configuration is finished, power on the virtual machine. You should now be able to back up the virtual machine with the Use CBT feature.

Suggested best practice (to prevent the file fault error):

Whenever you migrate a virtual machine using the vCenter server, always perform the steps in the Fix (above) that will trigger the vCenter server to run a re-configuration cycle on the virtual machine.

15.15 VMware transport libraries

Creation Date: April 16, 2013
Revision Date: June 03, 2013
Product: DS-Client (Linux and Windows)

Summary

15.16 VMware VADP virtual machine name limitations

Creation Date: October 29, 2013
Revision Date: October 29, 2013
Product: DS-Client (Linux and Windows)

Summary

This article applies to VMware VADP backup sets. The VMware virtual machine name cannot contain certain special characters because they are treated differently when handling the machine for backup. If you do, DS-Client cannot back up that virtual machine.

Do not use any of the following characters in a virtual machine name:

%, &, *, $, #, @, !, \, /, :, *, ?, “, <, >, |, ;, ‘

This is a VMware issue. Special characters cause the vCenter Server to not resolve the machine.

For instructions to create this kind of backup set, see: Section 6.18, “VMware VADP backup sets (Windows or Linux)”, on page 269

Error messages

The error on backup of the *.vmdk file can display something like:

```
Error opening file disk2000.vmdk for reading...
```

Workaround

Try renaming the machine without a special character. Make a new backup set with that machine and attempt to back up again.

Additional information

For more information, see VMWare Knowledge Base #2046088.

15.17 Backup / restore of Microsoft SQL Server (VSS-aware) backup sets

Creation Date: May 01, 2010
Revision Date: March 26, 2018
Product: DS-Client (Windows)

Summary

This article covers various backup and restore issues for Microsoft SQL Server backups using the VSS-aware backup set type.

For more instructions, see Section 6.19.5, “Creating a Microsoft SQL Server (VSS-aware) backup set”, on page 289.

Backup of a Microsoft SQL Server cluster

See Section 15.4, “Backup / restore of a Microsoft SQL Server cluster”, on page 517.

MASTER database does not support differential backup

VSS-aware backup sets support only backup of the `master` database from any Microsoft SQL Server instance with the **Full** Database backup policy.

If you add the `master` database to a VSS-aware backup set with the **Full+Differential** policy selected, the backup will fail on every differential backup attempt.

Database backup policy

Database backup policy options can help reduce the backup time for very large databases (where the dump takes up significant time).

You can configure the backup set to perform differential database backups. Differential backups contain all the changes to the database since the last full dump.

Full dump: Always	[Default] This is the default behavior for all Microsoft SQL Server backups. Each backup of the SQL Server performs a full dump (VSS Snapshot) of each database.
Full dump: Plus Differential	Performs a full dump (VSS Snapshot) of the database on first backup, followed by differential backups until another full backup is needed (*).
(*) A full dump is needed (other than first time) when: • a database has been backed up by another backup set (or manually from the SQL tools); • a database has been restored (either from another database or an earlier generation); • the database properties have been modified (recovery model switched to 'simple'); • a set number of consecutive differential backups have been performed, unless over-ruled with the 'Do not start full dump' option. This uses the same number set in the DS-Client Advanced Configurations **MasterGenerations** parameter (note: this parameter is also used for another purpose).	

NOTE: DS-Client can take advantage of the differential backup policy if the backup set (of the SQL database) is the only process that backs up that target. If another backup set is used to backup the database (or the internal SQL commands are used to perform manual backups / dumps), then the backup policy requires the next backup to be a full dump.

Database Backup Policy Full Backup Schedule Over-ride Rules:

- These rules are optional. They allow greater control when a Full Backup can occur (e.g. not during business hours).

IMPORTANT: Full dumps can be delayed, but a full database dump needs to be performed at regular frequency to protect the integrity of the database backup. By default, DS-Client allows a full backup to be skipped a maximum of 120 consecutive times. This number is configurable using the advanced parameter **MaxNonFullDumps**. For more information, see Section 3.1.8, "Configuring the advanced settings", on page 33.

For more information about database backup policy options, see Section 15.4, "Advantages and disadvantages of different database backup policies", on page 515.

Integrating with Nimble Storage

You can create Microsoft SQL Server (VSS-aware) backup sets that can be integrated with Nimble Storage to create persistent hardware snapshots of the Nimble Storage volumes. Users can store the databases on Nimble Storage volumes and then restore only the selected databases from the Nimble Storage snapshot or revert the entire volume.

When you integrate with Nimble Storage, DS-Client creates snapshots in up to three locations:

- DS-System
- Production Nimble Storage location
- Nimble Storage replication partner (Optional)

DS-Client enforces retention on the snapshots at these locations based on your configuration.

NOTE: To specify how the copying of data from the snapshot to the destination is triggered, you can configure the advanced parameter **DSClientPerformCopyFromSnapshot**. For more information, see Section 3.1.8, “Configuring the advanced settings”, on page 33.

Prerequisites for Nimble Storage integration:

Before you can integrate a Microsoft SQL Server (VSS-aware) backup set with Nimble Storage, you must do the following:

1. Ensure that the Nimble Storage Windows Integration Toolkit has been installed on the Microsoft SQL Server host. For information, see the Client Software Installation Guide.
2. Ensure that the VSS Nimble Provider has been installed on the Microsoft SQL Server host. For information, see the *Client Software Installation Guide*.
3. Manually create one or more volume collections, depending on your environment and user requirements. Configure each volume that contains the database(s) you plan to create snapshots for with a volume collection, and create an externally triggered schedule for each collection.
4. (Optional) If you want to enable replication, configure a Nimble Storage replication partner in the Nimble Storage Management Console. You must provide the name or IP address of the replication partner on which you want the hardware snapshots to be created.
5. If you have configured CHAP on the volumes where the Nimble Storage resides, you must provide the CHAP credentials for DS-Client to use. You can only provide one set of CHAP credentials for each Microsoft SQL Server (VSS-aware) backup set. All volumes added to the backup set must be configured with the same set of CHAP credentials.

NOTE: Determine the retention settings that you need in the production Nimble Storage, in the Nimble Storage replication partner, and in DS-System. You will be asked to specify the maximum snapshots to be kept at each of these locations.

Restoring a full database from Nimble Storage snapshots:

When a Microsoft SQL Server (VSS-aware) backup set has been integrated with Nimble Storage, you can restore a full database from the hardware snapshots on the Nimble Storage array.

If you are restoring a full database from a production Nimble Storage and want to automatically establish the connection between the Microsoft SQL Server host and the production Nimble Storage where the hardware snapshot is stored, select **Use automount for restore** in the Restore Now Wizard.

If you are restoring a full database from a Nimble Storage replication partner, you must do the following before starting the restore process:

- In the Nimble Storage Management Console, set the snapshot online. This refers to the snapshot from which you want to restore the full database.
- Connect the hardware snapshot from the Nimble Storage to the Microsoft SQL Server host via the iSCSI initiator.
- If the volume containing the hardware snapshot is configured with CHAP, you must provide the required credentials.
- In the Microsoft SQL Server host, mark the disk online and assign a drive letter to the disk. This refers to the disk that contains the target database in the Microsoft SQL Server host.

Like other Microsoft SQL Server backup sets, a Microsoft SQL Server (VSS-aware) backup set that is integrated with Nimble Storage can be used in combination with another Microsoft SQL Server (Classic) backup set configured with the Transaction Log Only database backup policy. For more information, see Section 15.4, “Using the Transaction Log Only database backup policy”, on page 516.

Limitations of Nimble Storage integration:

The following limitations apply to Nimble Storage integration with Microsoft SQL Server (VSS-aware) backup sets:

- Full dump always is the only database backup policy that supports integration with Nimble Storage for Microsoft SQL Server VSS-aware backup sets.
- When the production Nimble Storage contains multiple partitions, the automount option for restoring a full database from Nimble Storage snapshots is not supported.
- The automount option for restoring from Nimble Storage snapshots is supported for restoring from the production Nimble Storage only.

Data integration issues

Each SQL database is presented as a component by the SQL VSS Writer. In the VSS-based “SQL restore”, a component must be restored with all its contents (the file snapshot) based on the rules specified in its Metadata.

- These issues are similar to those in VSS-aware backups of Microsoft Hyper-V.
- See Section 15.19, “Data integration issues”, on page 577.

Truncate Transaction Log behavior

The truncation of Microsoft SQL Server databases transaction logs is automatically handled by the SQL Server engine.

- For databases configured in Simple recovery mode, the transaction logs should be truncated whenever a full backup is taken (whether using traditional SQL backups or VSS-aware ones).
- For databases configured in Full or Bulk-logged recovery mode, the transaction logs should be truncated whenever a transaction log backup is performed, if a checkpoint has occurred since the previous backup.

Since Microsoft does not support VSS-aware transaction log backups for Microsoft SQL Server, the database administrator will need to manually take transaction log backups using various tools, like DS-Client using traditional SQL Server backups, or SQL Server Management Studio, to truncate them.

Note that whenever log truncation occurs, it will only free up the space within the log files, but not reduce the physical files' size. There are also various factors that can delay the transaction logs truncations (see Microsoft's site for more details).

Alternate restore location issues for pure files

VSS-aware backups have the ability to restore the “pure files” from a backup. These files can be usable by the corresponding Microsoft management tools.

To restore Microsoft SQL Server databases in alternate location, you must first restore the database files as pure files using the Restore Wizard:

1. Select the VSS-aware backup set and start the restore wizard. Click **File Restore**.

   The Database Tree changes to display the individual file components (not the database instances).

2. Browse and select the directories and files to restore. You will need the *.ldf and *.mdf files to restore an Microsoft SQL Server from pure files.

3. Click **Next**.

4. Select the restore location and complete the restore.

After the pure files have been restored, you can use Microsoft SQL Management Studio to attach the databases to the destination Microsoft SQL Server instance. Consult the Microsoft documentation for further instructions.

Pure files restores of differential backups

If your VSS-aware SQL backup is using the Full+Differential policy, there is an additional differential file (*.mdf.diff) that forms part of the backup. Since this is saved in a format that only DS-Client would normally use, you have an additional, manual step to roll up the changes from the *.mdf.diff into the *.mdf file.

This assumes the “File Restore” method is selected in the first DS-Client restore wizard dialog box for the selected VSS-aware SQL Server backup set. After restoring the .mdf, .mdf.diff, and .ldf files for the selected database in any chosen folder in an alternate location, a command line tool named “VssDiffApply.exe” (available on the Release DVD in the “Tools” folder) needs to be used to merge the .mdf and .mdf.diff files for that database.

1. Copy the “VssDiffApply.exe” tool to the same location as the restored .mdf, .mdf.diff, and .ldf files.
2. Open the command prompt in Windows as an administrator.
3. Change directory to the location where the files were restored and run the following command:

   ```
   VssDiffApply.exe [/y] <.mdf file> <.mdf.diff file>
   ```

4. After VssDiffApply.exe is run successfully, attach the .mdf database file to the desired SQL Server instance using SQL Management Studio.

Backing up a database in an Always On Availability Group

To create a backup set of a Microsoft SQL Server Always On Availability Group, type the name or IP address of the Availability Group Listener. DS-Client will automatically detect this type of configuration and display all databases that are currently in the Availability Group.

Restoring a database in an Always On Availability Group

Before you restore a database of an Always On Availability Group, you must remove the target database from the Availability Group. After a successful restore, you can add the database back to the Availability Group. For more information, see the Microsoft SQL Server documentation.

15.18 Backup / Restore of Microsoft Exchange Server (VSS-aware) backup sets

Creation Date: May 18, 2010
Revision Date: October 16, 2018
Product: DS-Client (Windows)

Summary

This article covers various backup / restore issues for Microsoft Exchange Server backups (using the VSS-aware backup set type).

For instructions to create this kind of backup set, see: Section 6.19.2, “Creating a Microsoft Exchange Server (VSS-aware) backup set”, on page 283

Database backup policy (VSS-aware sets)

Database backup policy options can help reduce the backup time for very large databases (where the dump takes up significant time).

You can configure the backup set to perform differential database backups. Differential backups contain all the changes to the database since the last full dump.

Full dump: Always	[Default] This is the default behavior for all Microsoft Exchange Server backups. Each backup of the Exchange Server performs a full dump (VSS Snapshot) of each database.
Full dump: Plus Differential	Performs a full dump (VSS Snapshot) of the database on first backup, followed by differential backups until another full backup is needed (*).
Full dump: Plus Incremental	Performs a full dump of the database on first backup, followed by incremental backups until another full dump is needed (*).
(*) A full dump is needed (other than first time) when: • a database has been backed up by another backup set (or manually from the Exchange tools); • a database has been restored (either from another database or an earlier generation); • the database properties have been modified (recovery model switched to ‘simple’); • a set number of consecutive differential backups have been performed, unless over-ruled with the **Do not start full dump** option. This uses the same number set in the DS-Client Advanced Configurations **MasterGenerations** parameter (note: this parameter is also used for another purpose).	

NOTE: DS-Client can take advantage of the differential backup policy if the backup set (of the Exchange database) is the only process that backs up that target. If another backup set is used to backup the database (or the internal Exchange commands are used to perform manual backups / dumps), then the backup policy requires the next backup to be a full dump.

Database Backup Policy Full Backup Schedule Over-ride Rules:

These rules are optional. They allow greater control when a Full Backup can occur (e.g. not during business hours).

IMPORTANT: Full dumps can be delayed, but a full database dump needs to be performed at regular frequency to protect the integrity of the database backup. By default, DS-Client allows a full backup to be skipped a maximum of 120 consecutive times. This number is configurable using the advanced parameter **MaxNonFullDumps**. For more information, see Section 3.1.8, “Configuring the advanced settings”, on page 33.

For more information about Database Backup Policy options, see Section 15.4, “Advantages and disadvantages of different database backup policies”, on page 515.

Data integration issues

Each Exchange database is presented as a component by the Exchange VSS Writer. In the VSS-based Exchange restore, a component must be restored with all its contents (the file snapshot) based on the rules specified in its Metadata.

These issues are similar to those in VSS-aware backups of Microsoft Hyper-V.

See Section 15.19, “Data integration issues”, on page 577.

Truncation of transaction log with VSS-aware backup sets

The truncation of transaction log files is controlled by Microsoft components. How the truncation is triggered differs depending of the kind of backup being performed (for example, non-DAG configurations versus DAG replicated configurations). For more information, see Microsoft Developer Network documentation.

Restore issues

The DS-Client can only restore a Microsoft Exchange mailbox database if the destination database for the restore is in ‘mounted’ state.

DS-Client performs the following steps during a restore of a Microsoft Exchange Server (VSS-aware) backup set:

1. Checks if the destination database for restore is in ‘mounted’ state.
2. Retrieves information from the mounted database, including physical path and database GUID.
3. Dismounts the database.

4. If restoring to the original location: Replaces the database files in the physical location. If restoring to an alternate location: Restores logs to a “restoredlogs” folder, then restore the Exchange database files to the physical location. VSS Writers will apply the logs from the restoredlogs folder and then the directory will be removed.
5. Mounts the Microsoft Exchange database.

File restore to recovery database (RDB)

A direct VSS restore to a Recovery Database (RDB) is not supported. However, you can use the File Restore method to restore the backup files, then manually load those files to the RDB.

1. Restore the Exchange files before creating the RDB.
   a) **DS-User** > **Restore Now**: In the Restore Wizard click **File Restore**.
   b) For each database you want to restore, select the entire backup folder (including all log files).
   c) Restore to the original or alternate location, as required.
2. When you create the RDB, specify the restored database name.
3. Before mounting the database, run the “eseutil” in the database directory, which will reset the database to a clean shutdown state. For example:

   ```
   eseutil  /r e00 /i /d
   ```
4. Mount your RDB.

NOTE: Only one RDB can be mounted at a time.

Item-level restore

NOTE: This is the same capability as for Microsoft SharePoint described in the Knowledge Base article in Section 15.20, “Backup / restore of Microsoft SharePoint Server (VSS-aware) backup sets”, on page 580.

VSS-aware backups of Microsoft Exchange Server have a granular restore capability that allows you to restore at the individual item-level from a backed up Microsoft Exchange database.

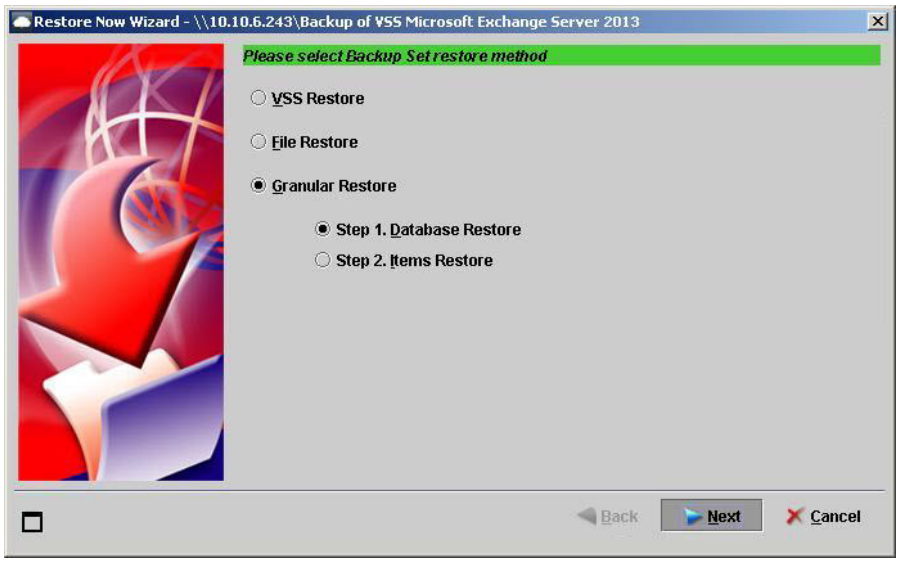
Requirements:

- The backup must be made using the VSS-aware backup set type.

- The target Exchange server where you want to perform the Item-Level restore must have DS-Recovery Tools installed and running. This is a separate installation. For detailed instructions, see the *Client Software Installation Guide*.
- The DS-Recovery Tools service account must have access to the Microsoft Exchange server where the items are going to be restored.

There are two steps to performing a Granular Restore: Step 1) Restore the database and Step 2) Restore Items. The first step restores the Exchange database at the point-in-time that contains the items you want to restore. The second step involves connecting to that database and selecting the individual items you want to restore.

1. Browse the Backup Sets tree and select the one you want to restore.
2. On the **Restore** menu, click **Restore Now**. The Restore Now Wizard appears.
3. On the Select the Restore Method page, select **Granular Restore** and then **Step 1. Database Restore**.



F1 Help: Select the Restore Method

NOTE: If you are restoring from a BLM Restorable Image or Disc/Tape media, you can only perform Step 1 - the database restore from that media. Step 2 must always be performed from the database restored in Step 1.

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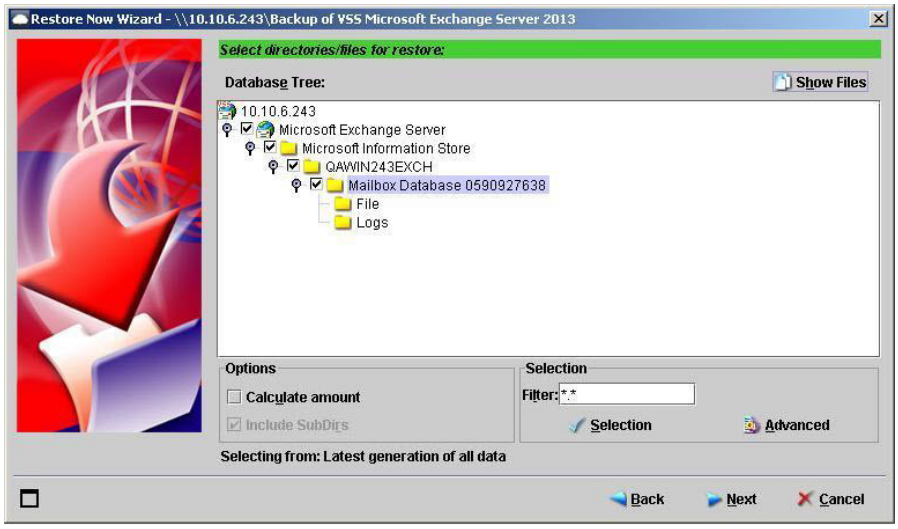
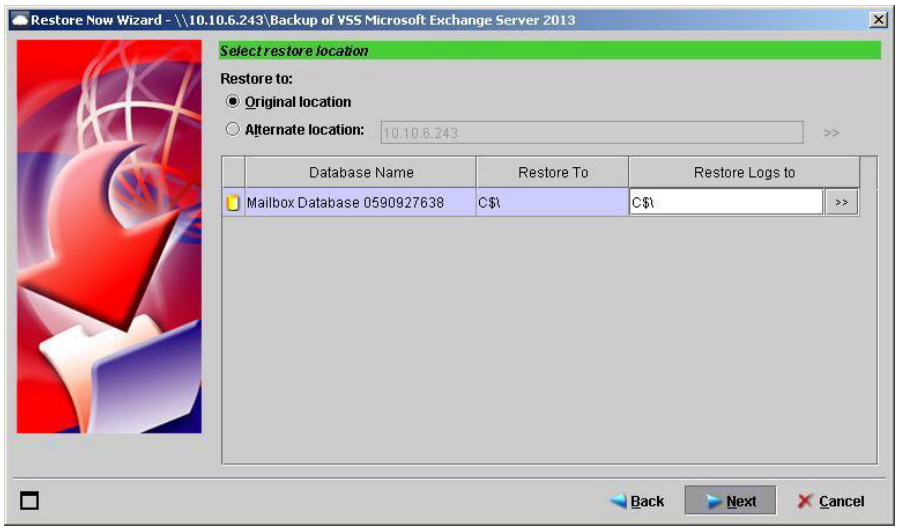
4. Click **Next**.
5. On the **Select directories/files to restore** page, select the Exchange database to restore.



F1 Help: Select directories / files (Restore / BLM / Delete / Validation)

6. Click **Next**.

7. On the **Select restore location** page, choose where you want to restore the database and log files.



F1 Help: Select restore location (Exchange DB - Granular Restore)

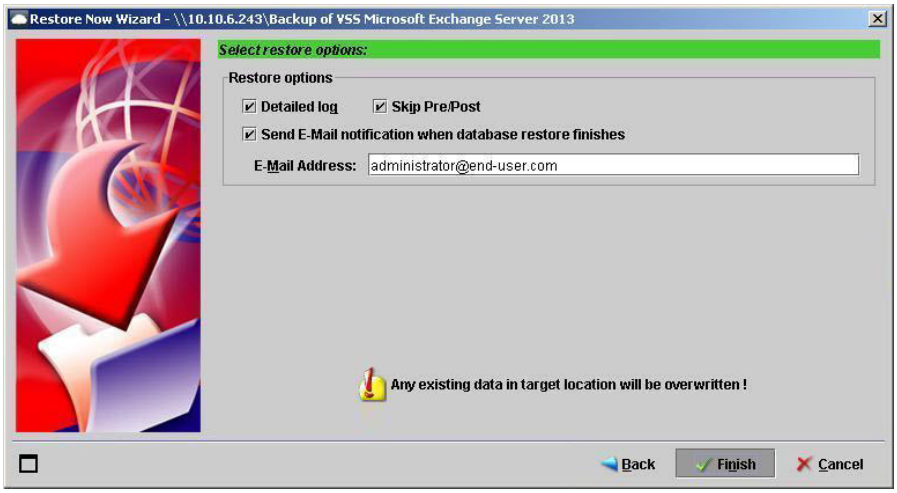
In general, it is easier to restore both the database and the log files to the same location. Remember, you are only restoring these files temporarily so that you can perform Step 2 (the Item-Level restore).

8. Click **Next**.

F1 Help: Select Restore Performance Options (Windows DS-Client)

On the **Select restore performance options** page, the options are intended for large backup sets in high performance environments. In general, you should use the defaults and skip to the next dialog box.

9. Click **Next**.



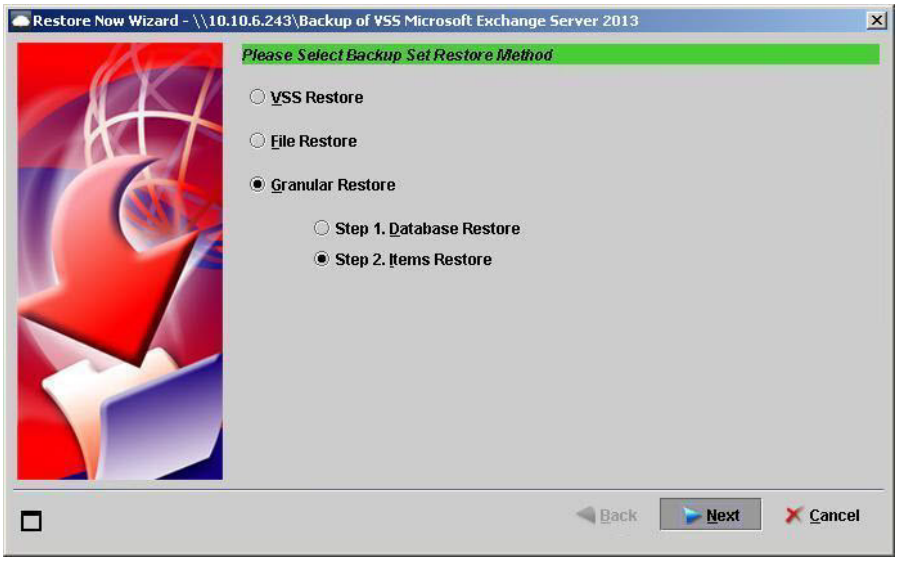
F1 Help: Select Restore Options (VSS-aware Exchange / SharePoint)

10. On the **Select restore options** page, select the Exchange database restore options and then click **Finish**.

    The restore process begins. After the database has been restored to a Microsoft SQL server, you can proceed to step 2 (restoring at Item-Level).

11. Browse the Backup Sets tree and select the same backup set. On the **Restore** menu, click **Restore Now**.

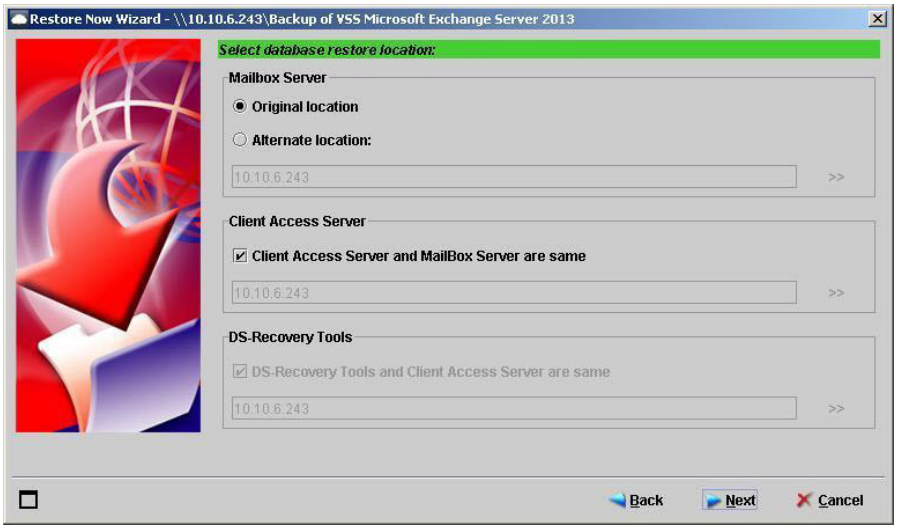
12. On the Select the Restore Method page, select **Granular Restore** and then **Step 2. Items Restore**.



F1 Help: Select the Restore Method

13. Click **Next**.

14. On the **Select database restore location** page, select the target Microsoft Exchange Server where you want to restore at item-level from the restored database.

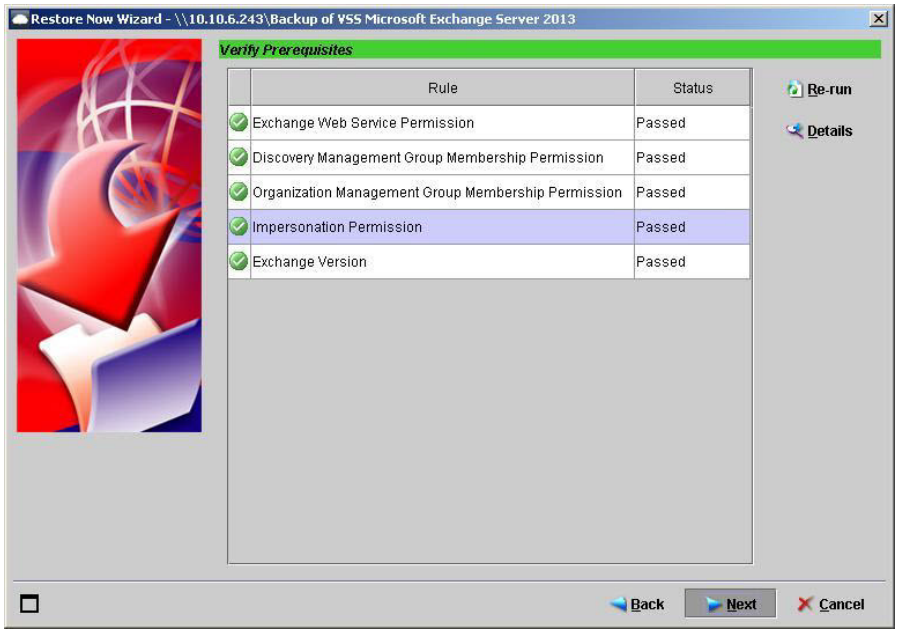


F1 Help: Select database restore location (Exchange Item-Level)

NOTE: The Microsoft Exchange Client Access Server you select should be running the DS-Recovery Tools (separate installation required). If it is not running on the same machine as the Microsoft Exchange Mailbox Server, specify the machine in this dialog box. The DS-Recovery Tools (DS-MLR) service should be running.

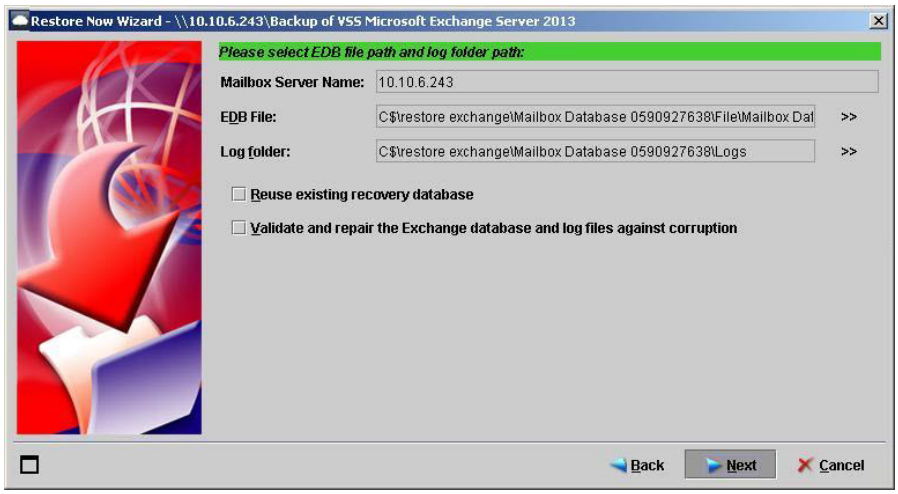
---

15. Click **Next**. On the **Verify Prerequisites** page, wait until DS-Client completes the compatibility check for the selected restore location. You can only continue when all prerequisite checks have passed.



F1 Help: Verify Prerequisites (Exchange Item-Level)

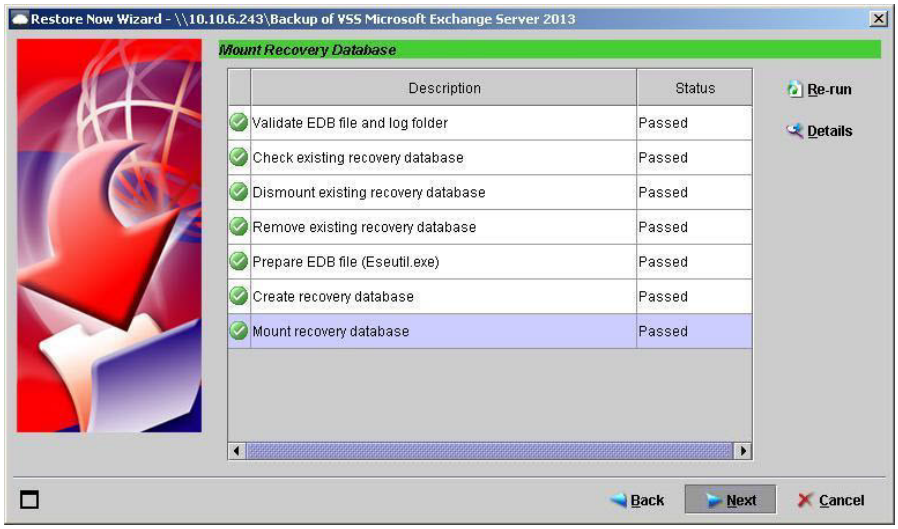
16. Click **Next**.
17. On the **Select EDB file path and log folder path** page, specify the restored database from Step 1. Database Restore.



F1 Help: Select EDB file path and log folder path (Exchange Item-Level)

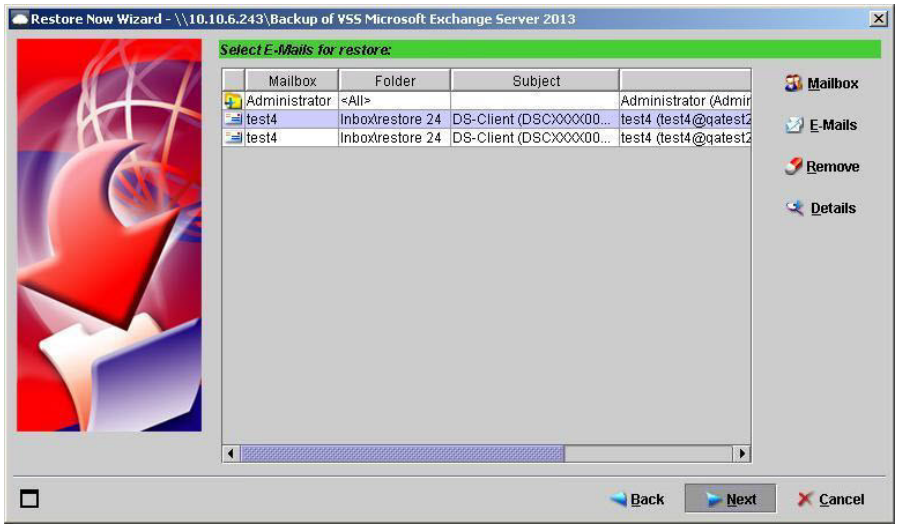
18. Click **Next**.
19. On the **Mount Recovery Database** page, DS-Client takes the selected Microsoft Exchange database file and prepares it for Item-Level restore.

    You can proceed to the next dialog box only when all checks have passed.



F1 Help: Mount Recovery Database (Exchange Item-Level)

20. Click **Next**.

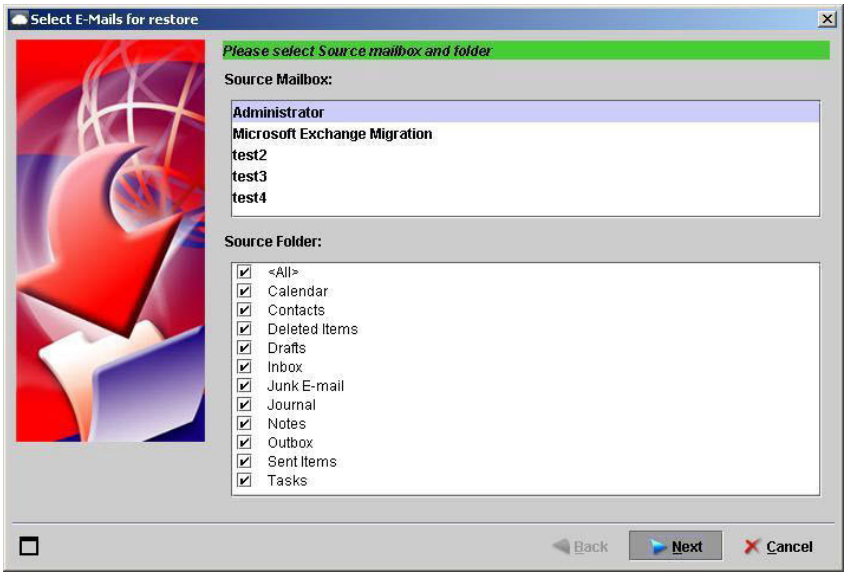


F1 Help: Select E-Mails for restore (Exchange Item-Level)

21. On the **Select E-Mails for Restore** page, configure the list of mailboxes and emails for restore.

22. To restore an entire mailbox, click **Mailbox**.

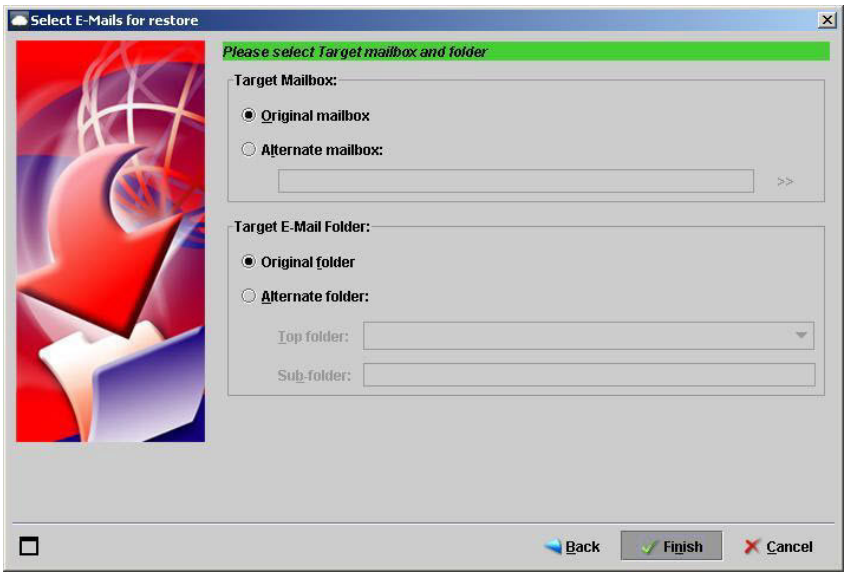
a) In the **Source Mailbox** section, select the one you want to restore. You can select one mailbox per pass through the wizard.



F1 Help: Select Source Mailbox and folder (Exchange Item-Level)

b) In the **Source Folder** section, select the folders to restore from the mailbox.

c) Click **Next**.



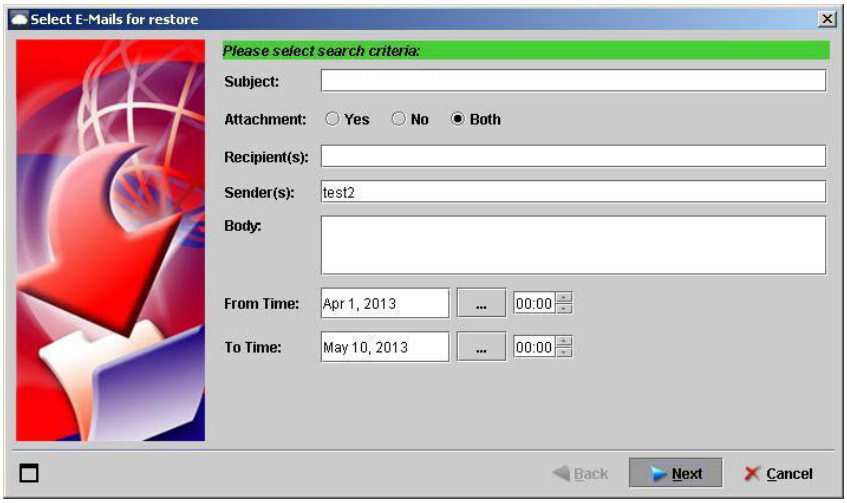
F1 Help: Select Target Mailbox and folder (Exchange Item-Level)

d) Select the target destination mailbox and folder for restore.

e) Click **Finish**.

23. To restore specific emails, click **E-Mails**.

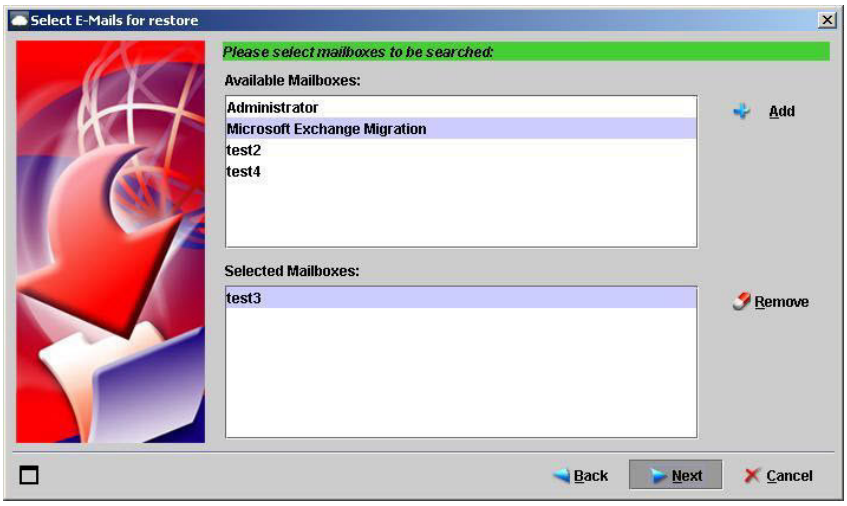
a) Enter the search filter you want to use. The wizard will search for emails matching your input.



F1 Help: Select Search Criteria (Select E-Mails for restore wizard)

b) Click **Next**.

c) Select the mailboxes that you want to search.

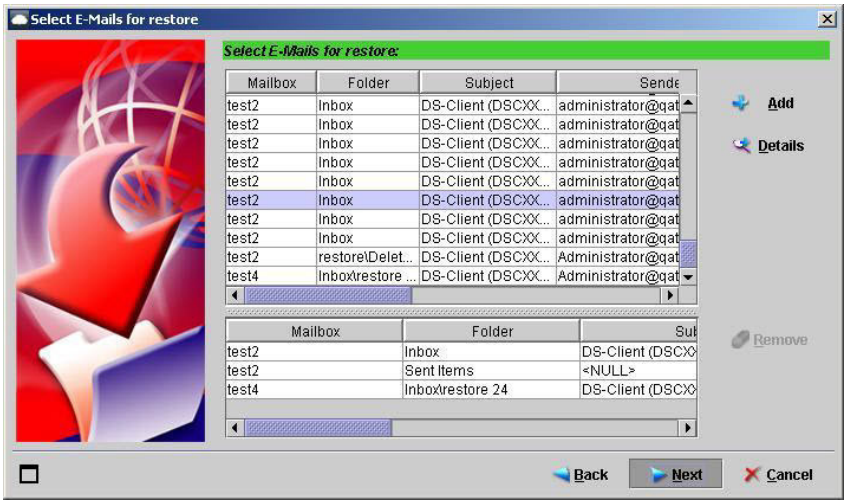


F1 Help: Select Mailboxes to be searched (Select E-Mails for restore wizard)

d) Click **Next**. The Wizard will search only mailboxes in the **Selected Mailboxes** list.

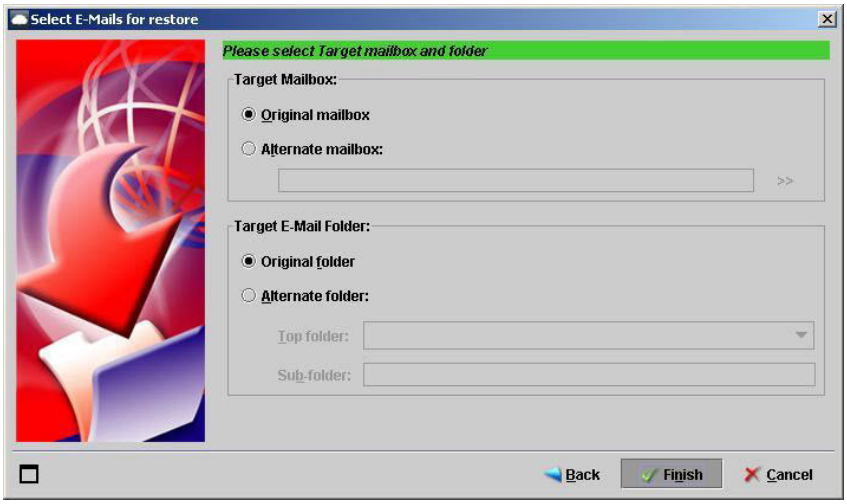
e) Select the emails that you want to restore from the list in the top section, and then click **Add**.

f) Repeat until you have added all the emails you want to restore.



F1 Help: Select E-Mails for Restore (Select E-Mails for restore wizard)

g) Click **Next**. Choose the destination where you want to restore.

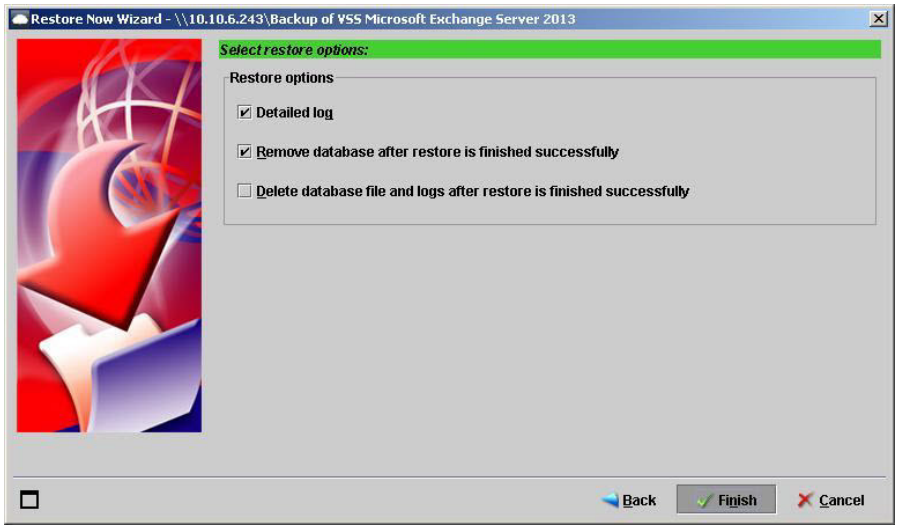


F1 Help: Select Target Mailbox and folder (Exchange Item-Level)

h) Click **Finish**.

24. On the **Select E-Mails for Restore** page, continue adding mailboxes and emails until you have completed your restore selection, and then click **Next**.

25. On the **Select restore options** page, select any restore options.



F1 Help: Select restore options (Exchange Item-Level)

26. Click **Finish**.

15.19 Backup / restore of Microsoft Hyper-V Server (VSS-aware) backup sets

Creation Date: March 25, 2010
Revision Date: April 13, 2018
Product: DS-Client (Windows)

Summary

This article covers various backup / restore issues for Microsoft Hyper-V backups (using the VSS-aware backup set type). With the DS-Client software you can perform online backups of Microsoft Hyper-V virtual machines.

For instructions to create this kind of backup set, see: Section 6.19.3, “Creating a Microsoft Hyper-V Server or Cluster Hyper-V (VSS-aware) backup set”, on page 286.

Requirements for the backup and restore of Microsoft Hyper-V virtual machines

- To perform backup/restore with Microsoft Hyper-V VSS Writer, the “Hyper-V Virtual Machine Management” service must be running on the target server.
- For application consistent checkpoints, ensure that Hyper-V Integration Services is installed on the guest operating system of the virtual machine.

Backup policy

- Based on Microsoft Hyper-V VSS Writer for both backup and restore.
- The backup unit is the Hyper-V virtual machine (not individual files within the virtual machine). A Hyper-V virtual machine is a group of files governed with strong data integration. The backup mechanism is called the “Saved State” method, where the virtual machine is put into a saved state during the snapshot process. Snapshots are taken of the appropriate volumes, and the virtual machine is returned to the previous state after the snapshot process is done.
- The GUID of Hyper-V virtual machine is the identifier for the Hyper-V virtual machine. This means, the GUID of Hyper-V virtual machine is considered as the **file name** of the virtual machine. The name of the virtual machine can be saved as a description of the virtual machine (note that the virtual machine name might not be unique for all virtual machines in a host).
- Hyper-V WMI APIs are used to search for the virtual machines in a host server. This is required when creating a Microsoft Hyper-V backup set, allowing users to browse for virtual machines to back up. Users can also select “all” virtual machines to be backed up.

- VSS provides a consistent interface that allows online backup of a Hyper-V virtual machine.
- VSS-related metadata is saved with the backup data to provide the rules for data integration in each backed up component (virtual machine).
- Master / Delta and library files are supported for this type of backup set.

Hyper-V backup policy options (incremental backup)

Hyper-V backup policy options can help reduce the backup time for very large virtual machines (where the dump takes up significant time).

This feature is for Microsoft Hyper-V backup sets for standalone Hyper-V Servers or Hyper-V clusters.

Requirements and conditions for incremental backup:

- You must configure the Microsoft Incremental Backup on the Hyper-V host (this is normally done using PowerShell). The Microsoft incremental backup setting is applied as a property to each individual virtual machine. All virtual machines selected for backup must be configured with the Microsoft incremental backup setting. (Note: If any virtual machine in a backup set is not configured with this setting, the whole backup session will be backed up with the “Full Backup” method.)
- It is recommend to apply all Microsoft hot-fixes related to any target Hyper-V host. At minimum, Microsoft KB 2919355 must be applied on the Hyper-V host or the Hyper-V cluster.

  When creating or editing a VSS-aware backup of a Hyper-V Server, the backup set properties options tab has the following options for backup policy configuration:

Full dump: Always	[Default] This is the default behavior for all VSS-aware standalone Hyper-V and Hyper-V cluster backups. Each backup of the Hyper-V Server performs a full dump (VSS Snapshot) of each virtual machine.
Full dump: Plus Incremental	Performs a full dump of the virtual machine on first backup, followed by incremental backups until another full dump is needed (*).
(*) A full dump is needed (other than first time) when: • a virtual machine has been backed up by another backup set (or manually by the Windows Server Backup using the VSS Full Backup option); • a virtual machine has been restored from an earlier generation; • the virtual machine properties have been modified; • a set number of consecutive incremental backups have been performed, unless over-ruled with the Do not start full dump option. This uses the same number set in the DS-Client Advanced Configurations **MasterGenerations** parameter (note: this parameter is also used for another purpose).	

Rules for overriding a full backup schedule in the Hyper-V backup policy:

These rules are optional. They allow greater control when a full backup can occur (e.g. not during business hours).

IMPORTANT: Full dumps can be delayed, but a full database dump needs to be performed at regular frequency to protect the integrity of the database backup. By default, DS-Client allows a full backup to be skipped a maximum of 120 consecutive times. This number is configurable using the advanced parameter **MaxNonFullDumps**. For more information, see Section 3.1.8, “Configuring the advanced settings”, on page 33.

For more information about backup policy options, see Section 15.4, “Advantages and disadvantages of different database backup policies”, on page 515.

Restore policy

For Restore, three models are supported:

- VM-level restore (VSS Restore)
- Restore as files (File Restore)
- File level restore (FLR)

VM-level restore (VSS Restore):

VM-level restore uses the Hyper-V VSS Writer to restore the whole virtual machine and maintain data integration.

For VM-level restore, the restore unit is a virtual machine. All files (a snapshot at a particular moment) involved in the virtual machine are provided based on the saved metadata.

Exactly one generation (or session) can be selected for restore.

Restore as files (file restore):

Restore as files does not guarantee data integration. This method restores the selected individual files the same way as for a File system backup set. End-users (customers) are responsible for the result of the restore.

This option is suitable for scenarios where VM-level restore is not possible (e.g. alternate restore, if some files are corrupted so that VM-level restore is not possible, etc.) or not necessary (usually for advanced users that understand Microsoft Hyper-V very well and can manually manage the restored files, or the files are restored for other purposes than as part of a virtual machine).

NOTE: Before restoring to an alternate location, ensure that there is no virtual machine with the same GUID (see Backup Policy above) on the target machine. If there is a virtual machine with the same GUID, the existing virtual machine will be overwritten.

File level restore (FLR):

FLR is available if the backup set was backed up with the **Use FLR** backup set option enabled. (On the **Sets** menu, click **Backup Sets** and **Properties**, and then click the **Options** tab.)

This method restores the selected individual files the same way as for a File system backup set. Using FLR means the files you select for restore are from the Hyper-V virtual disk's data (that is, the files that users who have logged on to the backed up virtual machine can see).

FLR limitations:

- FLR is not supported for BLM and Disc/Tape restores.
- FLR is not supported for Local-Only, Instant Recovery, or Self-Contained backup sets.
- The Hyper-V virtual machine must be running either a Windows NTFS or Linux Ext4 file system.
- FLR is supported when creating Online backup sets with the **Save on Local Storage** or **Save in instant recovery vault** option. However, when performing a File Level Restore (FLR), the files are always restored from the DS-System online storage.

Data integration issues

Each virtual machine is presented as a component by the Hyper-V VSS Writer. In the VSS-based VM restore, a component must be restored with all its contents (the file snapshot) based on the rules specified in its metadata.

Components:

Each virtual machine is presented as a component by the Hyper-V VSS Writer. In the VSS-based VM restore, a component must be restored based on the Backup Components Document and Writer Metadata Documents.

The component data integration metadata file includes an entry for each individual file belonging to this component and the component itself. The entry contains the following information:

- File ID
- Generation ID
- Backup Time
- Full Path (directory and file name)

DS-Client and DS-System use the combination of File ID / Generation ID to identify the backed up component generation.

BLM uses the full path and backup time to identify the backed up component generation.

A component (virtual machine) is represented by the component data integration metadata. Retention, delete, BLM request and Disc/Tape request work at the component-level. Validation works at the level of the individual backed up files.

Component restore:

Restore works both at the component-level (virtual machine) and individual file level. This is selectable from the DS-User. A component generation is considered “complete” if all its referenced contents exist. Otherwise it is considered an “incomplete component” by the DS-Client. A file that is not referenced by a complete component generation is called an “unreferenced file”.

Incomplete components:

Incomplete component generations are allowed to facilitate individual file restore from incomplete components.

Files that are backed up in an incomplete component generation could be referenced by later generations of the same component (thereby avoiding re-backup of the unchanged file again).

In the Retention Rules of DS-Client, options are provided to **Delete incomplete components** and **Delete unreferenced files**.

Incomplete component generations are not visible in the restore tree for VM-level restore.

The component data integration metadata are backed up as separate files with the Microsoft Hyper-V backup, and will be backed up the same way as data file (except that it is not encrypted). This is because the metadata is parsed by DS-System and BLM Archiver without knowing the encryption keys.

DS-Client will save the component data integration metadata in its database. Metadata is required by activities like restore, delete, and retention. Synchronization is responsible for synchronizing them with the corresponding online file.

BLM and components:

When a component generation is moved to BLM, all its referenced files (if any exist) must be copied to BLM. When generating a BLM restorable image, if a component generation is included, that image must also include all its referenced files.

Backup requirements for Hyper-V clusters

Backup of Hyper-V in a clustered configuration is supported through the VSS-aware backup set type. The following requirements must be met to back up a Hyper-V cluster:

- Add the IP address and computer name for all the nodes in the Hyper-V cluster to the DS-Client computer's "Hosts" file, which is found in:

  `C:\WINDOWS\system32\drivers\etc\Hosts`

- Create a VSS-aware backup set and select **Microsoft Cluster Hyper-V**.
- Specify the computer using the IP address of the ‘cluster virtual node’. (This is configured on the Hyper-V cluster itself.)

  If you can connect to the specified computer, you will see an additional folder level named “<HAVMs>”. This contains the cluster’s high availability virtual machines that can be selected for backup.

All other steps are the same as for Microsoft Hyper-V backup sets for standalone Hyper-V.

Issues related to Hyper-V clusters

When restoring virtual machines, you must ensure that the same virtual machine (based on GUID) does not exist on any other node that is part of the same Hyper-V cluster (for reasons such as migration, failover, and renaming).

15.20 Backup / restore of Microsoft SharePoint Server (VSS-aware) backup sets

Creation Date: March 04, 2011
Revision Date: April 30, 2018
Product: DS-Client (Windows)

Summary

This article covers various backup and restore issues for Microsoft SharePoint Server using the VSS-aware backup set type.

For instructions to create this kind of backup set, see: Section 6.19.4, “Creating a Microsoft SharePoint Server (VSS-aware) backup set”, on page 287.

Features supported

Functionality	DS-Client (VSS-aware Backup / Restore)
Server farm, except the configuration and Central Administration databases	Yes
Configuration and Central Administration databases	No (Microsoft does not support this capability)
Web applications	Yes
Site collections	Yes
Content databases	Yes
Databases of Search Service Application	No
Search databases	No
Windows SharePoint Service Search	No
Office SharePoint Server Search	No

Requirements for backup / restore support

The following requirements must be met before you can backup / restore SharePoint servers with DS-Client's VSS-aware backup set type.

- On every target SharePoint machine you want to back up, you must manually start the VSS Writer service:
  1. Open **Administrative Tools** > **Services** and start the service. By default, this service must be manually started; however, you can configure it with the Automatic startup type.
  2. Register the Writer in the Windows registry by running the “`STSADM -o registerwsswriter`” command from a command prompt.

If you are backing up a SharePoint Farm (not a standalone machine), the following additional requirements must be met:

- Add the IP address and computer name for all the Microsoft SQL Servers and SharePoint Web servers in the Farm to the DS-Client computer's “Hosts” file, which is usually found in:

  `C:\WINDOWS\system32\drivers\etc\Hosts`

- The VSS Writer service must be running on one of the SharePoint web servers.
- The SQL Server VSS Writer service must be running on every Microsoft SQL Server machine in the SharePoint Farm.

  Microsoft KB article #645391 describes how to use Windows PowerShell 2.0 to document the configuration settings for your SharePoint Farm. Documenting configuration settings is important for creating scripted deployments for your environment and for quickly recreating a set of configurations in the event of a failure.

Backup policy

- The backup set must be created on one of the Web Front End (WFE) servers.
- DS-Client should resolve the computer name of the Microsoft SQL Server.
- DS-Client should access all Microsoft SQL Server databases used by SharePoint.

The Microsoft SQL databases used by SharePoint can support differential backup (see the Knowledge Base article for Microsoft SQL Server in Section 15.4, “Database backup policy”, on page 512).

Restore policy

There are two phases during the restore process: The first phase restores the SharePoint server's Microsoft SQL full dump. The second phase restores the SharePoint server's Microsoft SQL differential backups (if applicable).

- Before restoring a Web Application to its original location, any existing Web Application with the same name and related Shared Service Application must be deleted from SharePoint Central Admin.

Post-restore steps (on the target SharePoint server)

After restoring from DS-Client, manually create the Web application:

1. Go to **Central Admin** > **Manage Web Applications** > **New**
2. Enter the name of the database that was restored from DS-Client.

Alternatively, you can use Windows PowerShell.

Required account permissions for running VSS

Microsoft VSS has special requirements for the accounts running the writers on all target server instances for backup and restore:

- To configure this account from the target computer, click **Administrative Tools** > **Services**, select the corresponding VSS Writer Service and right-click **Properties**. In the Log On tab, configure the account that runs the writer.
- The account running the VSS writer must be a member of the Domain Administrators group.
- The account must have permission to issue **BACKUP DATABASE** and **RESTORE DATABASE** commands to the target database servers.
- The account must have permission to access Microsoft SQL Server, which requires it to be a member of the SQL Server administrator group with 'db_creator' and 'sysadmin' roles.

Item-level restore

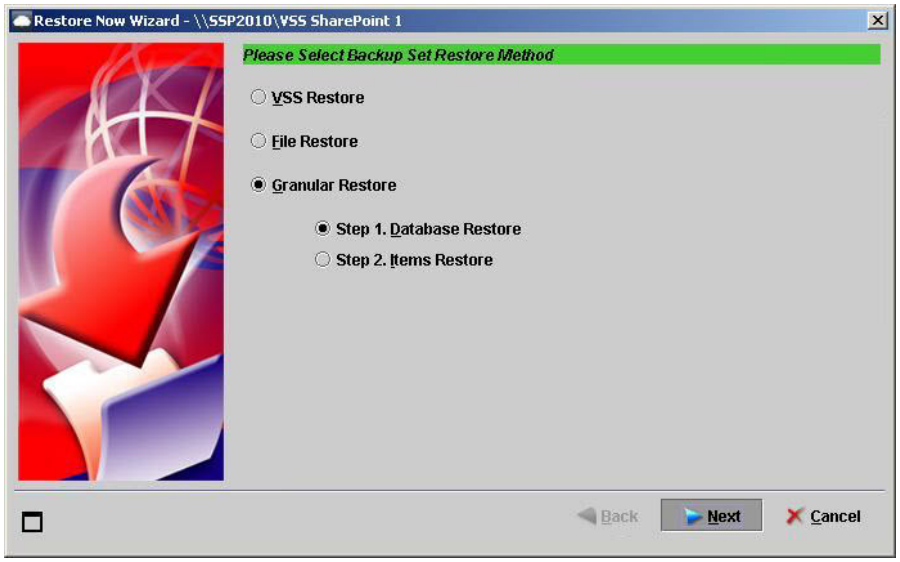
VSS-aware backups have a granular restore capability. This allows you to restore at the individual Item-Level from a backed up database.

Requirements:

- The backup must be made using the VSS-aware backup set type.
- The target Microsoft SharePoint server where you want to perform the Item-Level restore must have DS-Recovery Tools installed and running. This is a separate installation. For detailed instructions, see the *Client Software Installation Guide*.
- The DS-Recovery Tools service account must have access to the SQL Server instance and to the Microsoft SharePoint server where the items are going to be restored.

There are two steps to performing a 'granular restore': Step 1) Restore the database and Step 2) Restore Items. The first step restores the SharePoint database at the point-in-time that contains the items you want to restore. The second step involves connecting to that database and selecting the individual items you want to restore.

1. Browse the Backup Sets tree and select the backup set you want to restore.
2. On the **Restore** menu, click **Restore Now**. The Restore Now Wizard appears.
3. On the **Select the Restore Method** page, select **Granular Restore** and then **Step 1. Database Restore**.



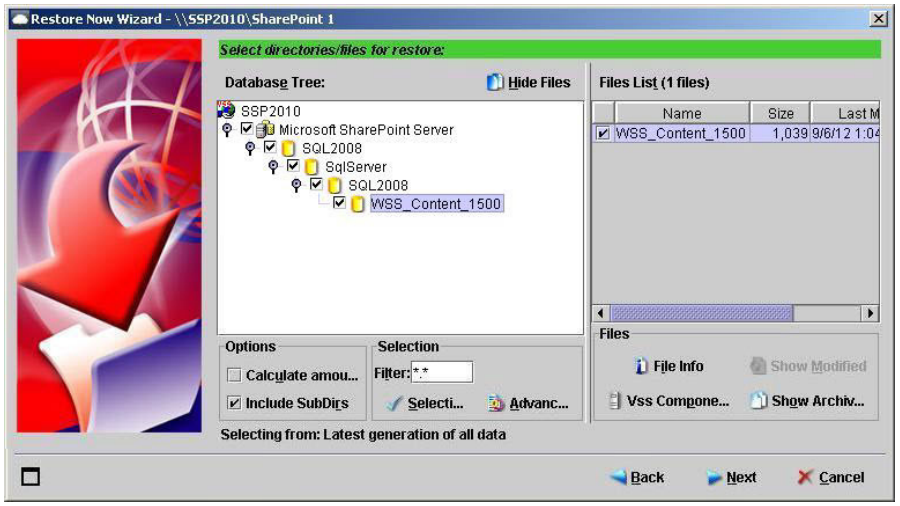
F1 Help: Select the Restore Method

4. Click **Next**.

NOTE: If you are restoring from a BLM Restorable Image or Disc/Tape media, you can only perform Step 1 - the database restore from that media. Step 2 must always be performed from the database restored in Step 1.

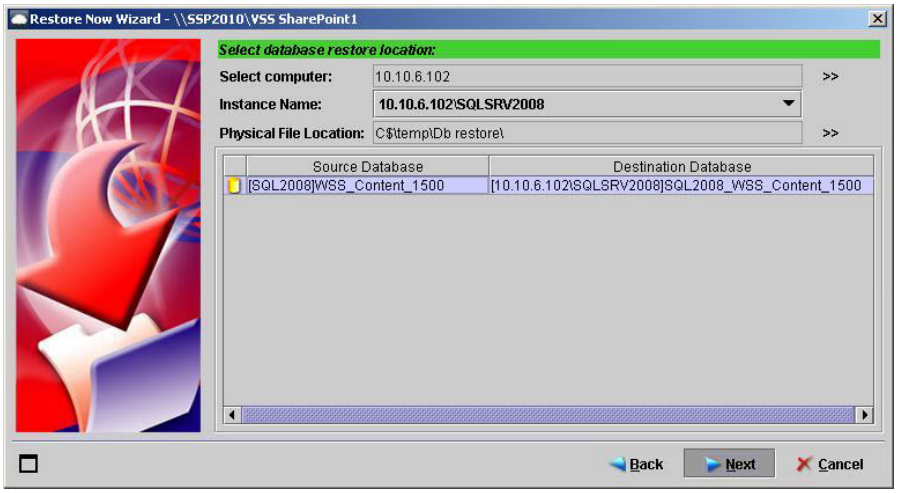
---

5. On the **Select directories/files to restore** page, select the SharePoint database to restore, and then click **Next**.



F1 Help: Select directories / files (Restore / BLM / Delete / Validation)

6. On the **Select database restore location** page, choose where you want to restore the database. This should be to a Microsoft SQL Server.

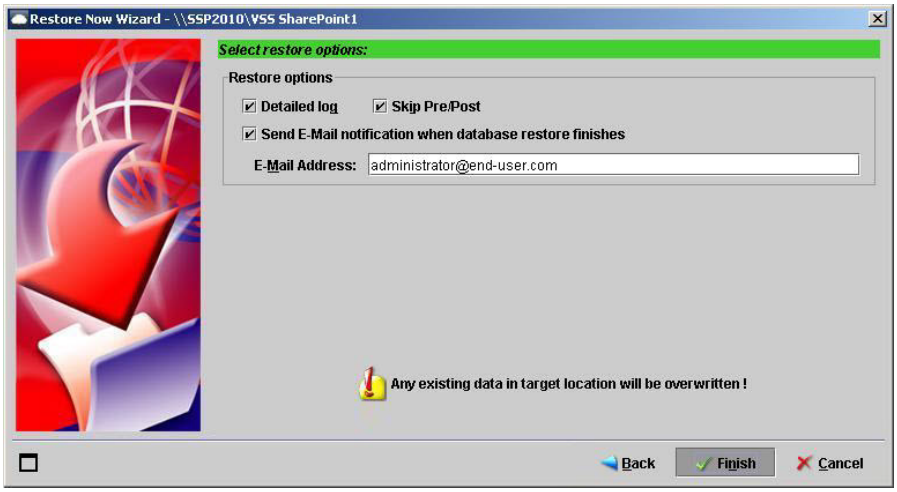


F1 Help: Select database restore location (SharePoint)

You can restore to a different SQL instance or select a different SQL server (which does not have to be a SharePoint farm) but this SQL server must be in the same domain as (or a trusted domain of) the target SharePoint server you want to restore to (in Step 2 - Items-Restore).

7. Click **Next**.
8. On the **Select restore performance options** page, retain the default settings. These options are intended for large backup sets in high performance environments.

   F1 Help: Select Restore Performance Options (Windows DS-Client)
9. Click **Next**.
10. On the **Select restore options** page, select the SharePoint database restore options, and then click **Finish**.

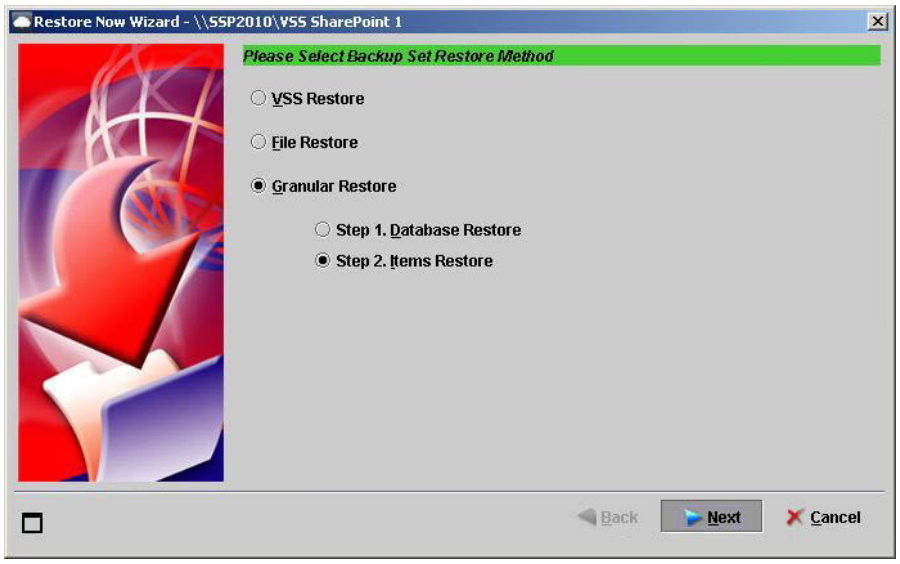


F1 Help: Select Restore Options (VSS-aware Exchange / SharePoint)

The restore process begins.

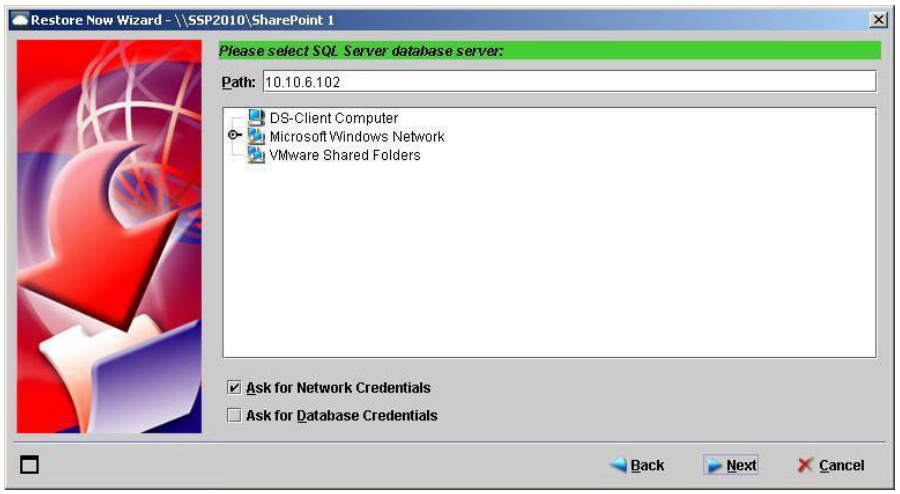
After the database has been restored to a Microsoft SQL server, you can proceed to step 2 (restoring at Item-Level).

11. Browse the Backup Sets tree and select the same backup set. On the **Restore** menu, click **Restore Now**.
12. On the Select the Restore Method page, select **Granular Restore** and then **Step 2. Items Restore**.



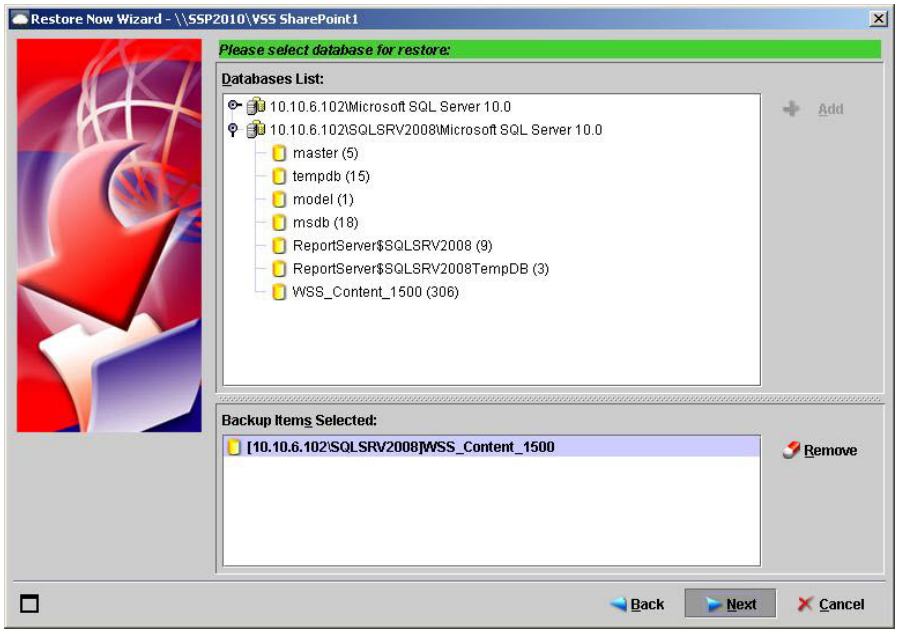
F1 Help: Select the Restore Method

13. Click **Next**.
14. On the **Select SQL Server** page, select the Microsoft SQL Server where you restored the database.



F1 Help: Select the computer

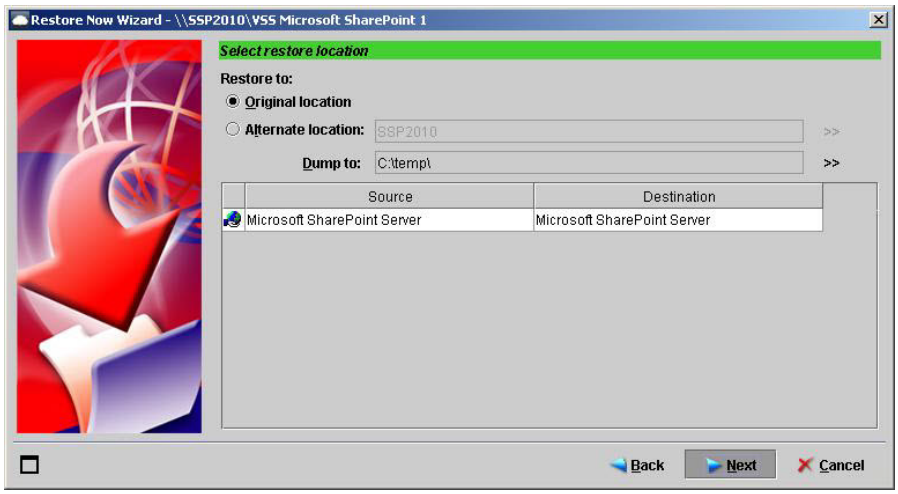
15. Click **Next**.
16. On the **Select database for restore** page, select the Microsoft SQL database containing the database, and then click **Add**.



F1 Help: Select Items for Backup Set

17. Click **Next**.

18. On the **Select restore location** page, you can restore to the original source location or choose an alternate SharePoint server.



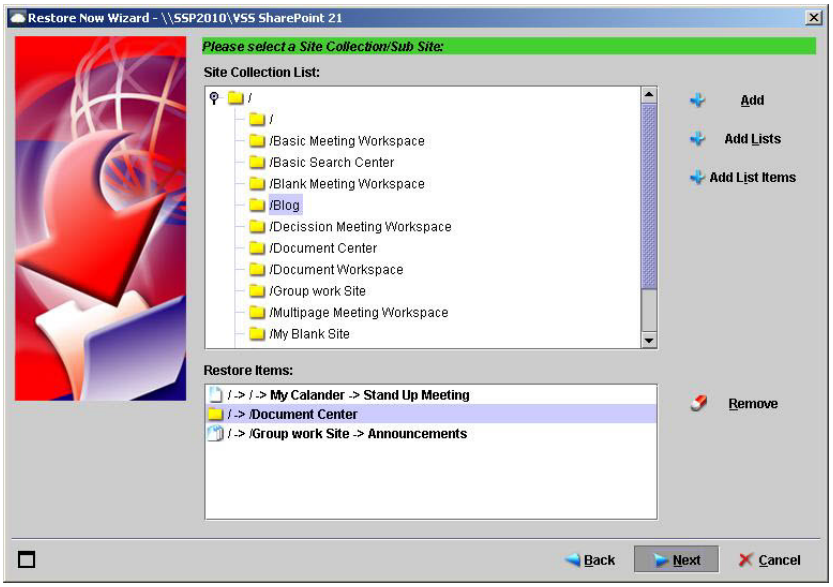
F1 Help: Select restore location

NOTE: The restore destination must be running the DS-Recovery Tools. This requires a separate installation. See the *Client Software Installation Guide* for instructions.

---

a) Specify a dump location in the **Dump to** field. Click **>>** to browse the available paths on the target server, and then click **Next**.

The **Select a Site Collection / Sub-Site** dialog box appears. This selection determines the 'granularity' of the restore. It can be broad (e.g. restore the entire Site or a specific sub-site) or it can be extremely precise (e.g. restoring an individual item from a list belonging to the site).

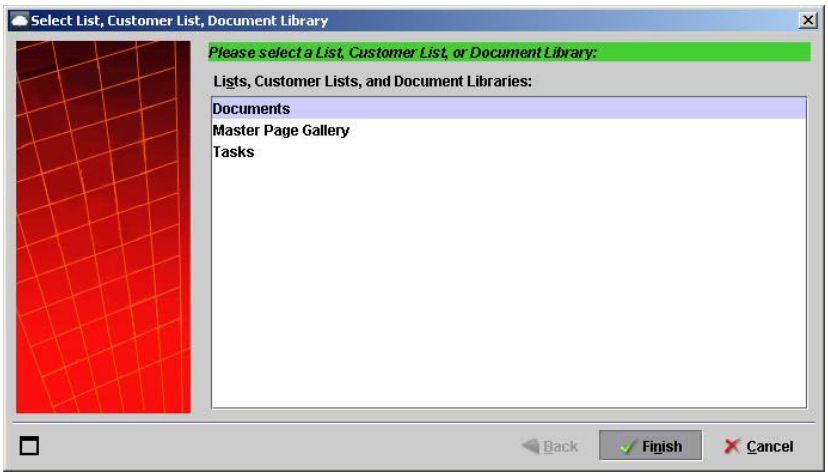


F1 Help: Select a site collection / sub-site (SharePoint Item-Level)

b) In the **Site Collection List**, you can select the entire site (/) folder, or a specific sub-site by selecting the folder. Click **Add**. Your selection appears in the **Restore Items** section.

c) Hover the mouse pointer over a folder to see corresponding URLs and source database name.

d) To restore a **Full List**, highlight the site folder (or sub-folder) containing the list you want, and then click **Add Lists**.



F1 Help: Select a List / Customer List / Document Library (SharePoint Item-Level)

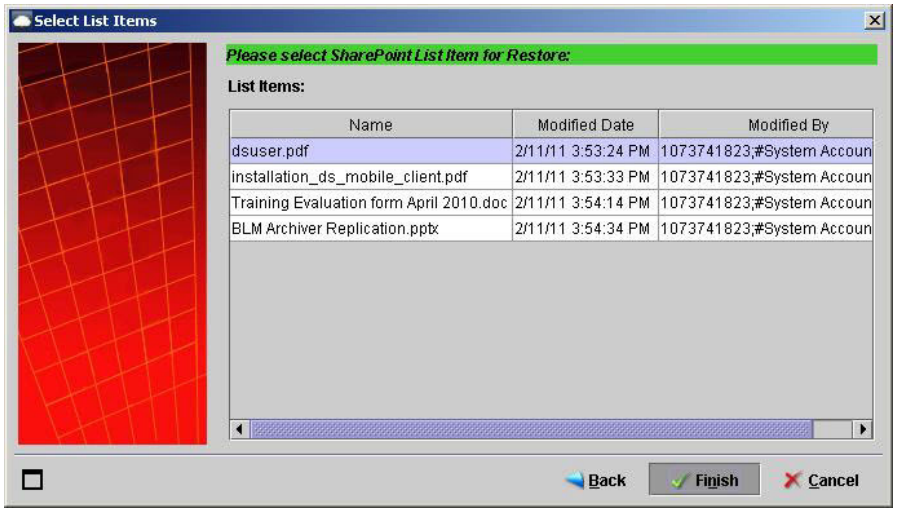
e) You can select any number of items that appear. Each item is either a List, Customer List, or Document Library containing its own set of items from the SharePoint database. When you are done, click **Finished**.

19. Click **Next**. If you are restoring at the List level, the Restore Now Wizard jumps to the **Select restore options** page. Otherwise, click **Finish**.

a) To restore a List-Item, highlight the site folder (or sub-folder) containing the list you want, and then click **Add List Items**.

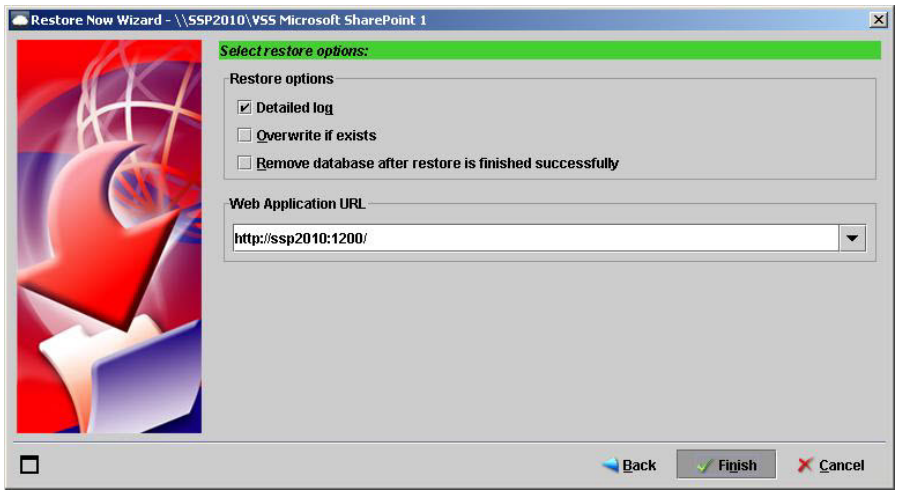
b) Select the List, Custom List, or Document Library containing the item(s) you want, and then click **Next**.

c) Select the list items you want to restore (use CTRL + click for multiple items), and then click **Finish**.



F1 Help: Select SharePoint List Item (SharePoint Item-Level)

20. When you have finished making your restore selections, click **Next**.



F1 Help: Select restore options (SharePoint Item-Level)

21. On the **Select restore options** page, select the restore options and the required **Web Application URL** from the drop down list.

NOTE: If you select **Overwrite if exists**, any additional items that already exist in the target location will not be overwritten.

---

22. Click **Finish**. The restore process begins.

15.21 Backup / restore of NAS (Linux DS-Client)

Creation Date: December 02, 2011
Revision Date: May 01, 2013
Product: DS-Client (Linux)

Summary

This article describes the backup and restore process for NAS (Network Attached Storage) devices using the “NAS, UNIX-SSH, NFS, Local File System” backup set type.

To back up/restore the NAS device, DS-Client utilizes a dedicated API from the NAS vendor. DS-Client uses the API for creating a volume based snapshot on the NAS device for the data selected in the backup set. After creating a snapshot, DS-Client temporarily mounts a NAS share and backs up the data from the snapshot. When the backup is finished, DS-Client unmounts the NAS share and deletes the snapshot.

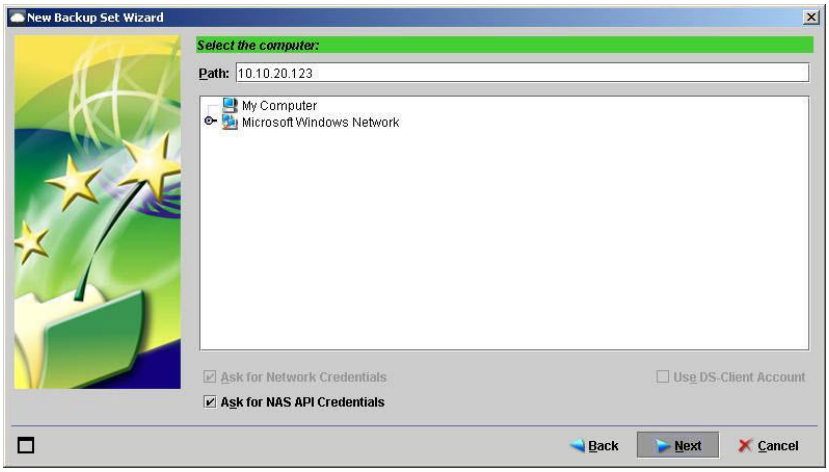
NOTE: CIFS shares or volumes with NTFS / Mixed security type are not supported.

NOTE: NAS backup is only supported on Linux DS-Client (not on Mac DS-Client).

For instructions to create this kind of backup set, see: Section 6.11, “NAS, UNIX-SSH, NFS, or Local File System backup sets (Linux or Mac)”, on page 238

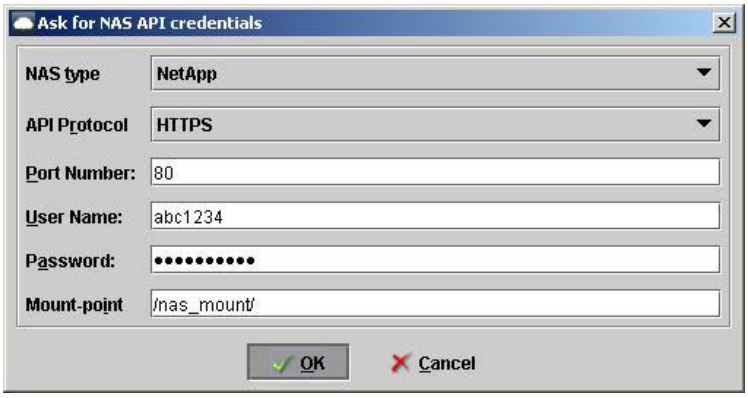
Creating a NAS backup set

1. Open DS-Client New Backup Set Wizard, select **NAS, UNIX-SSH, NFS, Local File System**, and then click **Next**.
2. Select **NAS** and enter the NAS IP address or DNS name in the Path box (e.g. “NAS\10.10.20.33”). Select **Ask for credentials** if the current DS-Client user has no data access rights on the NAS device or if you want to use a different user. Click **Next**.



3. If the **Ask for credentials** option is selected, the Ask for credentials dialog box appears. Type a valid user name and password, and then click **OK**.

4. By default, **Ask for NAS API credentials** is selected, and you are prompted with a dialog box to enter the NAS API connection credentials.



F1 Help: Specify Credentials (Linux DS-Client)

a) Select the NAS type and the API access protocol.

b) Specify the port for the API connection, API user credentials and a mount point to be used for mounting the NAS share during the backup. Use an existing mount point or create a new one for the backup purpose.

c) Click **OK**.

NOTE: Make sure the specified User has rights to execute the API commands on the NAS device. The user must be a member of the Administrators group.

---

5. Browse the NAS shares and add data to the **Selected Items for Backup** list, and then click **Next**.

6. Follow the next steps as you would for the online backup set type until you reach the **Specify backup set options** page.

7. Configure the **Continue backup on snapshot failure** option:
    - If this option is selected (default), then in case of a snapshot failure, DS-Client will try to access the data selected in the backup set directly by skipping the snapshot functionality.
    - If this option is not selected, then in case of a snapshot failure, DS-Client will stop the backup process.
8. Specify all the required options and create the backup set as you would with an online File system backup set.

NetApp configuration requirement

For NetApp NAS volumes, there is a volume configuration option that enables access to the snapshot file for NFS when browsing the NetApp volumes. This must be selected, otherwise DS-Client cannot access the snapshot.

NetApp clusters

If you are backing up a NetApp cluster, make sure to select **NAS type** in the **Ask for NAS API credentials** dialog box. This will allow DS-Client to interact with the NAS API correctly.

Snapdiff API

Linux DS-Client has the **Use Snapdiff API** option for (NetApp) NAS backup sets. This will appear if DS-System is using NetApp storage, and is configured to support the NetApp Snapdiff. If selected, DS-Client will attempt to use the NetApp Snapdiff API to avoid re-scanning the whole NAS volume during an incremental backup. Snapdiff compares the current snapshot with the last snapshot of the target NAS volume and generates the list of new and changed files from that comparison. This can provide significant speed improvements to the backup process, especially on large volumes.

The following limitations exist. In all cases where Snapdiff fails, DS-Client will attempt a full scan of the NAS volume.

NOTE: A previous snapshot should exist so that the Snapdiff API can function.

- Snapdiff does not work on the first (baseline) backup.
- Snapdiff does not work if the current snapshot fails.
- Snapdiff does not work if any of the backup set's backup items have been changed (since the previous backup).

15.22 Backup from the Cloud (Salesforce.com)

Creation Date: August 20, 2012
Revision Date: December 08, 2014
Product: DS-Client

Summary

This article contains important information about the Backup from the Cloud (Salesforce.com) backup set kind.

NOTE: Salesforce and Salesforce.com are all trademarks of salesforce.com, inc. and salesforce.com. These trademarks, related terminologies, and their accompanying dialog box screenshots (if any) are used solely for the purpose of describing expected configuration and/or behavior to ensure proper use of the software described in this document.

See also:

- Section 6.6, “Cloud (Salesforce.com) backup sets (Windows)”, on page 191
- Section 6.6.4, “Restoring a Salesforce.com backup set at the table level”, on page 194

Managing Force.com API usage limits

DS-Client uses the Salesforce API for backup and restore processes.

IMPORTANT: To minimize the number of API call counts made a restore process, select the **Use Bulk API** restore option in the Restore Wizard when you are configuring a restore activity for Salesforce.com data in DS-Client.

Salesforce.com balances transaction loads by imposing two types of limits on API calls:

- Concurrent API Request Limits
- Total API Request Limits

When a call exceeds a request limit, an error occurs. If your Salesforce.com account exceeds the specified limits, errors can occur in DS-Client.

For more detailed information on API usage limits, see Salesforce.com documentation. You can also contact Salesforce about modifying the API limits associated with your account.

Changing your Salesforce.com password

If you need to change your Salesforce.com password, you must obtain a new security token. You can request the security token from the Salesforce.com website (**Setup** > **My personal information** > **reset my security token**). All existing Salesforce.com backup sets must be updated with the new credentials (username, password, and security token).

Preventing duplicate records in a table-level restore

During a table-level restore of a Salesforce.com backup set, the restored records might be duplicated if the same tables are restored multiple times. To avoid this issue, do the following:

- To prevent duplicate records in all tables except the Case and Contract tables, select the **Detect duplicate records by name comparison** restore option when performing a table-level restore.
- To prevent duplicate records in the Case or Contract tables, manually delete the entire contents of the table before performing the restore.

NOTE: Records in the Case and Contract tables are not identified by name but by unique IDs that are incremented automatically. Duplicate records in these tables cannot be detected by name comparison.

Restoring from BLM Restorable Images or Disc/Tape media

When you are configuring a restore activity for Salesforce.com backup sets that have been written to BLM Restorable Images or Disc/Tape media, the **Original location** option will be unavailable in the Restore Wizard. This is because these media have been written without the credentials to the original backup target server (Salesforce.com database).

When configuring a restore of Salesforce.com data from these media, select **Alternate location** on the **Select restore location** page to specify the restore target, so that you can then provide the credentials required for accessing the restore target in the **Specify Credentials** dialog box.

15.23 Backup from the Cloud (Google G Suite)

Creation Date: April 17, 2013
Revision Date: August 28, 2018
Product: DS-Client (Windows)

Summary

This article contains important information about the Backup from the Cloud (Google G Suite) backup set kind. Read this article carefully before attempting to create this kind of backup set.

NOTE: Google, G Suite, Gmail, Google Calendars, Google Docs, Google Drive, Google Sites, and Google Contacts are all trademarks of Google Inc. These trademarks and related terminologies are used solely for the purpose of describing expected configuration and/or behavior to ensure proper use of the software described in this document.

For the remainder of this article, the term “Google G Suite backup set” will be used as an abbreviation for “Backup from the Cloud (Google G Suite) backup set”.

See also:

- Section 6.3, “Cloud (Google G Suite) backup sets (Windows)”, on page 165
- Section 6.3.4, “Restoring a Google G Suite backup set”, on page 169

Prerequisites for backup and restore of G Suite data

The following prerequisites must be met before you can perform backups for G Suite data.

Google domain, administrative account, and end-user accounts required:

It is assumed that you already have an existing G Suite domain on which there are active end-user G Suite accounts that need to be backed up.

You must also have a Google administrative account that has the permission to access all end-user accounts to be backed up from that domain.

G Suite DS-Client plug-in required on DS-Client computer:

You must install the G Suite DS-Client plug-in on the DS-Client computer. The plug-in installation file can be found on the installation DVD in the following folder:

- \Software\DS-Client\DS-Client_FullFeatured\Windows_64_bit\plugins\install.exe

DS-NOC on Windows recommended for G Suite backups:

We recommend using the Cloud Management System in DS-NOC (Windows) rather than DS-User to create, configure, and schedule G Suite backup sets. DS-NOC on Linux does not support G Suite backups.

The Cloud Management System in DS-NOC automates the process for creating and scheduling Backup from the Cloud (Google G Suite) backup sets for multiple users according to your specified settings. It can divide backup sets among multiple DS-Client instances and distribute multiple credentials among many backup sets. It is also a centralized interface for monitoring these backup sets.

After the backup sets have been created and scheduled using the Cloud Management System in DS-NOC, you can use DS-User to initiate on-demand backups or restore the data as necessary.

IMPORTANT: Do not use DS-User to modify the properties of a G Suite backup set that was created in DS-NOC. In particular, changing the backup set name or the schedule in this manner can adversely affect the operation of the system.

Required network connections:

- Ensure that the following network requirements are met:
  - The DS-Client computer has Internet connection and is able to connect to your G Suite domain on which data needs to be backed up.
  - DS-User is able to connect to the G Suite domain on which data needs to be backed up.
- To create, schedule, configure, or monitor G Suite backup sets via DS-NOC, ensure that the web server hosting DS-NOC is able to connect to your G Suite domain on which data needs to be backed up.
- If the DS-NOC service, the DS-Client service, or the DS-User application is behind a proxy server, ensure that the respective proxy server settings are configured.
  - For the DS-NOC service, see instructions on configuring Apache Tomcat to use a proxy server in the *Server Software Installation Guide*.
  - For the DS-Client service and/or the DS-User application, see instructions in Section 3.1.6, “Configuring the DS-System connection settings”, on page 28.

G Suite domain and account requirements:

Before performing Google G Suite backups, do the following.

1. Sign in to Gmail using the super admin user account.
2. On the **Settings** menu, click **Manage** this domain.
3. Enable API access as follows:
   a) Sign in to the Google Admin console for your G Suite domain.
   b) On the **Security** menu, click **Settings**.
   c) Click **API reference**.
   d) Ensure that the **Enable API access** check box is selected.
4. Create a project and enable the required G Suite APIs for the project as follows:
   a) Sign in to the Google Cloud Platform console for your G Suite domain.
   b) Create a project.
   c) On the **APIs and Services** menu, click **Dashboard**.
   d) On the **Dashboard** page, click **Enable APIs and Services**.
   e) On the **API Library** page, search for and enable the following Google APIs:
      - Admin SDK
      - CalDAV API
      - Contacts API
      - Gmail API
      - Google Calendar API
      - Google Drive API
5. Create credentials for the service account as follows:
   a) Sign in to the Google Cloud Platform console for your G Suite domain.
   b) On the **IAM & admin** menu, click **Service accounts**.
   c) On the **Service accounts** page, click **Create Service Account**.
   d) Create a service account. Ensure that the project role is set as **Owner** and the **Enable G Suite Domain-wide Delegation** option is enabled. An OAuth 2.0 client ID is automatically generated for the service account.

NOTE: You must generate the credentials that are required based on the logon mode that will be used during backup configuration and backup and restore activities. The credentials will be used to access the backup source and

restore destination. The Service account logon mode allows access to one or multiple user accounts on your G Suite domain. This mode is available in DS-User and is the only logon mode in DS-NOC. The Client ID for native application logon mode allows access to one G Suite user account only. This mode is available in DS-User only.

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6. Create encryption keys for the service account as follows:
   a) Sign in to the Google Cloud Platform console for your G Suite domain.
   b) On the **IAM & admin** menu, click **Service accounts**.
   c) On the **Service accounts** page, select the service account you created, and then click **Create key** on the **Actions** menu.
   d) Create a private key in JSON format for the service account, download the key, and store it in a secure location.
   e) Create a private key in P12 format for the service account, download the key, and store it in a secure location.

NOTE: The encryption keys are used for the credentials when logging on to DS-Client and DS-NOC.

---

7. Locate and record the Client ID as follows:
   a) Sign in to the Google Cloud Platform console for your G Suite domain.
   b) On the **APIs and Services** menu, click **Credentials**.
   c) On the **Credentials** page, locate the project you created and copy the Client ID.
8. Configure the OAuth 2.0 client ID of the service account to use the required API scopes as follows:
   a) Sign in to the Google Admin console for your G Suite domain.
   b) On the **Security** menu, click **Settings**.
   c) Click **Advanced Settings**, and then click **Manage API client access**.
   d) In the **Client Name** box, paste the Client ID.
   e) In the **One or More API Scopes** box, add the following API scopes separated by a comma, and then click **Authorize**.
      - https://mail.google.com/
      - https://sites.google.com/feeds/
      - https://www.google.com/calendar/feeds/
      - https://www.google.com/m8/feeds/

- https://www.googleapis.com/auth/admin.directory.user
- https://www.googleapis.com/auth/calendar
- https://www.googleapis.com/auth/drive

Internet Explorer 8 or a later version required for DS-User:

You must ensure that Internet Explorer 8 or a later version is installed on the computer on which DS-User is running. This allows authentication with G Suite accounts in the Restore Now Wizard when you initiate a restore of G Suite data, and in the New Backup Set Wizard if you plan to create Google G Suite backup sets using the DS-User.

G Suite backup issues

- **Google Document Form** items are composed of two parts:
  - one item of type application/vnd.google-apps.form
  - one item of type application/vnd.google-apps.spreadsheet
- Backup and restore of the application/vnd.google-apps.spreadsheet item is supported.
- Backup and restore of the application/vnd.google-apps.form is not supported.
- If Google introduces new document types that are not immediately supported by DS-Client, there might be an error if you try to backup an unsupported item.
- After editing a native Google file in Drive, it can take Google several minutes to note that the file has changed. Any backup that is run before Google has updated the file's Last Modified Date, Google will assume the file has not changed and ignore it. To prevent this, allow Google time to update a file's metadata before running a backup.
- **Troubleshooting Calendar backup**: In high use environments, you can encounter events with Google Calendar backups if the G Suite site temporarily enters the Read-Only mode. For a detailed description, see the Google article “Calendar Usage Limits”:

  `https://support.google.com/a/answer/2905486?hl=en`
- DS-Client backup size does not match with Google’s actual size because Google displays the size of items in their native format, whereas DS-Client processes data that is specifically meant for backup.
- Contact groups are not supported.
- With each G Suite backup set that contains Sites as a backup item, a maximum of 25 sites can be backed up for each G Suite user account. If the G Suite user account contains more than 25 sites, only 25 sites are arbitrarily chosen among all the sites and then backed up. If a viewer comment on a site does not appear in the comment feed, the comment cannot be backed up.

- **Sometimes G Suite backup items are not backing up the first time**: The files that are backed up depend on the result of the item listing at the start of the backup activity. Since there are no errors, the entire operation has performed as expected. Other than errors during the listing, DS-Client has no other method of knowing if it has not acquired the entire list since that number depends on the list itself. All affected files should be backed up during the next backup activity.

G Suite restore issues

- When restoring large files, DS-Client can experience timeouts. To resolve this issue, increase the timeout value in the advanced parameter **GAppsRestoreCompleteTimeout**. For more information, see Section 3.1.8, “Configuring the advanced settings”, on page 33.

NOTE: Note that DS-Client will retry restoring the file according to the advanced parameter **GAppsRequestRetry**.

- Failed restores can mistakenly report the failed file's size in the Restored Amount in the process dialog or event log. This will not affect billing. For an accurate measure of restored data, note Event #40000552: Restore Capacity Consumed in the Event Log for the Restore activity.
- If a Google Drive file is deleted from the user's Drive account and restored from a backup, any backup set which explicitly refers to the file will need to be changed to point to the new file. File-level backups get Drive files by ID, and a restored file is automatically given a new ID by Google.
- One of the following permissions is required for the restore of G Suite Calendar. To edit these permissions, go to **Calendar Settings** > **Share this Calendar** and set one of the following:
  - owner = “Make changes AND manage sharing” OR
  - writer = “Make changes to events”
- Backup and restore of Attachments in G Suite Calendar Events are not supported.

G Suite behavior when restoring G Suite sites to their **original** location:

- When you take the backup of a site and delete it from the cloud before restoring, the site does not get immediately deleted. Google takes some time to completely delete the site. You can verify this by navigating to **Deleted Sites**, where you will see the status as `Still Deleting Site....`
- If you restore before the site is completely deleted from the cloud, Google will append some numeric value to the original webspace name and create the site in that webspace because the webspace name of the site (found in the Site’s URL) must be unique.

G Suite behavior when restoring a document to **alternate** location:

- When restoring a document to an alternate location, sometimes that document might not be immediately visible in the G Suite **My drive** location. If this occurs, wait a couple of minutes and then check again. The document should be immediately visible if you look in the **All Items** location.
- Contents of similarly named folder paths (e.g. "`/folder 1/folder 2`" and `/folder1/folder2`) will be merged during restore. This also applies to original location restore, if the source folders have been deleted.

15.24 Backup from the Cloud (Microsoft Office 365)

Creation Date: May 08, 2014
Revision Date: September 10, 2018
Product: DS-Client (Windows)

Summary

This article provides important information about Backup from the Cloud (Microsoft Office 365) backup sets.

NOTE: Microsoft Office 365, Exchange, SharePoint, and Office are all trademarks of Microsoft Corporation. These trademarks, related terminologies, and their accompanying dialog box screenshots (if any) are used solely for the purpose of describing expected configuration and/or behavior to ensure proper use of the software described in this document.

For the remainder of this article, the term “Microsoft Office 365 backup set” will be used as an abbreviation for “Cloud (Microsoft Office 365) backup set (Windows)”.

See also:

- Section 6.4, “Cloud (Microsoft Office 365) backup sets (Windows)”, on page 173
- Section 6.4.4, “Restoring a Microsoft Office 365 backup set”, on page 176

Backup and restore functionality for Microsoft Office 365 data

The Microsoft Office 365 data that can be backed up and restored using DS-Client includes Exchange Online data, SharePoint Online data, and OneDrive data (as SharePoint Online data).

NOTE: In Microsoft Office 365 Small Business domains, only the backup and restore of Exchange Online data is supported by DS-Client; the backup and restore of SharePoint Online data is not.

Exchange Online data:

- Supported

  DS-Client can back up Exchange data from Exchange Online, or from an on-premises Exchange Server using Exchange Web Services (EWS). It can also restore Exchange data to either of the two.

  Exchange data that can be backed up and restored includes the following:

  - Email messages

- Calendars and appointments
- Contacts (including Contact Lists, but not Contact Groups)
- Tasks

Exchange data needs to be in a user mailbox, shared mailbox, or resource mailbox to be supported. It can be restored to the same mailbox or a different mailbox of the original domain or of a different domain using DS-Client.

NOTE: Although Exchange data on an on-premises Exchange Server is not Microsoft Office 365 data, the backup and restore of such data will be processed by DS-Client using Microsoft Office 365 backup sets. Therefore, the backup and restore of data for Exchange Online, and for an on-premises Exchange Server using EWS, require mostly the same prerequisites.

- Not supported: distribution groups

  Exchange distribution groups are **not** supported in Microsoft Office 365 backup sets. Because of the limitation of APIs provided by Microsoft, distribution groups cannot be automatically excluded in the DS-NOC interface.

  For more details, see Section 15.24, “Exclude distribution groups from backup sets:”, on page 612.

SharePoint Online data:

- Supported:

  DS-Client can back up SharePoint data from SharePoint Online and restore it to SharePoint Online. SharePoint data that can be backed up and restored includes the following:

  - Site collections
  - Sites
  - Lists
  - Individual list items
  - Web parts

  You can select data for backup at the site collection, site, and list levels. You cannot select list items individually as backup set items; however, the individual list items that are within selected lists will be backed up. You can select individual list items for restore.

  SharePoint data can only be restored to the same site collection at the original domain (i.e. Original Location) using DS-Client.

- Not supported:

  - Lookup columns

The backup and restore of lookup columns in SharePoint is not supported. A source list containing one or multiple columns that look up data in the columns of a target list cannot be restored.

- Hidden and catalog lists

  Restoring hidden or catalog lists is not supported because these lists often contain system files.

OneDrive data (as SharePoint Online data):

- Supported

  OneDrive data is processed as SharePoint Online data by DS-Client. OneDrive data under personal sites can be backed up and restored using DS-Client.

  OneDrive data for each user is backed up as the Documents List of each user's personal site, e.g.

  \\OFFICE.MICROSOFT.COM\VirtualShare:SharePoint Site Collections\https://<tenant>-my.sharepoint.com/personal/<user>_<tenant>_onmicrosoft_com/\Documents*

DS-NOC on Windows recommended

We recommend using the Cloud Management System in DS-NOC (Windows) rather than DS-User to create, configure, and schedule Microsoft Office 365 backup sets. DS-NOC on Linux does not support Microsoft Office 365 backups.

The Cloud Management System in DS-NOC automates the process for creating and scheduling Backup from the Cloud (Microsoft Office 365) backup sets for multiple users according to your specified settings. It can divide backup sets among multiple DS-Client instances and distribute multiple credentials among many backup sets. It is also a centralized interface for monitoring these backup sets.

After the backup sets have been created and scheduled using the Cloud Management System in DS-NOC, you can use DS-User to initiate on-demand backups or restore the data as necessary.

IMPORTANT: Do not use DS-User to modify the properties of a Microsoft Office 365 backup set that was created in DS-NOC. In particular, changing the backup set name or the schedule in this manner can adversely affect the operation of the system.

Recommended DS-Client-to-DS-System setup

To optimize the speed of Microsoft Office 365 backups, set up DS-Client and DS-System to communicate within the same local area network (LAN) at the same site location. This setup keeps communication localized between DS-Client and DS-System. After obtaining data from the source, DS-Client can send the backup data to DS-System via a LAN, which is more efficient than transferring over a wide area network (WAN).

This setup differs from the typical recommendation of installing DS-Client on the same LAN with the backup source.

Basic workflow for backup and restore

Backing up data for multiple users:

First, you can configure and edit backup settings for Microsoft Office 365 backup sets using Cloud Management System in **DS-NOC (Windows**).

DS-NOC (Windows) creates and schedules Microsoft Office 365 backup sets in DS-Client according to your settings and configures DS-Client as necessary. **DS-Client** then runs Microsoft Office 365 backups according to your settings.

For procedural instructions on using the Cloud Management System in DS-NOC, see the *DS-NOC User Guide*.

Restoring data for individual users:

1. Before restoring the data of a particular Microsoft Office 365 user, identify the Microsoft Office 365 backup set in the DS-Client that processed that user's data. Obtain that information using the Cloud Management System in **DS-NOC (Windows)**.
2. In **DS-User**, using the Restore Now Wizard, select the data that you want to restore in that backup set.

   DS-Client restores the selected data.

Prerequisites for backup and restore

Ensure that the following prerequisites are met before you perform the backup and restore of data on Exchange Online, an on-premises Exchange Server, SharePoint Online, and OneDrive.

DS-NOC on Windows: Recommended tool for Microsoft Office 365 backups

We recommend using the Cloud Management System in DS-NOC (Windows) to create Microsoft Office 365 backup sets. See Section 15.24, "DS-NOC on Windows recommended", on page 604.

Required network configuration:

Ensure that the following network requirements are met:

- The DS-NOC server (if used) and the DS-Client computer are able to access *.office365.com.
- That ports 80, 8080, and 443 are open on the DS-NOC server (if used) and the DS-Client computer.
- The proxy server settings are configured if the DS-NOC service (if used), the DS-Client service, or both are behind a proxy.
    - For the DS-NOC service, see instructions on configuring Apache Tomcat to use a proxy server in the *Server Software Installation Guide*.
    - For the DS-Client service, see instructions in Section 3.1.6, “Configuring the DS-System connection settings”, on page 28.

DS-Client Installation: Microsoft Office 365 DS-Client plug-in required:

For DS-Client to perform backup and restore for Backup from the Cloud (Microsoft Office 365) backup sets, including Microsoft Exchange Server (using EWS) backup sets, you must install the Microsoft Office 365 DS-Client plug-in on the DS-Client computer or on every node of a Grid DS-Client installation.

The plug-in installation file can be found on the installation DVD in the following folder:

- \Software\DS-Client\DS-Client_FullFeatured\Windows_64_bit\plugins\install.exe

DS-Client Service: Windows administrator account required for Exchange Online and SharePoint Online:

Ensure that the DS-Client Service uses a Windows administrator account to log on when it starts. If the DS-Client Service uses a Local System Account, Logon failure errors might occur due to a limitation of the authentication method used by Microsoft when you attempt to create a Backup from the Cloud (Microsoft Office 365) backup set.

NOTE: This requirement does not apply to the backup and restore of data for an on-premises Exchange Server.

License: Microsoft Office 365 license required:

A Microsoft Office 365 license is required for each user who has Microsoft Office 365 data that will be backed up and restored and for each user who will manage the backup and restore process or whose credentials will be used by DS-Client to access the backup source. For example, to back up and restore a Microsoft Office 365 mailbox or SharePoint site, a corresponding Exchange Online license or SharePoint Online license is required.

Prerequisites for backup and restore of SharePoint Online data

Ensure that the following prerequisites are met before you perform the backup and restore of SharePoint Online data, including OneDrive data.

DS-NOC Server: Windows-specific dependencies required for SharePoint Online:

To create, schedule, configure, or monitor Microsoft Office 365 backup sets for SharePoint Online data (including OneDrive data) via DS-NOC, ensure that Windows-specific dependencies are installed on the DS-NOC server.

SharePoint Online requires Windows-specific dependencies to allow data access. For details on additional configuration required for SharePoint Online, see the *DS-NOC User Guide*.

Apache Tomcat Service: Windows administrator account required for SharePoint Online:

To create, schedule, configure, or monitor Microsoft Office 365 backup sets for SharePoint Online data (including OneDrive data) via DS-NOC, ensure that the Apache Tomcat Service uses a Windows administrator account to log on. Apache Tomcat is the service that runs DS-NOC.

This is a requirement to ensure proper operation owing to the Windows-specific dependencies mentioned above in Section 15.24, “DS-NOC Server: Windows-specific dependencies required for SharePoint Online:”, on page 607.

Domain: User permission requirements for SharePoint Online:

To perform the backup and restore of SharePoint Online data, including OneDrive data, you must create for each DS-Client at least one dedicated SharePoint account that is used solely for the purpose of accessing the backup source and restore destination. The dedicated SharePoint account requires the following permissions:

- Global admin

  In the Office 365 admin center, ensure that the SharePoint account that will be used for accessing the backup source and restore destination is set as a Global administrator.

- Site Collection Administrator

  In the Office 365 SharePoint admin center, set the same Global administrator as the Site Collection Administrator for each site collection to be backed up and restored. DS-Client applies the Site Collection Administrator role automatically for personal sites.

IMPORTANT: The SharePoint account that you use to perform the backup and restore of SharePoint Online data will become an owner of the SharePoint items. For more information, see the Microsoft documentation here.

DS-Client buffer: Space requirement

Ensure that the location that is selected as the DS-Client buffer path provides sufficient space for SharePoint Online backup activities. During the backup of SharePoint Online data, DS-Client uses the DS-Client buffer to temporarily store files that are larger than 500 MB. The capacity of the DS-Client buffer must be able to support data storage requirements based on a combination of these three aspects:

- Batch size
- Number of simultaneous backup sessions allowed
- Largest possible size of files to be backed up simultaneously.

For details on how to determine the DS-Client buffer capacity required for SharePoint online backup activities, see Section 6.1.2.5, “Using the DS-Client buffer”, on page 122.

Prerequisites for backup and restore of Exchange data

Ensure the following prerequisites are met before you perform the backup and restore of Exchange data on Exchange Online or an on-premises Exchange Server using EWS, unless otherwise specified.

On-premises Exchange Server using EWS: Authentication setup required

Implement the following authentication setup on the DS-Client computer and on the on-premises Exchange Server.

The following procedures prepare your on-premises Exchange Server to be a backup source and restore destination for Backup from the Cloud (Microsoft Office 365) backup sets. They are important for ensuring that DS-Client is able to connect to the Exchange Server using EWS.

- Authentication Setup in DS-Client Computer

  On the DS-Client computer on which the Microsoft Office 365 plug-in is running, set the following configuration in Local Group Policy Editor:

  1. Click **Start** and then **Run**.
  2. Type `gpedit.msc`
  3. The Group Policy Object Editor appears.
  4. Browse to **Local Computer Policy** > **Computer Configuration** > **Administrative Templates** > **Windows Components** > **Windows Remote Management (WinRM)** > **WinRM Client**.
  5. Set up authentication as follows:

     ```
     Allow Basic Authentication        : Enabled
     Allow CredSSPauthentication       : Not configured
     Allow unencrypted traffic         : Enabled
     ```

```
Disallow Digest authentication    : Not configured
Disallow Kerberos authentication  : Not configured
Disallow Negotiate authentication : Enabled
Trusted Hosts                     : Enabled
```

NOTE: When you enable Trusted Hosts, be sure to add the computer name of the on-premises Exchange Server (or add *) to the TrustedHostsList.

- Authentication Setup in on-premises Exchange Server

  1. Enable Windows Authentication for the EWS virtual directory in IIS:

     a) On your on-premises Microsoft Exchange Server, open **Internet Information Services Manager** (IIS).

     b) Browse to the Default Web Site/EWS folder.

     c) For the folder Windows Authentication, set the status to **Enabled**.

     The authentication setup should appear as follows:

     ```
     Anonymous Authentication : Disabled
     ASP .NET Impersonation   : Disabled
     Basic Authentication     : Enabled
     Digest Authentication    : Disabled
     Forms Authentication     : Disabled
     Windows Authentication   : Enabled
     ```

  2. Enable Basic Authentication for EWS:

     a) To go to the administrative settings for your on-premises Exchange Server, visit https://<server>/ecp

     In the URL, <server> can be an IP address, hostname, or FQDN at which the Exchange Server can be accessed.

     b) In the Exchange Admin Center, click **servers** to go to your on-premises Exchange Server.

     c) Click **virtual directories** and double-click **EWS**.

     d) Under Authentication, select **Basic authentication**.

Exchange domain: Minimum credentials required for Exchange

You must prepare at least the minimum number of credentials to be used for the backup of Exchange data:

1. Identify or create multiple users whose credentials will be used for the backup of Exchange data.

   IMPORTANT: Each user account must be associated with a user mailbox.

2. Configure each user according to procedures in Section 15.24, “Exchange domain: User permission requirements for Exchange”, on page 610.

   IMPORTANT: The minimum number of credentials required is proportional to the maximum number of concurrent activities (which is configured using the **MaxSessions** parameter). Each credential that you provide can support no more than 4 concurrent activities. Therefore, when MaxSessions is set at a value of 4 or smaller, provide at least one credential per DS-Client. When MaxSessions is set at a value between 5 and 8, provide at least two credentials per DS-Client. When MaxSessions is set at a value between 9 and 12, provide at least three credentials per DS-Client.

This requirement applies to data backup for Exchange Online and for an on-premises Exchange Server.

- Before setting up the backup of Exchange Online data using DS-NOC, prepare to provide at least the required number of credentials. DS-NOC will distribute the credentials among backup sets for DS-Client to use during backup. Backup can fail if DS-Client does not have access to the required number of credentials.
- For the data backup of an on-premise Exchange Server using EWS, prepare the required number of credentials that DS-Client can use for backup activities that will run concurrently. However, you must also carefully plan the backup activities to prevent each credential from being used by more than four concurrent backup activities.

Exchange domain: User permission requirements for Exchange

The following procedures are required for the backup and restore of data for Exchange Online and for on-premises Exchange using EWS. Configure each user that will be used for logging on to the Exchange Server as follows.

1. Add user to Discovery Management:

   a) Go to the administrative settings for Exchange:

      - For Exchange Online: In the Microsoft Office 365 account, on the **ADMIN** menu, select **Exchange**.
      - For Exchange Online in a Microsoft Office 365 Small Business domain, visit https://outlook.office365.com/ecp/
      - For an on-premises Exchange Server, visit https://<server>/ecp

In the URL, <server> can be an IP address, hostname, or FQDN at which the Exchange Server can be accessed.

b) Go to **permissions** > **admin roles**.

c) In the list, select **Discovery Management**, and then click the Edit button.

d) In the pop-up window, under Members, click **+**.

e) In a new pop-up window, select the user you need to add, click **add**, and then click **OK**.

f) In the first pop-up window, click **Save**.

g) In the admin roles pane, verify that the user you need to add is listed under Members of the Discovery Management group.

2. Add user to Organization Management:

a) Go to the administrative settings for Exchange:

- For Exchange Online: In the Microsoft Office 365 account, on the **ADMIN** menu, select **Exchange**.
- For Exchange Online in a Microsoft Office 365 Small Business domain, visit: https://outlook.office365.com/ecp/
- For an on-premises Exchange Server, visit https://<server>/ecp

In the URL, <server> can be an IP address, hostname, or FQDN at which the Exchange Server can be accessed.

b) Go to **permissions** > **admin roles**.

c) In the list, select **Organization Management**, and then click the Edit button.

d) In the pop-up window, under Members, click **+**.

e) In a new pop-up window, select the user you need to add, click **add**, and then click **OK**.

f) In the first pop-up window, click **Save**.

g) In the admin roles pane, verify that the user you need to add is listed under Members of the Organization Management group.

3. Add Application Impersonation as an assigned role in Organization Management:

a) Go to the administrative settings for Exchange:

- For Exchange Online: In the Microsoft Office 365 account, on the **ADMIN** menu, select **Exchange**.
- For Exchange Online in a Microsoft Office 365 Small Business domain, visit https://outlook.office365.com/ecp/
- For an on-premises Exchange Server, visit https://<server>/ecp

In the URL, <server> can be an IP address, hostname, or FQDN at which the Exchange Server can be accessed.

b) Go to **permissions** > **admin roles**.

c) In the list, select **Organization Management**, and then click the Edit button.

d) In the pop-up window, under Role, click **+**.

e) In a new pop-up window, select **ApplicationImpersonation**, click **add**, and then click **OK**.

f) In the first pop-up window, click **Save**.

g) In the admin roles pane, verify that **ApplicationImpersonation** is listed under Assigned Roles of the Organization Management group.

Exchange Data: Requirements for backup

The following requirements apply to both Exchange Online and an on-premises Exchange Server using EWS unless otherwise specified.

1. Restrict source location:
   - Ensure that the Exchange data that you need to back up are located in a user mailbox, shared mailbox, or resource mailbox. The backup of Exchange data are only supported at these source locations.
2. Exclude distribution groups from backup sets:
   - Ensure that distribution groups are excluded in every Microsoft Office 365 backup set whether you are creating it via DS-NOC or DS-User. See To exclude SMTP addresses not associated with a mailbox via DS-User: and To exclude Exchange distribution groups via DS-NOC:.

NOTE: An Exchange backup set that contains distribution groups as backup items or as part of backup set items can result in error during backup.

---

3. Do the following where applicable:
   - (Exchange Online) Provide multiple credentials to be used for backups.
     - Ensure that you have provided **multiple** credentials when editing backup settings for a domain in DS-NOC. DS-NOC will distribute the credentials among backup sets for DS-Client to use for backup processes.

NOTE: Backups can fail if DS-Client does not have access to multiple credentials.

- (On-premises Exchange) Prevent concurrent backups from using the same credentials:
  - When creating backup sets in DS-User, make sure that you use different credentials among backups that will run concurrently. Plan backup activities carefully to avoid running concurrent backups using the same credentials.

NOTE: Backups can fail if concurrent backup activities use the same credentials.

To exclude SMTP addresses not associated with a mailbox via DS-User:

In DS-User, you can enable a feature that automatically makes distribution groups, deleted users, and other email addresses that do not have a mailbox unavailable for selection in the New Backup Set Wizard. This elimination process will delay the wizard as it verifies each item before populating the list of email addresses for selection.

To enable this feature, follow these steps in DS-User:

1. On the **Setup** menu, click **Configuration**.
2. Click the **Advanced** tab.
3. Select the category **Miscellaneous**.
4. Select the parameter **ExchangeOnlineExcludeGroupMailboxes** and set its value to **Yes**.

NOTE: If this feature is not enabled, you must ensure that distribution groups are not selected alongside mailboxes that you have manually selected for backup in a Microsoft Office 365 backup set.

To exclude Exchange distribution groups via DS-NOC:

Distribution groups will appear in the same list of mailboxes in Cloud Management System in DS-NOC. The DS-NOC interface cannot automatically separate users from groups because of the limitations of the APIs provided by Microsoft.

Therefore, when you configure Microsoft Office 365 backup sets for a domain in Cloud Management System, you must ensure that distribution groups are not selected alongside mailboxes that you have manually selected for backup.

DS-Client system requirements

When backing up and restoring Microsoft Exchange data using Backup from the Cloud (Microsoft Office 365) backup sets, the DS-Client computer minimum system requirements are as follows:

For domains with less than 25,000 items per mailbox:

- **Processor –** Intel Core i5
- **Memory –** 16 GB

For domains with more than 25,000 items per mailbox:

- **Processor –** Intel Core i7
- **Memory –** 32 GB

Archiving restored files to PST

When you have selected to restore only Microsoft Exchange data to the local disk, you can archive the restored files to a PST file.

Before archiving Microsoft Exchange data to a PST file, the following requirements must be met:

- Ensure that Microsoft Outlook is installed on the same machine as the DS-Client.
- Ensure that the security settings in the Microsoft Outlook Trust Center (Options > Trust Center > Trust Center Settings > Programmatic Access) are configured to never warn you about suspicious activity. For detailed instructions, see the Microsoft documentation.
- Ensure that all the stores, such as mailboxes, that have been added to the current Microsoft Outlook profile are accessible (that is, with a legitimate license and not deleted or corrupted). Remove all other stores that are not added to the current profile.
- Ensure that all foreground instances of Microsoft Outlook are closed on the DS-Client machine. If multiple restore activities will be running sequentially or simultaneously, ensure that all Microsoft Outlook instances are closed in the foreground before the first restore activity in the series.

NOTE: During the restore process, DS-Client will access Microsoft Outlook in the background.

Known issues

Backup error in Event Log:

In the backup of Exchange Online data using a Microsoft Office 365 backup set, you can see the following error in the DS-Client Event Log after the backup of some mailboxes:

```
10110039 : The following exception has occurred. This property
was requested, but it wasn't returned by the server.
```

This error does not affect the successful backup or restore of items from the mailbox.

Restore error when mailbox is deleted and inactive:

When you restore Microsoft Office 365 Exchange data to Original Location using DS-Client **within 30 days after the deletion of a mailbox** and the required mailbox is **inactive** at the destination location, the following behavior can occur:

- The deleted mailbox remains in deleted status.
- Restore attempts fail with this event:

```
10110039 : The following exception has occurred. The SMTP
address has no mailbox associated with it. The mailbox remains
in deleted state.
```

NOTE: To prevent this error, ensure that the required mailbox already exists and is active in the domain at the destination.

Limitation: Selected objects not supported in local disk restores

Notes, Journal, and Contacts entries are not restored in local disk restores.

In the local disk restore process, Microsoft Office 365 data is converted to other data formats. The following limitations also apply when you restore Microsoft Office 365 data to local disk:

- Journal or Notes entries attached to an email message are not restored. The email message itself is restored. Other types of attachments to the email message, such as a PDF document, are also restored.
- All attachments to a calendar item are not restored. The calendar item itself is restored.
- All attachments to a task are not restored. The task itself is restored.

Limitation: Automatic versioning unavailable for SharePoint Online data

DS-Client does not support automatic versioning for SharePoint Online data even if you have enabled versioning for specific lists in SharePoint. DS-Client will only back up the latest version of the list items, and it will only restore the generation that is selected to be restored for each list item. The restored generation will be added to the SharePoint Online database as the latest version.

Limitation: Backup and restore of Office 365 Group data in Office 365 Business Premium not supported

DS-Client does not support the backup and restore of data generated by Office 365 Group features in Office 365 Business Premium. Office 365 Group features include conversations and email, group calendar, and file sharing of group documents.

Important information

Restoring orphaned Microsoft Office 365 backup sets

Like other kinds of backup sets, a Microsoft Office 365 backup set can become orphaned and can be restored.

To restore an orphaned Microsoft Office 365 backup set to an Alternate Location or to the local disk of the DS-Client computer, perform the following:

1. Recover the backup set.
2. Restore the backup set.

To restore an orphaned Microsoft Office 365 backup set to its Original Location, perform the following:

1. Recover the backup set.
2. Migrate the backup set.
3. Restore the backup set.

In the migration of a backup set, you will re-configure the backup items of the set and provide the credentials that DS-Client requires to access the source of a backup set. Migration is required for restoring an orphaned Microsoft Office 365 backup set specifically to its Original Location or for performing backups for the set.

For procedural instructions:

- See Section 3.11.3, “Viewing the system status”, on page 77.
- See Section 7.6, “Migrating a backup set”, on page 313.
- See Section 6.4.4, “Restoring a Microsoft Office 365 backup set”, on page 176.

15.25 Physical-to-Virtual (VMware vCenter) backup set

Creation Date: August 28, 2012
Revision Date: October 16, 2018
Product: DS-Client & Local DS-VDR Tool

Summary

This article provides additional information about the Physical-to-Virtual backup set type. This backup set type allows you to 'backup' a physical machine to a VMware virtual machine.

NOTE: A Physical-to-Virtual backup set does not backup data to DS-System.

Physical-to-Virtual requirements

The following requirements must be met to create Physical to Virtual backup sets:

- DS-Client must be configured with the Local DS-VDR Tool feature and be pointing to a running instance of the tool (**Local DS-VDR** > **Configure Local DS-VDR Tool**).
- Install the VMware vCenter Converter Standalone on the Local DS-VDR Tool computer. This plug-in can be found at the VMware website.
  - Run the installation and select **Client-Server installation (advanced) Setup Type**. The plug-in has three components:
    - A server that must be installed on the Local DS-VDR machine.
    - A client that is optional and allows a user to monitor P2V processes.
    - An agent that is pushed (by the server component) to the actual target physical machine that is to be converted.

    NOTE: This agent is 'pushed' to the target physical machine at the time the backup set is created (after you select the target server in the New Backup Set Wizard). If you encounter a popup error that indicates the agent installation has not completed, that target machine probably does not support physical to virtual conversion. Do not try to continue with the P2V backup set if this occurs. (Also, if you uninstall this agent from the target machine, the physical to virtual conversion will not work. In this case, you must create a new P2V backup set on the target machine to 'push' the agent to the target again.)
- Make sure to export the physical machine to a datastore that has enough space.

- If you plan to convert a Linux physical machine, you must also perform the following:
  - Enable SSH on the source Linux machine.
  - Use the root account to convert a Linux powered-on machine.
  - Make sure that the Converter Standalone server machine has network access to the source (physical) machine.
  - Turn off firewall applications running on the source machine.
  - Make sure that no other conversions job is using the source you select.
  - To be able to convert multi-boot virtual machines, make sure to install GRUB as the boot loader. (LILO is not supported.)
  - Have your network administrator assign a dedicated IP address that you can use for each Physical-to-Virtual backup set you create. This will be used in the IP / Netmask / Gateway for conversion helper VM fields for the backup set options.

Other details

For the list of operating systems that can be converted from physical to virtual, refer to the **Installation and Support Matrix**, which can be found on the Installation DVD (\Documentation\Release_Information).

Each physical machine that is protected will cost one Local DS-VDR license count.

The name of the exported virtual machine will contain the physical machine name or IP address and the backup timestamp, in the following format:

<physical machine name or IP address>_<timestamp>

NOTE: If Max. gen. is set to 1 for a Physical-to-Virtual backup set, the Local DS-VDR will disable this time stamp to allow the same name to be kept for Physical to Virtual Conversion. This way, the master/delta algorithm will apply on subsequent backups and DS-Client will be able to send only the changes that have been made to the source virtual machine since the previous backup.

During the physical to virtual conversion process, all the virtual disks are automatically created as ‘Thin’ disks to save space in the VMware ESXi host storage.

The Local DS-VDR tool can convert from physical machine directly to a VMware standalone ESXi host or VMware vCenter Server.

Converting from Microsoft Hyper-V to VMware vSphere

Using the Physical to Virtual Backup set type, you can convert powered-on Microsoft Hyper-V virtual machines to VMware vSphere virtual machines.

Prerequisites:

- Make sure that the Windows version installed on the powered-on machine is supported by VMware.
- Make sure that the VMware vCenter Converter Standalone server machine has network access to the Windows source machine where the powered-on Hyper-V machine is running.
- Turn off firewall applications running on the source machine.
- Disable “simple file sharing” on the source Windows machine.
- Make sure that no other conversion jobs are using the source you have selected.
- Remove any VMware Converter 3.x installations manually from the source machine.

Troubleshooting: Linux physical machine has Xserver starting problem

Problem:

For Physical-to-Virtual backup sets of a Linux source physical machine, sometimes after converting to a virtual machine on the target VMware server, the virtualized machine has starting problems with its Xserver.

Solution:

Execute the following steps on the converted virtual machine:

1. Power on the virtual machine.
2. When you are prompted to reconfigure the Xserver, click “yes”.
3. Input the virtual machine’s root user password.
4. Auto-reboot and start the Xserver.

15.26 Block-level resume

Creation Date: October 17, 2005
Revision Date: September 15, 2017
Product: DS-Client

Summary

Block-Level Resume allows a backup to continue from the last successful file block backed up in the session. Supported backup sets configured to use the DS-Client buffer automatically benefit from the Block-Level Resume feature if the DS-System has received at least 100 MB of compressed data for a file. The benefit increases with the size of the file being backed up. Without this feature a backup of a large file that is interrupted due to a lost connection would have to restart from the beginning of the file.

NOTE: When Block-Level Resume is not used, the resume occurs at the file-level.

If the backup process is interrupted (e.g. the connection to DS-System is lost), DS-Client will attempt to reconnect a specified number of times to resume the backup. The default number of reconnection attempts is 3. For more information, see Section 3.1.5, “Configuring the parameter settings”, on page 25.

NOTE: For best results, we recommend that you configure the interval between reconnection attempts to be at least 5 minutes.

The following backup sets support the Block-Level Resume feature:

Windows DS-Client:

- File system
- Email message
- Microsoft SQL Server
- Microsoft Exchange Server
- Oracle Server database
- Permissions only

Linux DS-Client:

- Local File System
- UNIX-SSH
- NFS
- IBM DB2 database

- Oracle MySQL database
- Oracle Server database
- Permissions only
- PostgreSQL database

Mac DS-Client:

- Local File System
- UNIX-SSH
- NFS
- Oracle MySQL database
- Permissions only
- PostgreSQL database

NOTE: For more information on the DS-Client buffer feature, see Section 6.1.2.5, “Using the DS-Client buffer”, on page 122:

15.27 Continuous data protection (Backup set option)

Creation Date: July 31, 2006
Revision Date: October 11, 2018
Product: DS-Client

Introduction

Users often want to protect ongoing changes to their data as soon as the changes have occurred. Examples of such data are word processing or spreadsheet files and the Contacts, Calendar, Notes, and Drafts in a mailbox.

Weekly or daily scheduled backups are not sufficient to prevent data loss caused by unexpected failures on the data source. Though more robust as a backup strategy, hourly backups can consume too much system resources when a complete file system or mail server scan is required.

Continuous Data Protection (CDP) is a backup solution that continuously monitors the changes on a target server and backs up ongoing changes as soon as the changes are detected. It retains intermediate changes so that users can recover images from a specific time. Continuous data protection differs from a “point-in-time” backup and from replication or mirroring, which only keeps a snapshot of the latest image.

After a CDP backup begins (on demand or as scheduled), the session will continue to run unless explicitly stopped, for example, by the scheduled end time or by the user. DS-Client continuously monitors the ongoing changes on the target backup server throughout the entire backup session. As soon as DS-Client detects a change, it immediately backs up the changes to DS-System.

See also:

- Section 6.1.2.4, “Enabling Continuous Data Protection (CDP)”, on page 121
- Section 6.1.3.10, “Restoring data from continuous data protection (CDP) backups”, on page 142

Recommendations for configuring backup sets with CDP

When you configure a File system backup set with CDP, it is not necessary to select an entire server to back up. Like typical File system backup sets, you can select specific parts of a server, including any combination of share level, directory level, and file level filters. Extended regular expressions can be used to define complex selections.

When you configure a Microsoft Exchange Server backup set (EWS) with CDP, you can select user accounts, or individuals folders (such as Inbox, Sent, Contacts, Calendar, Notes) within user accounts, for backup.

Selecting individual email messages in a backup set with CDP is allowed but not recommended. When an individually selected email message is removed from its original location, it will not be backed up.

DS-Client can also be configured with Local Storage for faster recovery.

The Retention feature can help you to manage the number of online generations stored on DS-System. For more information, see Chapter 5, “Working with retention rules”.

Features and limitations

- **Use Buffer** and **Pre-Scan** are unavailable when CDP is used.
- A regular backup process stops after all the backup items have been processed. Once started (by schedule / on demand), the CDP process will not stop until one of the following events:
  - An on-demand stop is issued (i.e. click “Stop”).
  - The scheduled time limit is reached.
  - It is suspended by conflicting activities. (See Section 15.27, “CDP with other activities”, on page 624.)
  - It runs out of retry connect times to DS-System (including restart backup scenarios).
  - Some other unexpected stop condition (Exceptions, failed to connect to target, etc.).
- Windows support with CDP:
  - **Follow Junction Point** is **NOT** supported because DS-Client cannot be notified of changes that happen inside a junction point.
  - **Backup data in Remote Storage** is supported. However, like normal backup, if the data on the remote storage is changed but not the placeholder, DS-Client cannot detect the change.
  - **Backup Single Instance Store file data** is supported.
- If you migrate a backup set in which CDP is enabled, the same limitations apply to the new target server.
- You can enable CDP in a backup set in which CDP has not been enabled as long as all the conditions mentioned above are satisfied. The Backup Options dialog box will allow you to select only Continuous Data Protection if this is true.
- The same file cannot be backed up more than once in the same second.
- For data with frequent changes, CDP can be configured to wait a specified amount of time from the last change made to a file before backing it up.
- File Change Detection is configurable at the backup set level.

- **Windows Built-in File Monitoring** (Windows only): Interfaces with Windows operating system functionality for notification of file changes.
- **File Alteration Monitor** (Linux only): Similar to the Windows Built-in File Monitoring. Interfaces with Linux operating system functionality for notification of file changes. FAM will only be used if it is installed and working on the target machine (i.e. if the FAM daemon can be started). If FAM is not installed, DS-Client will try to copy and execute a FAM instance on a target Linux machine.

NOTE: FAM might not be available for some UNIX platforms.

- **Generic Scanner** (UNIX only): Loops the scanning function from online File system backup sets. (This can be used if the File Alteration Monitor is not available. It permits CDP of any file data at the expense of a higher I/O load.)
- **MLR Email Monitoring** (Windows only): Monitoring included with the DS-MLR service installation.

- Windows DS-Clients can perform CDP only if the target backup machine is supported. It does not support servers that are 'simulated' as Windows machines (e.g. using SAMBA to back up a UNIX machine).
- CDP with BLM (Infinite Generations) will start Archiving activities as needed. While an archiving activity is in progress, the BLM will deny access to the package that is currently open for activities like Browse, Create Restorable Image, Retention, etc. DS-System will stop the current archiving activity after 5 minutes of inactivity, and re-start a new one if needed.
- The Process Window for CDP backup sets always shows the current data transfer rate. (For online backup sets, this number is the average transfer rate achieved since the start of the backup.)

CDP with other activities

Some activities are handled differently when interacting with CDP backup sets. Each CDP backup set has on/off settings to suspend the backup for **scheduled** Retention, Validation, and BLM (**Backup Set Properties** > **Options** : **Continuous Data Protection**).

- If the suspend setting is "off", the other (scheduled) activity will fail to run with an error.
- If the suspend setting is "on", (or if you run an **on demand** activity), DS-Client will suspend the CDP and resume or restart after the other (scheduled / on demand) activity finishes.

Suspend CDP, then resume:

- Restore

- BLM Request
- Validation (without errors)

Suspend CDP, then restart a new CDP:

- Synchronization
- Retention
- Delete
- Validation (with errors)

Daily Admin / Weekly Admin:

The strategy is configurable.

To configure the strategy, click **Setup** > **Configuration** > **Parameters**: **CDP Strategy**.

- **Skip**: Admin will skip any running CDP backup sets
- **Suspend**: Admin will suspend any running CDP backup sets, then restart them once the Admin is finished.

CDP should not be running:

The CDP backup set should not be in use if you run any of the following activities (you will not be allowed to proceed until the CDP backup is stopped):

- Assisted Delete (If a CDP backup is running, that backup set will be skipped)
- Remove backup set
- Disc/Tape Request

Scheduled CDP backups

A backup schedule can include the following tasks:

1. Perform Backup
2. Enforce Retention
3. Perform Validation
4. Perform BLM

For online backup sets, tasks 1-4 will run in sequence.

If the schedule applies to a CDP backup set, tasks 2-4 are handled differently. The schedule will run those tasks in the following sequence, then the CDP backup will resume / restart:

1. Perform Backup: A full scan and backup of the changed items is performed once.
2. Enforce Retention: Suspend CDP, enforce retention, then restart a new CDP
3. Perform Validation:
    - If validation is completed without errors, suspend CDP, then resume.
    - If validation is completed with errors, suspend CDP, then restart a new CDP.
4. Perform BLM: Suspend CDP, perform BLM, then resume.
5. After the last task is run, the CDP backup is restarted / resumed.

NOTE: The next day, when the CDP backup reaches the same scheduled start time, DS-Client will force a full scan of all files/folders in the CDP backup set's backup items.

Bandwidth considerations (catch-up, queuing, granularity)

- If network bandwidth is slow, DS-Client queues the list of changed files. The backup is performed later, as network resources permit, using the latest change to the queued file. This means less granularity (dynamic adjustment to granularity).
- If there are too many queued changes, a pre-scan of the entire backup set will be performed.

Reconnection

Both demand and scheduled CDP backup sets will use the reconnection settings from DS-Client **Setup** > **Configuration** > **Parameters** and see options in the Backup Options section.

Unix DS-Client with File Alteration Monitor:

If DS-Client cannot access a backup item's parent folder when the backup starts, DS-Client will re-check if it can be accessed every 5 minutes.

Disabling CDP in a backup set

To disable CDP in a backup set in which CDP has been enabled, do the following:

1. If a CDP backup session for the backup set is in progress, stop the backup session.
2. In the Backup Sets tree, right-click the backup set, and then click **Properties**.
3. In the Backup Set Properties dialog box, select the **Options** tab.
4. In the Options tab of the Backup Set Properties dialog box, clear the **Continuous data protection** box.
5. Click **Apply** and then click **OK**.

16 DS-User F1 Help for GUI (Context-Sensitive)

This section contains an alphabetical listing of the dialog boxes in DS-User. The F1 Help provides descriptions for the contents of the different dialog boxes.

About DS-User

This dialog box shows the current version of this installation of the DS-User application. Click Info to bring up the DS-Client Version Info.

DS-Client Info	Brings up the DS-Client Version Info dialog box.
Ports	Brings up the Listening Ports dialog box.
JRE Properties (DS-User only)	Brings up the Java Runtime Environment Properties dialog box with information on the local computer where DS-User is running.

Access Report

View by size	Shows the graphic sorted by size.
View by number of files	Shows the graphic sorted by number of files
List	**Shows the files sorted by Modified Time**
New Report	Allows you to search for specific file extensions.

Activity Log viewer

Use this dialog box to view the DS-Client Activity Log. To narrow your search, you can specify search parameters in the Select By section at the bottom. Some search combinations do not require certain boxes or buttons, and in those instances will be unavailable.

Activities List	
Icon	Icon shows the type of activity.
User Name	Name of the user that performed the activity (if applicable).
Activity	Type of activity.
Owner	User Name of the owner of the backup set (i.e. an administrator might perform an action on a set owned by someone else).
Customer	Displays the customer to which a backup set is assigned. This column is displayed only when the Multi-Tenant feature is enabled.
Description	Identifies the backup set affected by the Type of activity performed.
Node ID (Grid DS-Client)	Contains the DS-Client node associated with the activity.
Warnings	Number of warnings that occurred during the activity (if any).
Errors	Number of errors that occurred during the activity (if any).

Start	Shows the date and time the activity was started.
End	Shows the time the activity was completed.
Duration	Length of time between the activity's start and end times.
Files	Number of files that were actually transferred or processed. • Note: CDP backup sets that are currently running will have this box updated every 30 minutes.
Online	Amount of data transferred to or from Online storage. (In Bytes) • Note: CDP backup sets that are currently running will have this box updated every 30 minutes. • Note: For activities that do not transfer data, the number in this column represents the amount of data processed (e.g. scanned, deleted, etc.).
Transmitted Amount	Shows the total amount of data transmitted between the DS-Client and DS-System (including encryption/compression). • Note: For activities that do not need connection to DS-System (e.g. local storage cache, Initial Backup), this column will reflect the amount of processed data, after de-duplication and compression (where applicable).
Completion	Whether the activity completed by finishing and closing gracefully. Note that errors can occur, even if the activity is completed. If an activity appears in red, it is because it had a completion status that might not have resulted in a complete activity and you should check the Event Log for further details. • For more information, see Section 9.3.2, "Viewing the Event Log", on page 376.
ID	Activity's Identification number
Note	Shows additional information for the corresponding activity (if applicable).
Description section • Displays details about the highlighted line in the Activities List.	
Select by section • Filter options that can be used to limit what is displayed in the Activities List.	
From	Type the date and time of the earliest activity you want to see. No earlier data will be displayed.
To	Type the date and time of the latest activity you want to see. No newer data will be displayed.
Activity	You can search for a specific activity.
Type	If this list box appears, it allows you to choose between Demand and Scheduled activities (or both).
ID	Allows you to search for a specific Activity ID number. Each activity on DS-Client has its own unique (chronological) ID number.
Node/Set	You can search for a specific node/backup set. • Click [>>] to bring up the Select from Backup Sets dialog box.
Schedule	If you select Scheduled backups, this list box appears, allowing you to select a specific schedule.
Retention	Allows you to filter for only activities associated with the selected retention rule. • The default is <Any>, which disables this filter.

User	You can specify a particular user in this box. • **Owner**: Searches for activities **belonging to** a particular user (the backup set owner). • **Performed by**: Searches for activities **performed by** a particular user.
Node ID (Grid DS-Client)	To view the activities from a specific Node, choose one from the list. The default is <All>.
Find	Click to update the activity log display based on the parameters in the Select By section.
Detailed Log	For backup sets that have the Detailed Log option activated (Set Properties - Options tab). • Click to bring up the Detailed Log Viewer, which shows all the files that were backed up in the highlighted session.
Event Log	You can view more details about each activity by accessing the Event Log. The "Select By" options in the Event Log will match those of the highlighted activity. • Click to bring up the Event Log Viewer.

Add / Edit Complexity Rule

Use this dialog box to add or edit a Complexity Constraint Rule for a Rotated Password.

Min. Length	The minimum number of characters from the selected Character Set to include in the rotated password.
Character Set	
Choice	Select a set of characters or define your own. • Letters • Uppercase Letters • Lowercase Letters • Digits • Special Characters • Custom
Characters	Shows the character set for the corresponding complexity rule choice. • For Custom: you can edit the list of characters that can be used.

Add / Edit Event Filter

This dialog box allows you to enter or modify an Event Filter.

Event #	This must be the exact event number, as it appears in the Event Log Viewer.
Category	This must be the same category as the corresponding event number, as it appears in the Event Log Viewer.

Type	Select what Event Severity to apply. This over-rules the default for the corresponding event. Remember: this can affect the notifications that are sent. • Information • Warning • Error
Description	Shows the corresponding description for this event. This box cannot be edited.
OK	Click to save this filter in the Event Filter List.

Add / Edit Permissions for a User or Group

This dialog box allows you to add permissions for other users/groups to use the selected backup set.

List	
Icon	Shows what the corresponding entry refers to: • a specific user • a group
Name	Shows the users and groups available.
Description	Shows a description (if any) of the corresponding user or group.
Domain	[Windows only] Shows the domain or server where the user or group is from.
Permission Type	
Backup	Grants permission to perform backups.
Restore	Grants permission to restore.
Modify	Grants permission to modify the backup set.
Delete	Grants permission to delete the backup set.
Notes	
1	Users and groups only appear if they have logged into the DS-Client at least once.
2	The backup set owner and users with the “DS-Client Administrator” role automatically have all permissions to a backup set even though they are not listed here.

Add / Exclude item from scanning result

UNPROTECTED LAN RESOURCE DISCOVERY TOOL

The Discovery Wizard helps you to identify all the unprotected resource (shares) on your LAN. This dialog box allows you to add or exclude scan items that were discovered by the previous scan of the Unprotected LAN Resource Discovery Tool.

Item Tree • Shows the items discovered by the previous scan.	
Add	Adds the item.

Exclude	Excludes the item.

Add / Exclude Subnet

UNPROTECTED LAN RESOURCE DISCOVERY TOOL

The Discovery Wizard helps you to identify all the unprotected resource (shares) on your LAN. This dialog box allows you to add or exclude items from the scan.

Subnet Address	Enter the first three parts of the IP address, followed by a “0” in the last part to signify the subnet (e.g. 12.34.56.0 searches all resources on the “.56” subnet). • This dialog box only uses the first three parts of the IP address entered.
Subnet Mask	Read Only.
Add	Adds the subnet.
Exclude	Excludes the subnet.

Add / Modify address

Use this dialog box to add or modify a DNS host name or IP address.

Host name or an IP address	Use this box to enter a specific DNS host name or IP address.
IP range (Add only)	Use this option to specify the start and end of an IP range (e.g. 10.20.30.40 to 10.20.30.43). This allows you to quickly populate a large list of sequential IP addresses.

Add / Modify DS-Client (DS-User Initialization)

Add or modify a specific DS-Client entry (standalone or Grid) to search for on startup of the DS-User.

Single DS-Client	Enter the DS-Client IP address or DNS address.
Grid DS-Client	If you select Grid DS-Client, the box expands into a list and the following buttons appear. • **Add**: Add a new entry to the Grid DS-Client address. • **Modify**: Edits the highlighted entry in the Address list. • **Delete**: Deletes the highlighted entry from the Address list. • **Load**: This allows you to load a text file containing a list of hostnames and / or IP addresses representing the nodes of a single Grid DS-Client.
Port	The default setting is “4403”. Normally you should not change this setting.
Use UDP protocol to discover DS-Client	The UDP protocol can display the list of DS-Clients faster, though with less certainty that a DS-Client is capable of accepting a connection.

Add / Modify DS-Client Connection Entry (Print Global Report)

This dialog box allows you to enter or modify DS-Client connection entries.

Name	Enter a descriptive name for the DS-Client.
IP Address	Enter the DS-Client's IP Address. • Once you finish entering the IP address, press TAB or highlight another box. DS-User will immediately verify if the DS-Client is running (the From list will activate).
User Name	Type the user name of the account with access to the DS-Client.
Password	Type the corresponding account password.
From	Select the domain or server on which the username and password will be verified. (i.e. DS-Client validates supplied credentials with this domain or server.).

Add / Modify DS-System connection entry

Use this dialog box to add/modify DS-System connection setup entries.

DS-System connection entry	
Primary	Select to indicate if this is the Primary connection. The DS-Client will use the Primary connection first, to connect to the DS-System. All other connection entries are considered alternate entries, to be used only if the primary connection fails.
DS-System address (IP or DNS)	A list of the DS-System's address(es) that can be used for this connection entry. • You can enter an IP address or a DNS host name. • Multiple addresses can be entered, if your service provider provides multiple addresses to connect to the DS-System.
Add / Modify / Delete	Click this button to add, modify, or delete entries from the DS-System address list.

Pre/Post This option can be used to run commands on DS-Client when connection to DS-System is required. This can help in some network situations, like dealing with firewalls.	
Pre-Command	Enter a command to run on the DS-Client computer before it connects to the DS-System. Click Test to run the command and view the exit code it returns.
Post-Command	Enter a command to run on the DS-Client computer after it disconnects from the DS-System. Click Test to run the command and view the exit code it returns.
Consider connection failed if pre-exit code	Specify a number. If the Pre-Command returns an exit code that meets this condition, the DS-Client will: • Not attempt to connect to DS-System. • Log the error.
Consider Pre/Post individually for each connection	Select to run the specified Pre/Post commands for each activity that requires a connection to DS-System (even if the activities overlap). Clear to run the Pre-Command before the first activity, and to run the Post-Command after the last activity has finished (if the activities overlap).

Delay after executing pre-command	Enter a time (in seconds) to wait after executing the Pre-Command, before DS-Client connects to DS-System.
Delay after executing post-command	Enter a time (in seconds) to wait after executing the Post-Command. No activities will run on DS-Client.

Add / Modify Filter

This dialog box allows you to create a filter to apply to an Email message backup set. This filter will allow only emails that fit the criteria to be backed up / restored. Some differences can exist, depending on the email server type, and if this filter is for backup or restore.

Filter Name	Add a descriptive name for the filter.
Filter Conditions	
Field	Select the box to search. The available selections depend on the email server type, and if this filter is for backup or restore.
Criteria	Select the criteria to apply to the search box. These searches are not case sensitive. • NOT checkbox - select to make this criteria negative. • = equal • > greater than • < less than • >= greater than or equal • <= less than or equal • Contains (Exchange, Restore) - Searches Field for Value containing this string. • Begins with (Exchange, Restore) - Searches Field for Value beginning with this string. • Ends with (Exchange, Restore) - Searches Field for Value ending with this string.
Value	Either enter the value manually, or select from the available value options. This box depends on the selection in the Field box.
Logical	Select the boolean operator that applies for each filter condition: • AND • OR
(Left Bracket	Use this with the right bracket for a complex filter.
) Right Bracket	Use this with the left bracket for a complex filter.
Add	Click to add the filter condition. You can do this as many times as necessary to create the required filter.
Description	Shows the details of this filter. Each filter condition you have specified appears.

Add / Modify Subnet

This dialog box allows you to enter or modify a subnet entry.

Address	Enter the subnet address • For example: “222.111.30” searches all resources on the “.30” subnet.
Port	The default setting is "4403". Normally you should not change this setting.
Use UDP protocol to discover DS-Client	Scanning a subnet uses the UDP protocol. • The UDP protocol can display the list of DS-Clients on a subnet faster, though with less certainty that a server is capable of accepting a connection (when compared with specifying the full IP address of a specific server).

Add a DS-Client

Add or modify a specific DS-Client entry (standalone or Grid).

Single DS-Client	Enter the DS-Client IP address or DNS address.
Grid DS-Client	If you select Grid DS-Client, the box expands into a list and the following buttons appear. • **Add**: Add a new entry to the Grid DS-Client address. • **Modify**: Edits the highlighted entry in the Address list. • **Delete**: Deletes the highlighted entry from the Address list. • **Load**: This allows you to load a text file containing a list of hostnames and / or IP addresses representing the nodes of a single Grid DS-Client.

Add Notification

This dialog box allows you to view and change the individual notification settings. For email and pager notifications, the notification options must have been set in the DS-Client Configuration dialog box.

Notification Method	
E-Mail	Sends an email message to the specified recipient.
Pager	Sends an email to the pager email account (configured in the DS-Client Configuration).
Broadcast (Windows DS-Client)	Sends a message to the messenger service on the specified recipient domain, workgroup or server. (Broadcasts to domains or workgroups are limited to 128 characters).
Event (Windows DS-Client)	Records the notification in the specified recipient server's Event Log.
Recipient	
Administrator (E-Mail)	Sends the email notification to the DS-Client Administrator (specified in the DS-Client Configuration - Notification Tab).
Other (E-Mail)	Sends the email notification to the recipient identified in the box.
Pager (Pager)	Sends the notification to the pager account (specified in the DS-Client Configuration - Notification Tab).

Server(s) (Broadcast & Event) (Windows DS-Client)	Sends the notification to the selected Domain, Workgroup or Server. Use the [>>] button to browse and select the recipient. **Note**: This feature is no longer supported on Windows DS-Clients.
Completion • **All**: Notification will be sent in any scenario: when Completed without errors, Completed with errors, and Incomplete. • **Successful**: An activity that completed successfully (without errors or warnings). • **Completed with warnings**: An activity that completed with at least one warning event. • **Completed with errors**: An activity that completed with at least one error event. • **Incomplete**: An activity that is not completed successfully.	
Detailed notification	(Email only). Select this box to send more detailed backup set information.
Attach detailed log	(Email only). Select this box to include a file-level detailed backup log as an attachment. • **Compress**: Select to compress the attached file.
Send E-Mail using HTML format	(Email only). Select this box to send the email notification in HTML format. Otherwise, it will be sent in plain text format.

Advanced Connection Options (Linux DS-Client)

SSH backup sets only

Use this dialog box to view or change connection options for the selected backup set.

Access interface	Select the type of script language to run on the backup source computer. • PERL • PYTHON • DIRECT: use only if you have a specific (i.e. custom-made) binary on the target computer that will perform the backup/restore.
Interpreter / Program Path	• Enter the exact path to the PERL / PYTHON / DIRECT binary on the target computer.

Advanced Options

Use this dialog box to narrow down your selection in a Restore Wizard or in a Request Wizard. The Wizard will show only directories that meet these conditions.

Notes:

- Restore Wizard includes regular on-demand restores, BLM Image Restores, and Disc/Tape Restores.
- Request Wizard includes BLM Requests, and Disc/Tape Requests.

Show section	
Latest generation of all data	Shows all data stored online. (Note that the Filter section is empty.)

Latest generation of all data (except deleted data)	Filters out files that were deleted from the source, but not removed from the online storage as of the last backup session. (You probably do not need this 'expired' data.) (Note that the Filter section has the date of the latest backup session.)
Selective data (from a certain period)	Allows you to specify the period from which you would like to restore. (Note that this activates the Restore Period and Filter sections.)
Period section This section is only active if the “Selective data (from a certain period)” radio button is selected. • This will narrow the display of files for restore to only those files/directories that were backed up within the specified period.	
From	Click [>>] to select the earliest time. • This opens the Select a Backup Session dialog box.
To	Click [>>] to select the latest time. • This opens the Select a Backup Session dialog box.
Filter section This section appears if the Restore Wizard or Request Wizard can use the DS-Client database to perform the filtering. It does not appear for BLM Image Restore or Disc/Tape Restore since they have been written to media and are no longer synchronized with the DS-Client database.	
Show all data	No filter is applied.
Hide data (dirs / files) deleted from source on / before:	This filter allows you to hide backed up data (directories and files) that was intentionally deleted from the source computer. Select a date and time in this box to filter out backed up data that was not scanned by the DS-Client since the filter date. This prevents you from restoring directories and files that were intentionally deleted.
Show only data (dirs / files) deleted from source on / before:	The inverse of the previous ‘hide data’ option (above). • This allows you to view and restore only those directories / files that were intentionally deleted from the source computer.
File overwrite section [Restore Wizard only] This section allows you to control the types of files that are restored to minimize restore times.	
Restore all	Restores all selected files to the destination directory. Any files of the same name will be overwritten.
Restore newer	Restores only with files that have newer dates than those in the destination directory.
Restore older	Restores only with files that have older dates than those in the destination directory.
Restore different	Restores only with files that have different dates/sizes than those in the destination directory.
Skip existing	Does not restore any existing files of the same name in the destination directory.

All Replicated Machines

This dialog box can display all the virtual machines that have been successfully replicated.

You can filter the list of virtual machines by the IP address of a source DS-Client in conjunction with its source port. • **Source DS-Client IP**: Select **All** to list all the virtual machines. Select a source DS-Client IP to filter the list. • **Source Port**: Select the source port that is used by a specific DS-Client if the same IP address is shared among multiple DS-Clients.	
Each line in the list corresponds to one replicated virtual machine. Replicated virtual machines are shown in two sections: • **Items ready for failover** lists source virtual machines that have been replicated to the destination server. • **Items ready for failback** lists target virtual machines that are being used after failover.	
Source DS-Client IP	The IP address of the DS-Client that connects to the source virtual machine. This is the DS-Client that generates replication data of the source virtual machine.
Source Port	Specifies the port that is used by the source DS-Client for VM replication processes.
Replication Set Name/ Number	• In the source DS-Client, this column shows the name of the VM replication set that replicated the virtual machine. • In the destination DS-Client, this column shows the **Set Number** (which is the **Set ID** in **Set Properties**) of the VM replication set that replicated the virtual machine. The name and ID of the VM replication set is only shown as a reference.
Server Type	The type of server that is currently hosting the source and target virtual machines.
Source Path	Path to the source virtual machine.
Destination Path	Path to the replication target virtual machine.
Generations	Shows the replicated generation that is selected to be used for the failover process. Click **>>** to select another generation.
Action	• **Failover**: Click this button to perform a failover on one virtual machine. • **Failback**: Click this button to perform a failback on one virtual machine.
Trigger	To perform failover or failback on multiple virtual machines concurrently, select the check box that corresponds to the virtual machines and then click this button. **Note:** DS-Client allows a maximum of three concurrent failback activities and has no limit on concurrent failover activities.
Refresh	To obtain an updated list of virtual machines that are ready for failover and failback, click this button.
Close	To close the dialog box, click this button. No new failover or failback processes will be initiated.

Assign to Retention

Use this dialog box to select a Retention Rule.

Name	• No Retention Rule: • Use a specific Retention Rule: select from the list of the Retention Rules defined on the DS-Client.
Description	Shows a description of the selected Retention Rule.

Assign to Schedule

Not Scheduled	Backup set is not set for unattended backup.
Scheduled	Backup set will run based on the selected schedule:
Available schedules	Shows a list of the schedules available.

Assisted Delete - Select Backup Set / Directory

This dialog box appears with the automatic selection(s) for delete from online, based on the selections made in the Assisted Delete - Select how you want to delete dialog box.

Backup Set List	• Windows DS-Clients: Selected directories will be deleted. • Linux/Mac DS-Clients: Files in the selected directories will be deleted. If the entire directory was deleted, the directory will also be removed from online. Clear a check box to keep the corresponding directory. All other backup sets\directories (that cannot be selected) do not fit the Assisted Delete selection parameters.
Finish	Click to have DS-Client connect to DS-System and delete the selected items from online storage.

Assisted Delete - Select how you want to delete

Assisted Delete allows you to delete ‘obsolete’ online data from several backup sets in one process. Use this dialog box to specify the delete conditions.

- For Windows DS-Clients, the Assisted Delete Wizard will search all File system and DS-MLR (email level) backup sets on the DS-Client for **directories** that match these conditions.
- For Linux/Mac DS-Clients, the Assisted Delete Wizard will search all “NAS, UNIX-SSH, NFS, Local File System” backup sets on the DS-Client for **files** that match these conditions.

Time based data selection

Delete Period	The From and To dates create a delete period: directories backed up during this time will be displayed for delete.
From	Select a starting time for the period you wish to delete.
To	Select an ending time for the period you wish to delete.
Leave last ... generations	Allows you to specify the number of generations to keep online (i.e. not select for delete) from the Delete Period. If you specify a number, you will only be able to select directories that have more generations available for delete than this number.
Filter	
Show only items deleted on / before	Windows DS-Client will compare directories in its logs with the directories backed up at DS-System. Linux/Mac DS-Client will compare files in its logs with the files backed up at DS-System. • The date and time entered in this box filters for directories (or files) currently on the DS-System but not on your backup computer at that time. • This allows you to remove backed up directories (or files) that were intentionally deleted from your source.

Placeholder/stub selection [Windows DS-Clients only] This option can be used if you are using a third-party storage management solution that migrates infrequently used files from the source, and leaves a small (size) placeholder/stub in its place. This assumes that the third-party storage management solution is where you want to protect that data (and the DS-System storage is not necessary). If DS-Client detects a placeholder / stub is created on the source (by the Windows “offline” attribute), the corresponding file on DS-System will be deleted, based on the selected conditions (see below).
Keep the last placeholder / stub and subsequent generations • The last placeholder or stub will be kept on DS-System, as well as any full file generations that appear after that latest placeholder/stub.
Keep all placeholders / stubs • All placeholders or stubs will be kept on DS-System, as well as any full file generations that appear after that latest placeholder/stub.

Move to BLM • A copy of all data deleted from DS-System during this Assisted Delete will be moved to BLM (Backup Lifecycle Management). This option only appears if the BLM Module is enabled by your service provider. • **Use new archive package:** Select to use a new archive package. Otherwise, this Archive request will be added to the current archive package on the BLM Archiver. Archive packages are specific to a particular backup set. Each BLM Request will be added to an Archive Package until it reaches a specified limit (# of files, size, time). • **Session Label:** Each Archive Package is automatically time-stamped, but you must add your own label (alphanumeric string) to demand BLM requests. This will make it easier to search an Archive Package.

Audit Trail

Use this dialog box to view the audit trail. You can see who has made changes to the database, when, and what the changes were.

Audit Trail List	
Icon	Icon shows the type of operation.
Time	Shows the time the modification occurred.
User	Shows the User Name of the user who performed the modification.
Operation	Shows the type of modification performed.
Table	Shows the table that was modified.
Description	Describes the details of the modification that occurred.
Select By	
From	Select the date and time of the earliest operations you want to see. No earlier data will be displayed. The default is one month before the current date.
To	Select the date and time of the latest operations you want to see. No newer data will be displayed. The default is the end of the current day.
Operation	Action, Insert, Update, Delete, or <All>.
User	You can type a specific user in this box.
Table	You can select a specific table from this list.

Available Password Rotation Rules

Use this dialog box to select a Rotation Rule. It also allows you to add or configure the list of Rotation Rules.

Rotation Rule List • ID: Internal DS-Client ID number. • Name • Min. Len.: The minimum length (in characters) of the rotated password. • Max. Len.: The maximum length (in characters) of the rotated password.	
New	Click to add a Rotation Rule to the list. • Opens the New / Edit Password Rotation Rule.
Edit	Click to edit the highlighted Rotation Rule from the list. • Opens the New / Edit Password Rotation Rule.
Remove	Deletes the highlighted Rotation Rule from the list.
Select	Click to select the highlighted Rotation Rule.

Backup Generations for '...'

Use this dialog box to view or select from the online generations of a particular file. This dialog box also shows all of the backup options applied to each generation. The file name and file ID are located in the dialog box header.

Backup Generations List • The number of columns that appear depends on the kind of backup set you are searching.

Local Storage column (Restore only)	This column only appears if the backup set is configured to use Local Storage. • If an “L” appears, it means that generation of the file is also in Local Storage.
Generation	Shows the “Generation ID”. • In most cases, this will be the Generation ID of the file stored online. In some situations, it will only show the latest Generation ID of the file (for all generations of the same file).
Last Modified	Date and time of last modification of this file.
Backup Time	Date and time of last backup of this file.
Compressed Size (Disc/Tape only)	Disc/Tape restores can only have one generation of a file. • This is the size of that file on the Disc/Tape media (as written by the DS-System).
File Size	The **protected** size of **each** listed generation of the file.
Stream Size	Shows the full transmission size of the file in Bytes (including file security, permissions, streams, etc.).
Options	Shows the corresponding backup options that have been applied to this particular generation of the file. These options correspond to the following key: E = Extended Attributes S = Backup Streams P = Permissions X = POSIX D = Daylight Savings Correction (some file systems) D = DBCC (Microsoft SQL Server backups) R = Reparse Point (Windows) C = Encrypted File (Windows) Z = Sparse File (Windows) O = Offline (Windows)
Archive Time	Time when the corresponding generation was ‘pushed’ to BLM from online (using the ‘Archive Old Data to BLM’ feature from the Retention Rules). • If this column appears, it means this generation has been Archived. You cannot restore the file from online (only from a BLM Image). • An Archived Data Placeholder (a small ‘archive stub’ containing only metadata) is left in place of the archived file to prevent DS-Client from backing up the file again (unless it is changed). • Only the latest generation of an online file leaves an Archived Data Placeholder. All other archived generations are completely removed from DS-System and no reference is made to them by DS-Client.
Archive ID	Corresponding Archive Package number for the generation.
Select Session Only (Restore only)	Click to select the highlighted generation for restore. • This will change the “Period” filter in the Advanced Options to only the selected generation’s backup session. Both the “From” and “To” boxes will specify the same backup session.
Select (Restore only)	Click to select the highlighted generation for restore. • This will change the “Period” filter in the Advanced Options. The “To” box will specify the backup session of the selected generation.

Backup Objects for '...' ('Backup from the Cloud')

Use this dialog box to view objects available for restore.

For 'Backup from the Cloud' backup sets (Salesforce.com): This dialog box appears in a Restore Wizard tab.

- For "Table Restore", all tables are selected by default.
- For "Granular Restore", you must manually select what items from the displayed table will be restored. You can enter a string in the "Filter" box to narrow the number items that are displayed. Click "OK" to accept your selection and return to the Restore Wizard.

Backup Schedules Tab

Use this tab to manage the schedules for the DS-Client.

Schedules Tree	Shows a tree of the existing schedules. The top-most container is <Not Scheduled>. Backup sets in this container will not run, except for demand backups initiated by the user. Expand a Schedule to show the backup set(s) associated with it.
Right-mouse click menu:	
Schedule Calendar	Opens the Schedule Calendar dialog box.
New Schedule	Click to create a new schedule. This brings up the Schedule dialog box.
Edit Schedule	Click to edit the highlighted schedule. This brings up the Schedule dialog box.
Delete Schedule	Click to delete the highlighted schedule.
Activate	Click to activate the schedule.
Suspend	Click to suspend the schedule. None of the backup sets associated with this Schedule will be backed up.
Set Priority	Click to prioritize the backup order within the schedule. This brings up the Set Backup Set Priority dialog box.
Expand	Expands the schedule branch.
Collapse	Collapses the schedule branch.
Assign to Schedule (backup set level)	If a backup set is highlighted, you can use this option to select a Schedule. • You can also drag-and-drop the backup set into the Schedule container you want.
Drag & Drop.	You can drag & drop backup sets to other schedules.

Backup Set Recovery

This dialog box allows you to recover backup sets to the DS-Client database in the event they become 'orphaned' on the DS-System.

For example:If your DS-Client was destroyed, you would have to reinstall the software to a new computer. The replacement DS-Client database will be empty of backup sets, but the DS-System will still have all your backup data.

At minimum, you must restore these backup set configurations by using this dialog box. (For DS-Clients with several backup sets it is much faster to use the DS-Client Database Recovery feature that will also recover all of the DS-Client's logs up to the last backup time of the database.)

Backup Set Tree	Shows any backup sets that can be “recovered”. In some cases, the backup sets will be recovered with default information (which you must correct). The name of the owner of the backup set can appear in different colors: • Black - You can recover the set, then perform restores immediately. • Red - You can recover the set, but afterwards you must migrate the backup set to specify the Network Provider or Computer information. (See Migrate Shares.) • Gray - You must resolve an ambiguity concerning the owner's user name or the Network Provider name prior to Recovering the backup set. Click Set Info to open the Recovery Info dialog box.
Recover	Click this button to select the highlighted backup set for recovery.
Set Info	Click this button to view the information that will be recovered for the highlighted backup set. This brings up the Recovery Info dialog box.
Notes	
1	Select the Activity Log to look for errors such as “Backup Set not found in Backup Log”. This indicates the backup set exists on the DS-System's online storage, but not in the DS-Client's database.
2	The Activity Log will be updated with Recovery information (if applicable) each time a Daily or Weekly Admin is run.
3	A synchronization is run on each recovered backup set.

Backup set type

Use this dialog box to select the types of backup sets you want to include in the Online File Summary.

Set Type	You can select any or all of the following backup set types to include: • **Online**: Includes data from all online backup sets. • **Self Contained**: Includes data from all current self contained backup sets. • **Local-Only**: Includes data from all Local-Only backup sets. • **Instant Recovery**: Includes data from all instant recovery backup sets.

Backup Sets Information

Use this dialog box to export the report data.

Export Options	
Save As	Choose where you want the report information saved.

File Format	Choose the format you want to save the report in from this drop down list.
Field Delimiter	(.csv format only) Allows you to select different field separators (tab, comma, semi-colon) for the exported data.

Backup Sets Tab

This tab appears in the DS-User dialog box. It allows you to manage the backup sets.

Backup Sets Tree Shows a tree of the existing backup sets (by default, sorted by computer). Expand a branch to show the backup set(s) associated with it.	
Color	A backup set's color indicates its status. • Black = active • Blue = Local-Only • Gray = suspended • Red = needs synchronization
Double click	Opens Demand Backup Wizard for the highlighted backup set.
Right-mouse click menu	
Backup Now...	Click to back up the highlighted set immediately. This brings up the Select Demand Backup Items dialog box.
Restore Now...	Click to restore the highlighted set. This brings up the Select Items dialog box.
Delete...	Click to delete online backups from the highlighted set. (In Advanced Mode, you can delete the entire set.)
Enforce Retention	Click to enforce the retention rules for the highlighted set.
Request Disc/Tape...	Allows you to request a Disc/Tape of the selected backup set/ files (your service provider must be configured to support this service).
BLM Request...	(Backup Lifecycle Management module must be enabled) Allows you to request a BLM Archive Package of the selected backup set/files.
Validation...	Allows you to perform a validation of the selected backup set/ files on the DS-System online storage.
Synchronize	Click to synchronize the backup log of the currently highlighted backup set with the DS-System online storage. This brings up the Synchronize Backup Set dialog box.
Activate / Suspend	Click to toggle the status of the currently highlighted backup set between Active and Suspended. Depending on the status, scheduled backups either will or will not be performed.
Migrate...	Click to migrate a backup set from one computer to another. This brings up the Migrate Backup Set Wizard dialog box.
Clone	Click to copy the highlighted backup set. This brings up the Clone Backup Set Wizard on the Schedule Tab. You must assign a new schedule and name for the backup set.

Convert / Cancel Convert	(Local-Only sets) Click to convert the highlighted backup set from Local-Only to an Online backup set that saves data to the DS-System. “Cancel Convert” only appears if conversion was interrupted for the highlighted backup set.
Change Owner	Click to change the ownership of the selected backup set. The Change Backup Set(s) Owner dialog box appears.
Permissions	Click to change the permissions of the selected backup set. The Backup Set Permissions dialog box appears.
Properties...	Click to edit the backup properties (ex: name, backup options, schedule, etc.) for the highlighted backup set. The Backup Set Properties dialog box appears.

Bandwidth Throttle

Use this dialog box to apply a “throttle” to the outgoing and incoming bandwidth used by the DS-Client. There are two tabs, which have identical configurations except for the data direction where the throttling is applied:

- To DS-System (backups)
- From DS-System (restores)

Default Throttling • **Unlimited**: (DEFAULT) No throttle is applied, unless listed in the Exceptions List. • **Limited to [...] KB/Sec**: Throttle is applied at all times, except for periods defined in the Exceptions List.	
Except (Exceptions List) Each line represents a different detail: a specific day and time window where the listed bandwidth throttle applies. This overrides the default throttling selection (above). • Start Time • End Time • Bandwidth Throttle: Can be “Unlimited” or “Limited to [...] KB/Sec”.	
Add	Click to add a new detail. • Opens the New / Edit Bandwidth Throttle Schedule Detail dialog box.
Modify	Click to edit the selected detail. • Opens the New / Edit Bandwidth Throttle Schedule Detail dialog box.
Remove	Removes the highlighted detail from the Exceptions List.
Select Group	You must highlight a Detail in the Exceptions List for this button to work. • Click to highlight any other details (from other days) that share this Detail’s Start Time, End Time and Bandwidth Throttle settings. This allows you to modify an entire group at the same time.

NOTE: When connected to a Grid DS-Client, the bandwidth throttle settings are enforced at node-level. This means the actual bandwidth usage will be the bandwidth throttle value multiplied by the number of nodes running backups (or restores) simultaneously. (For example: a throttle of 64 KB/sec on a 3-node Grid DS-Client would be limited to 192 KB/sec.)

BLM Archive Rule

Use this dialog box to define a BLM Archive rule.

Archive files older than:	Select a number and the unit of time: • Minute(s) • Hour(s) • Day(s) • Week(s) • Month(s) • Year(s)
Archive Rule applies to	
All files	• Includes all files in all subfolders.
Specific files defined by the filtering rule: select from the drop-down list	Select a File Filtering Rule from the drop-down list. • **Add**: adds a new rule to the list (Opens the File Filtering Rule dialog box) • **Edit**: edits the selected rule in the list (Opens the File Filtering Rule dialog box) • **Remove**: deletes the selected rule from the list
Description	• Shows a list of each option in the selected File Filtering Rule.

Change Backup Set(s) Owner

From	Existing owner of this backup set.
To	User you want to assign ownership of this backup set to.
Change Activity Log	Changes the DS-Client database so the owner box in the Activity Log reflects the new owner.
This backup set	Only this set is changed to the new owner.
All backup sets	All backup sets associated with this user will be changed to the new owner.

Choose Physical to Virtual destination type

Use this dialog box to select the destination virtual environment.

VMware vCenter Server	Choose if you want the virtual machine(s) to be located in a VMware vCenter Server.
Microsoft Hyper-V Server	Choose if you want the virtual machine(s) to be located in a Microsoft Hyper-V Server.

Choose the Cloud Service type

Select the type of cloud service for which you want to back up data.

Specific prerequisites apply to each cloud service type. It is assumed that you have met all applicable prerequisites before you proceed further.

- **Salesforce.com**: For details on prerequisites and instructions, see Section 6.6, “Cloud (Salesforce.com) backup sets (Windows)”, on page 191.
- **G Suite**: For details on prerequisites, see the Knowledge Base article in Section 15.23, “Backup from the Cloud (Google G Suite)”, on page 595. For instructions, see Section 6.3, “Cloud (Google G Suite) backup sets (Windows)”, on page 165.
- **Microsoft Office 365**: For details on prerequisites, see the Knowledge Base article in Section 15.24, “Backup from the Cloud (Microsoft Office 365)”, on page 602. For instructions, see Section 6.4, “Cloud (Microsoft Office 365) backup sets (Windows)”, on page 173.
- **Microsoft Office 365 Groups**: For details on prerequisites and instructions, see Section 6.5, “Cloud (Microsoft Office 365 Groups) backup sets (Windows)”, on page 181.

Choose the E-Mail Server type

Microsoft Exchange Server (EWS)	Back up Microsoft Exchange Server email messages. • Select this method for item-level backup of Microsoft Exchange Server.
Microsoft Outlook	Back up Microsoft Outlook email messages.

Choose the kind of backup set

This dialog box allows you to select the kind of backup set or replication set you want to create; the wizard will guide you through the necessary specifications according to your selection.

- DS-Client backup sets
- DS-Client replication sets

DS-Client backup sets

File system	The most common kind of backup. These include files, directories, and other operating system features.
Microsoft SQL Server	Backs up active Microsoft SQL servers on your network.
Microsoft Exchange Server	Backs up active Microsoft Exchange Mail Servers.
Permissions only	Backs up file and directory permissions. One dump file will be backed up for each backup item selected.

Oracle Server	Backs up Oracle server databases. [You must copy a DLL file to the target Server's system path, and make the configurations explained in the “Oracle Server Requirements” section of the Knowledge Base article in Section 15.7, “Backup / restore of Oracle database servers”, on page 522.]
Email Messages	Select this backup set kind to back up emails from Microsoft Outlook at the individual item level. • For information on prerequisites, see Section 6.7, “Email message backup sets (Windows)”, on page 207. Select this option also to back up data from Microsoft Exchange Servers (including on-premises Microsoft Exchange Servers) using EWS. • For information on prerequisites, see Section 15.24, “Prerequisites for backup and restore of Exchange data”, on page 608.
MySQL Server	Backs up MySQL server databases.
Microsoft SharePoint Server	Backs up Microsoft SharePoint Servers at Item-Level. [You must install the DS-Recovery Tools Service on the target data source computer. This is a separate product that is a component of the DS-Recovery Tools installation.]
VSS-aware Backup Set	Backs up selected items using the target computer’s Microsoft VSS (Volume Shadow Copy Service) tools.
VMware VADP	Backs up a VMware vSphere virtual machine. There are two backup methods available, depending on the “Use Local DS-VDR” option selection: • Backs up VMware servers on your network using the native VMware vSphere Storage APIs - Data Protection (VADP). (This will backup the data to the DS-System.) • Backs up by exporting a virtual machine on the vCenter Server. This requires a Local DS-VDR Tool. (This type of backup set does not backup data to DS-System.)
Backup from the cloud	Backs up selected items from one of the following cloud services: • Salesforce.com • G Suite • Microsoft Office 365 • Microsoft Office 365 Groups
Physical to Virtual	Backs up a physical computer by converting it into a virtual machine on a VMware vCenter Server. • Requires a Local DS-VDR Tool. • This type of backup set does not backup data to DS-System.
Note	
1	This tab is skipped in the following circumstances: • No other backup type (other than file system) is supported.

DS-Client replication sets

VM Replication	Replicates a virtual machine from one server to another. This option will direct you to the New Replication Set Wizard. VM replication is available for virtual machines on VMware vCenter Servers or Microsoft Hyper-V Servers. Note: A VM replication set does not back up data to the DS-System.

Choose the kind of backup set (Linux DS-Client)

This dialog box allows you to select the backup type you wish to create. Depending on your choice, the wizard will guide you through the necessary backup specifications.

DS-Client Backup Sets	**Creates backup sets that the DS-Client will process.**
NAS, UNIX-SSH, NFS, Local File System	The most common backup type. These include files, directories, and other operating system features.
Permissions	Backs up file and directory permissions only from each backup item. • You can select backup items at the directory level. One dump file will be backed up for each backup item selected.
MySQL	Backs up active MySQL servers on your network.
PgSQL	Backs up active Postgre SQL servers on your network.
Oracle Server	Backs up active Oracle servers on your network.
Oracle-SBT	Receives RMAN dumps via the Oracle SBT protocol.
DB2 Server	Backs up active DB2 servers on your network.
VMware VADP	Backs up VMware servers on your network using the native VMware vSphere Storage APIs - Data Protection (VADP).
Physical to Virtual	Backs up a physical computer to a VMware vCenter virtual machine. • Requires a Local DS-VDR Tool. • This type of backup set does not backup data to DS-System.

SSH Notes

- The backup source machine must be a Unix system (Linux, Solaris, HP-UX, or AIX).
- The source machine must have an OpenSSH compatible server installed and started.
- The source machine must have either Perl5 (core function, 5.6 or beyond) installed, or Python (2.4) installed. [Alternatively, you can use the DIRECT option to run a specific script/binary located on the source machine.]

- The SSH approach cannot scan the LAN to get an initial machine list. You must enter the IP address of the source machine in the Path box (e.g. UNIX-SSH\10.20.30.100). The user or administrator can also put the initial machine list into the file **hostlist_ssh** located in the installation path (usually /opt/CloudBackup/DS-Client).

For more details, see the Knowledge Base article in Section 15.5, “Backup / restore using UNIX-SSH”, on page 518.

Choose the name for this backup set

When creating a new backup set, you can specify a name for the set, its type, and other settings and options in this dialog box.

When creating a new VM replication set, you can specify a name for the set. Other settings and options in this dialog box are not applicable to VM replication sets.

The name that you provide allows you to identify the set in DS-Client.

Set name	**Enter the name of the backup set or VM replication sets.**
Set type	**Select the type of backup set.**
Online	Creates a full featured backup set of any kind.
Self-Contained	Creates a Self-Contained backup set that performs backup and restore using only local storage. • The Local Storage Path must be set (Setup Menu > DS-Client Configuration > Parameters Tab)
Local-only	Creates a Local-Only backup set that performs backup and restore using only local storage. This is similar to Self-Contained, except there are no limits on the number of backup sets, and the total capacity stored is licensed from the DS-System. • The Local-Only Tool must be enabled for the DS-Client (by your service provider from the DS-System). • The Local Storage Path must be set (Setup Menu > DS-Client Configuration > Parameters Tab)
Instant Recovery	Creates an Instant Recovery backup set. • The Local-Only Tool must be enabled for the DS-Client. • The Local Storage Path must be set.
Statistical	Creates a "virtual backup set" – one that collects backup statistics, but does not physically backup data.
Calculate transmit amount (Statistical backup sets)	This box appears when a Statistical backup set type is selected. Select to emulate an actual backup transfer process. During statistical backups, specified backup files will be read from their source and processed for compression/encryption.

BLM (Infinite Generations) (Backup Lifecycle Management module must be enabled)	Backup sets are configured to save a specific number of generations. Once a backup item reaches this number of generations, the oldest will be overwritten with each new generation backed up. Select to configure this backup set for BLM. When applicable, the DS-Client will instruct DS-System to send a copy of the oldest generation (that is about to be overwritten) to the BLM Archiver.
Use Local Storage • These options appear if you have the Local Storage Tool Enabled from your service provider, and you have specified a Local Storage Path in the DS-Client Configuration Parameters Tab.	
Save on Local Storage	Select this box to indicate this backup set will also be saved to a Local Storage location (at the DS-Client site). • Backup data will be sent to the location specified in the Local Storage Path box.
Transmission cache on Local Storage	Select this box to indicate this backup set will use the Local Storage as a cache, in case a backup session loses connection with DS-System. • Cached backup data will be sent to DS-System at the next connection opportunity (after synchronization). • Backup data will be sent to the location specified in the Local Storage Path box.
Save in instant recovery vault	Select this box to indicate this Online backup set will also be saved to the instant recovery vault. • Backup data will be sent to the location specified in the Local Storage Path box.
Local Storage Path	Click [>>] to choose a specific local storage path for this backup set. • Opens the Enter Local Storage Path. • If you do not make a selection, the path from the DS-Client Configuration Parameters Tab is used.
Customer	If the Multi-Tenant feature is enabled and configured, you can select the customer to which you want to assign the backup set. If you are a regular user, only the customers that have been assigned to you are displayed.

Choose the name for this backup set (Linux DS-Client)

This tab allows you to specify a descriptive name for this backup set.

Set name	**Enter the name of the backup set**
Set type	**Select the type**
Online	Creates a full featured backup set of any kind (File system, Database, etc.).
Self-Contained	Creates a Self-Contained backup set that performs backup and restore using only local storage. • The Local Storage Path must be set (Setup menu > DS-Client Configuration > Parameters Tab)

Local-Only	Creates a Local-Only backup set that performs backup and restore using only local storage. This is similar to Self-Contained, except there are no limits on the number of backup sets, and the total capacity stored is licensed from the DS-System. • The Local-Only Tool must be enabled for the DS-Client (by your service provider from the DS-System). • The Local Storage Path must be set (Setup menu > DS-Client Configuration > Parameters Tab)
Instant Recovery	Creates an Instant Recovery backup set. • The Local-Only Tool must be enabled for the DS-Client. • The Local Storage Path must be set.
Statistical	Creates a “virtual backup set” – one that collects backup statistics, but does not physically backup data.
Calculate transmit amount (Statistical backup sets)	This box appears when a Statistical backup set type is selected. Select to emulate an actual backup transfer process. During statistical backups, specified backup files will be read from their source and processed for compression/encryption.
BLM (Infinite Generations) (Backup Lifecycle Management module must be enabled)	Backup sets are configured to save a specific number of generations. Once a backup item reaches this number of generations, the oldest will be overwritten with each new generation backed up. Select to configure this backup set for BLM. When applicable, the DS-Client will instruct DS-System to send a copy of the oldest generation (that is about to be overwritten) to the BLM Archiver.
Use Local Storage • These options appear if you have the Local Storage Tool Enabled from your service provider, and you have specified a Local Storage Path in the DS-Client Configuration Parameters Tab.	
Save on Local Storage	Select this box to indicate this backup set will also be saved to a Local Storage location (at the DS-Client site). • Backup data will be sent to the location specified in the Local Storage Path box.
Transmission cache on Local Storage	Select this box to indicate this backup set will use the Local Storage as a cache, in case a backup session loses connection with DS-System. • Cached backup data will be sent to DS-System at the next connection opportunity (after synchronization). • Backup data will be sent to the location specified in the Local Storage Path box.
Save in instant recovery vault	Select this box to indicate this Online backup set will also be saved to the instant recovery vault. • Backup data will be sent to the location specified in the Local Storage Path box.
Local Storage Path	Click [>>] to choose a specific local storage path for this backup set. • Opens the Enter Local Storage Path. • If you do not make a selection, the path from the DS-Client Configuration Parameters Tab is used.

Customer	If the Multi-Tenant feature is enabled and configured, you can select the customer to which you want to assign the backup set. If you are a regular user, only the customers that have been assigned to you are displayed.

Clean Local-Only Trash

[Local-Only backup set data only]

Use this dialog box to clean the Local-Only Trash from the Local Storage Paths defined on the DS-Client.

Clean data deleted at least: [x] Days	Clean Trash only permits data deletion from the Local Storage Path's "recycle" folder if a file qualifies based on this age. • Valid values: 1-999 (days)
Local Storage Path	Dropdown list shows all the Local Storage Paths defined on the DS-Client. • Select the specific Local Storage Path's Trash (recycle folder) that you want to clean.

Clean previous shares in list (Linux DS-Client)

LAN STORAGE DISCOVERY TOOL

The Share Discovery Wizard helps you to identify all the available backup shares on your LAN.

Previous Shares List	A list of shares from the previous LAN Storage Discovery process. • Icon: • Date: • Share Name: • Shared Path: • Description: • Scanned Size:
Clean share list	Select to remove any shares from the previous scan that returned a 'Scanned Size' of "0".

Cloud database upload tool

Use this dialog box to upload the table(s) from any of the SalesForce.com backup set dump files in the Local Storage.

Select SalesForce DB File Location	
SalesForce DB Path	Browse and select the Local Storage folder containing the specific SalesForce.com database dump file you want to use for the upload. • This opens a browse selection window.

Select tables to upload • The left column contains a list of all the tables in the selected database dump file. • Highlight the table(s) you want to add, and then click the [+] button. • Selected tables appear in the right column	
Select credentials of SalesForce.com	
Connect to SalesForce with	Click to supply the connection credentials to the SalesForce.com account. • This opens the Specify Credentials (Windows DS-Client) dialog box
Upload	If DS-Client can connect to Salesforce.com with the supplied credentials, this button activates. • Uploaded table data is appended to any existing table.

Connect to DS-Client Service

Use this dialog box to connect to a specific DS-Client on your network. It displays a list of all available DS-Clients.

Connection Properties	
Server	Shows the selected DS-Client computer • This is a read-only box, showing the selection from the DS-Client(s) list.
Protocol	• Encrypted: All communications between the DS-User and DS-Client service are encrypted using a random encryption key. • Standard: This option is only offered for backwards compatibility with old service/daemon versions that do not have this feature.
Credentials	
User Name	Type your User Name. This is a valid account established on the DS-Client computer.
Password	Type your password.
From	Select the domain or server on which the username and password will be verified. (i.e. DS-Client validates supplied credentials with this domain or server.)
Remember Credentials	Select to have the DS-User reuse the supplied credentials on each login during the current session. This is reset once the DS-User application is closed.
Use current security context (Windows DS-Client only)	Activates the auto-connect feature for the DS-User installation. • Select this option to use your current logged on Windows Username and Password to connect to the DS-Client. • The DS-Client that DS-User connects with depends on the 'Auto-Connection' setting in the "DS-User Initialization - Connection" dialog box.
Note	
1	Access to the DS-Client is restricted to Administrators and Backup Operators. Regular users must be permitted access by Administrators (in the DS-Client Configuration - Roles tab).
2	User Names are required to restrict network access based on the credentials provided.

Continuous Data Protection Settings

During a continuous data protection (CDP) backup session, DS-Client will detect when backup set items are changed on the source and back up the changes according to the settings specified in this dialog box.

Configure this dialog box with consideration of the type of data being backed up.

File Change Detection	[Windows DS-Clients]: This is automatically selected, depending on the kind of backup set: • Windows File system: Windows Built-in Monitoring • Microsoft Exchange email messages (using EWS): Windows Built-in Monitoring [UNIX DS-Clients]: You can select the following: • **Generic Scanner** - Loops the scanning function from online File system backup sets. • **File Alteration Monitor** (Linux Only) - Similar to the Windows Built-in File Monitoring. Interfaces with Linux operating system functionality for notification of file changes. FAM will only be used if it is installed and working on the target machine (that is, if the FAM daemon can be started). If FAM is not installed, DS-Client will try to copy and execute a FAM instance on a target Linux machine. FAM might not be available for some UNIX platforms.
Do not back up more often than [...] Seconds / Minutes / Hours	Specify the minimum interval that DS-Client must wait before backing up a changed item or file that has been detected. • You can set a longer interval if you do not want to back up changes too frequently. • You can set a shorter interval (as short as 1 second) if you want the backups of changes to be more granular. (The actual granularity achieved depends on the speed of your network and hardware environment.)
Backup if file stops changing for [...] Seconds / Minutes / Hours	This option is for data that you know changes frequently. • DS-Client will only back up a changed item or file after detecting that it has not changed for the specified interval.
Suspend Backup for Scheduled	Select the scheduled activities that will suspend this CDP backup: • Retention • BLM • Validation

Customer Information

Use this dialog box to configure information about a “customer” when configuring the Multi-Tenant feature.

Name	Type the name of the customer.
Contact	Type the name of the contact person associated with this customer.
Address	Type the mailing address of the customer.
Note	Type any additional information about the customer.

Customized Data / Report Wizard - Select Order

This dialog box appears in both the customized data wizard and the customized report wizard. Use this dialog box to select the order in which this data set (or report) will be sorted.

Available Columns	The list of data fields that can be selected to sort the data set (or report). This list is based on the **View** selected in the Customized Data Wizard - Select a Data Set page (or Customized Report Wizard - Select Report Template page). • Use the **Add** and **Remove** buttons to select from this list of data fields. Added items are removed from this list and moved to the **Selected Columns** list.
Selected Columns	The list of data fields that you have selected to sort by. • Use the **Up** and **Down** buttons to select the sort order. The first item in the list is the first sort key. The next item is the second sort key, etc. • If you do not select anything, data will be returned as it is read from the database.

Customized Data Wizard - Confirm Data Set Summary

Use this dialog box to review your selections. Click Finish to save and / or export the Data Set.

Customized Data Wizard - Enter Data Set Name

Use this dialog box to choose the Data Set Name.

Save data set settings	Saves the selections (except for Data Filters) in the DS-User installation's '.ini' file. You can then access the same Data Set from the first Wizard dialog box.
Data Set Name	Shows the name of the Data Set.
Export data to file	Exports the data to a file, based on the Data Set selections.

Customized Data Wizard - Select a Data Set

Use this dialog box to select the type of data you want to export for your custom report.

Data Set	You have two options in the drop-down list: • Create a <new> Data Set. • Select from an existing Data Set (defined in the DS-User's .ini file).
View	If you are creating a new Data Set, you must select the 'View'. These are pre-defined groupings of tables. You can only select one view per Data Set. • A list of all tables included in the view appears in the list below.

Customized Data Wizard - Select Display Columns

Use this dialog box to select the specific data fields you want to export for your custom report.

Available Columns	The list of data fields that you can select to display. This list is based on the 'View' selected in the Customized Data Wizard - Select a Data Set dialog box. • Use the Add / Remove buttons to select from this list of data fields. Added items are removed from this list and moved to the "Selected Columns" list.
Selected Columns	The list of data fields that you have selected to display. • Use the Up / Down buttons to select the order in which data fields will be written. The first item in the list is the first data field that will be written.

Customized Data Wizard - Set Data Filters

Use this dialog box to select any filters for this Data Set.

TIP: If you are exporting a very big log and only want the structure to create a custom report template, you can filter (e.g. exporting all activity logs can be very large, but filtering for 1 week will contain the same structure with much less data).

Filter Column	The list of data fields that can be filtered is based on the 'View' selected in the Customized Data Wizard - Select a Data Set dialog box. • Highlight the item you want to filter. The bottom of the dialog box displays the available filter options.
Filter Value	Shows the filter that will be applied to the corresponding data field. • If the value is blank, no filter will apply (all data for the field will be returned).

Customized Report Wizard - Confirm Report Summary

This dialog box shows a summary of the Customized Report you are about to view. You can select "Close Wizard ..." if you want to exit the Customized Report Wizard once the report is generated.

Customized Report Wizard - Select Report Template

Use this dialog box to select the Custom Report you wish to generate.

Template Name	Select from the available custom reports.
File Name	Shows the path to the custom report template file.
Query String (DS-User only)	Shows the internal Query that was specified when the report was created in the third-party application.
View	Shows the original 'View' that the Data Set was based on.

Customized Report Wizard - Set Data Filters

Use this dialog box to filter the Customer Report for specific data. Note that you do not need to make any selections in this dialog box.

Filter Column	A list of all fields appears. Highlight the item to add a filter.
Filter Value	If blank, the default selection (usually <All>) applies. Otherwise, the filter value appears. • You can specify the filter for this column in the bottom section of this dialog box.

Database Availability Group (DAG) options

This page appears when creating a new Microsoft Exchange (VSS-aware) backup set.

Database Availability Group (DAG) options	
DAG name	If the Microsoft Exchange Server is in a DAG configuration, the DAG name appears in this read-only box.
DAG IP address	If the Microsoft Exchange Server is in a DAG configuration, the DAG IP address appears in this read-only box if it exists.
Domain name	If the Microsoft Exchange Server is in a DAG configuration, the domain name appears in this read-only box if the DAG is a member of a domain.
Back up individual mail server node	Select this option to back up only the node at the IP address you have connected to. If this is a DAG, this option will not back up the availability group.
Back up entire Database Availability Group	Select this option to back up the entire DAG. You must specify what type of DAG databases to back up. This selection is mutually exclusive: • **Back up active databases** - Select this option to back up the active databases in the DAG. • **Back up passive databases** - Select this option to back up the passive databases in the DAG.
Please select the priority of mail server nodes If you are backing up the passive databases, this section activates to allow you to prioritize the order in which the mail server nodes are backed up. Select a mail server node, and then click **Move Up** or **Move Down** to set the backup order.	

Database Dump Configuration

Use this dialog box to specify the database dump app to use for this PostgreSQL or MySQL database backup set.

- In the **Dump utility directory** box, specify the full path to the `pg_dump` or `mysqldump` utility you want to use for this backup set.
- By default, if nothing is specified, the DS-Client will decide and fill in the path of the dump app it uses.

- It is best to let the DS-Client decide automatically, unless you have a specific purpose to choose another database dump app. For more information on the behavior of this option, see the “Database Dump Configuration” section in the Knowledge Base articles in Section 15.8, “Backup / restore of MySQL database servers”, on page 530 and Section 15.10, “Backup / restore of PostgreSQL database servers”, on page 538.

Destination Information for Replication Set

This dialog box offers different options depending on the type of VM replication you have selected:

- VM Replication for VMware
- VM Replication for Hyper-V

VM Replication for VMware

This dialog box allows you to specify settings for the replication target virtual machines at the destination either through defaults in the **Global** section or through custom settings specified for each virtual machine in the table. Unless you specify the **Host**, **Datastore**, and **Folder** for individual virtual machines being replicated, virtual machines will be assigned the Host, Folder, and Datastore shown in the Global section.

Global **This section shows the default Host, Folder, and Datastore that will be assigned to or used by each replication target virtual machine in the table unless custom settings are specified for individual virtual machines.** • **Host**: Select a host for replication target virtual machines. • **Datastore**: Select a datastore in which files of the replication target virtual machines and other files necessary for the operation of the virtual machines will be stored. If a datastore is not selected in this section, the first available datastore from the list will be used as the default. • **Folder**: Select a folder that the replication target virtual machines will be organized under. If a folder is not selected in this section, the root level of vCenter Server will be the default. • **Clear Overrides**: Click this button to apply Global settings to all virtual machines in the table. All custom Host, Datastore, and Folder settings specified for individual virtual machines in the table will be removed.	
The table lists all virtual machines selected for this VM replication set. Each line shows the settings for an individual target virtual machine. If custom settings are not specified for a virtual machine, the virtual machine will be replicated to the Host, Folder, and Datastore shown in the Global section. To override Global settings for an individual virtual machine, specify custom settings for the virtual machine in the table.	
Source Machine/Folder Name	Shows the name of the source virtual machine.
Host	Click this cell to specify a host for the replication target virtual machine, if you want to override the Host setting in the Global section.

Datastore Setting	Click this cell to specify a datastore for the replication target virtual machine, if you want to override the Datastore setting in the Global section.
Folder	Click this cell to specify a folder under which the replication target virtual machine will be shown, if you want to override the Folder setting in the Global section.
Destination Machine/ Folder Name	This cell shows the name of the replication target virtual machine. By default, the replication target virtual machine is given the same name as the source virtual machine. Click this cell to rename the replication target virtual machine. In the destination vCenter Server, the replication target virtual machine will be identified by the name that you provide in this cell. Renaming the replication target virtual machine is optional. Note: The name of the virtual machine must not contain these characters: @ \ /

VM Replication for Hyper-V

The table in this dialog box shows the name of the source and replication target virtual machines, respectively on the source and destination Microsoft Hyper-V Servers. You can also rename the replication target virtual machine.

Source Machine Name	Shows the name of the source virtual machine.
Destination Machine Name	This cell shows the name of the replication target virtual machine. By default, the replication target virtual machine is given the same name as the source virtual machine. Click the cell to rename the replication target virtual machine. In the destination Hyper-V Server, the replication target virtual machine will be identified by the name you provide in this cell. Renaming the replication target virtual machine is optional. Note: The name of the virtual machine must not contain these characters: @ \ /

Detailed Log Viewer

Use this dialog box to browse through the list of items processed by an activity.

Logged File(s) List • Action: action applied to the corresponding file. • Time: time the activity processed the file. • Status: result of the activity processing. • Last Modified: time the processed file was last modified (as a backup source). • Size: (in bytes) • Online Path: Path useful for troubleshooting with your service provider. • Path: Path of the backup source file. This is the field that can be searched using the Path Filter. (For email backups, this contains the Subject line of the email.)
Path Filter

Filter	The string entered in this box is used to search the “Path” box from the list of logged files. • Default is *, meaning “ALL”. • The filter is used alone, or with the selected options (Case Sensitive, REGEX, Negate).
Options	Select to apply the option to the filter. • Case Sensitive • REGEX: Perform a REGEX pattern check. You must know the REGEX syntax. (For a brief description of the syntax, see Regular Expression.) • Negate
Find	Click to search this Detailed Log for files matching the Path Filter.

Details

LAN STORAGE DISCOVERY TOOL / ONLINE FILE SUMMARY TOOL

File List	
Backup Set / Share Name	Name of the backup set or share.
Directory	Directory.
File	Filename.
Backup Time / Last Scan	Backup time (online files) or last scan time (LAN).
File Size	Size in bytes.
Duplication	Level of duplication of the file (e.g. 10 means ten duplicates of the file exist Online or on the LAN).
Duplicate ID	Each file is scanned and an ID is generated for it. Any duplication (multiple instances of the same file elsewhere on the LAN or Online) will be identified by the same ID.
Last Modified (LAN File Summary Only)	Time the file was last modified.
Last Accessed (LAN File Summary Only)	Time the file was last accessed.
Description	Any additional details.
Show Duplicates	Opens the Show Duplicates dialog box for the highlighted file. Allows you to view all the duplicates of a single file. Highlight a file in the list, and then click the Show Duplicates button.

Disc / Tape Mailing Information

Use this dialog box to enter your mailing information for your Disc/Tape shipment.

Name	
Phone	
Address	This must be a valid street address where a major courier is able to deliver.

DS-Client Configuration Advanced Tab

Use this dialog box to view and change the Advanced DS-Client parameters.

- For details about each parameter, see Section 3.1.8, “Configuring the advanced settings”, on page 33.

IMPORTANT: Changing any of these parameters will have a significant impact on the DS-Client’s performance.

Type	The following options are shown only when a Grid DS-Client is used: • **Global Setting**: Select this option if you plan to configure the values of parameters uniformly across all the leaf nodes in the Grid DS-Client. • **Local Setting**: Select this option if you plan to configure the values of parameters individually for a specific leaf node in the Grid DS-Client.
DSClient Node	Select the leaf node for which you want to configure the values of parameters. This list is only shown when a Grid DS-Client is used and **Local Setting** is selected among the **Type** options. The list displays the names of all the leaf nodes in the Grid DS-Client.
Category	Select the category of the parameter that you want to see or change. This lists displays the categories in which the parameters are organized. • **Reset**: Click to return all parameters in the selected category to their default setting. When a Grid DS-Client is used and **Local Setting** is selected among the **Type** options, this list is not shown.
Parameter	This list displays the names of all the applicable parameters in the category that is currently selected. • **Reset**: Click to return the selected parameter to its default setting.
Value	Depending on the type of parameter, this box can be a text box or a drop-down list.
Configured Value	This box shows the current configuration of the parameter.
Effective Value	For parameters that require the DS-Client to be restarted before taking effect, the configured value does not change when you have entered a new value and then click **Apply**. This box displays what the value of the parameter will become after the DS-Client is restarted.
Restart DS-Client	This box indicates when a change that you apply to the parameter will take effect. • Yes: DS-Client must be restarted before the change takes effect. • No: The change applies as soon as you click **Apply**.
Reset all parameters	Click this button to return all the parameters in all the categories to their default setting.
Description	This box displays a description of the parameter that is currently selected and its value(s).

DS-Client Configuration Connections Tab

Use this dialog box to view and change the DS-System connection setup.

DS-System connection setup Each line in this list represents a DS-System connection entry. At least one entry must exist (Primary) for the DS-Client to connect to the DS-System. • **Primary**: A “Yes” in this column indicates if the corresponding entry is the primary connection. The DS-Client always attempts to connect to DS-System using the Primary connection first. All other entries on each different line in this list are alternates (indicated by “No”). Alternate DS-System connection entries are only attempted if the Primary DS-System cannot be reached (the alternate connection attempts will be made in the same order as they appear in this list). • **DS-System IP Address 1**: This column shows the IP address or DNS host name the DS-Client will use to connect to the DS-System. • **DS-System IP Address n**: (OPTIONAL) DS-Systems with multiple nodes can require an address for each node. Additional addresses appear in incremental columns to the right for each additional address provided. This is only necessary if your service provider supplies you with the additional addresses.	
Add / Modify / Delete	Click this button to add, modify, or delete connection entries in the connection setup table. You must click OK in the Configuration dialog box to confirm any modifications.
Test Connection	Click this button to test if the DS-Client can connect using the highlighted DS-System connection entry.
Internet Connection Setup (For ‘Backup from the Cloud’ backup sets and DS-NOC connections only.) This section allows you to configure the DS-Client to use a proxy server to access the Internet when connecting to the Cloud service site or DS-NOC server. The current proxy configuration is listed above the table. • **Proxy Server**: Click to configure the proxy server settings for the DS-Client. Opens the “Proxy Server Settings” dialog box.	

DS-Client Configuration Defaults Tab

Use this dialog box to change the default options. New backup sets will carry these settings by default (which can be changed).

Generations setup	
Online ... generations	Indicates how many older generations of a backup file should be kept Online.
Default Retention Rule	You can select a default Retention Rule (or create a new one). • Click [...] to open the Select Retention Rule dialog box.
Backup options	
Backup permissions	Backs up the file permissions. (ex: ACL on NTFS volumes, or Trustees on NetWare volumes.)
Open files (Windows DS-Client)	

Default Operation	Select from the list of operations: • Try deny write: Attempt to open backup file in 'Deny Write' mode. If this fails (because the file is already open), place the backup file in 'Allow Write' mode. • Deny write: This mode prevents any other process from writing to the backup file, while the DS-Client has it open. DS-Client will not back up the file, if another process has already opened it for write. (However, you can instruct the DS-Client to retry backing up the open file.) • Prevent write: Attempt to open backup file in 'Deny Write' mode. If this fails (because the file is already open), then open in Allow Write mode and lock the file, thereby preventing any process from writing to the file. This ensures that the most recent version of the file is backed up. • Allow write: Allow another process to read/write to the backup file (no restrictions). Since other applications can write to the file while it is being backed up, this can affect file consistency.
Retry times	Specifies the number of times you want the DS-Client to attempt to backup the file. (Maximum of 10 retries).
Retry interval (sec)	Specifies the interval between retries. (Maximum of 999 seconds).
Backup schedule	
List	Select from the list of defined schedules.
New	Click to create a new schedule.
Notification	
Notification	You can add a single default notification that will apply to new backup sets.
Add / Modify	Click to add a new notification, or edit the existing default notification. Opens the Add / Edit Notification dialog box (See Add Notification.)
Delete	Click to delete the existing default notification.
Data Compression	
Compression Type	You can select the default compression type that will be assigned to new backup sets: • LZOP: A faster compression than ZLIB, that comes at the expense of less compression. • ZLIB: This compression method will normally produce better compression than LZOP, but will take more time to compress. Choosing the best default compression: • ZLIB is a good default compression for backup environments where the ‘bottleneck’ (the slowest transmission point during the backup activity) is the network. • LZOP is a good default compression when the network is not the bottleneck. For example, when you are using a LAN speed connection and want backups to finish as fast as possible.

DS-Client Configuration Notification Tab

Use the Notification Tab to configure the way DS-Client will send notifications. DS-Client notifications (specified in backup set properties) are email reports or pager alerts that can be sent to the Administrator at the end of a backup session or, on a regular basis during Admin processes.

Outgoing E-Mail settings	
Send E-Mail through	• None • SMTP • MAPI (Windows DS-Client only)
SMTP Server (SMTP only)	Shows the SMTP server. Click [...] to configure this setting. Opens the SMTP settings dialog box.
From (E-Mail Address) (SMTP only)	Enter the email address from which you wish to send notifications. • Recipients will see this address in the “From” box of their email notifications (their ‘reply’ function will use this address).
From (Display Name) (SMTP only)	Enter the name (or other text) you would like to appear in the “From” box of the notification email. • Recipients will see this text in the “From” box of their email notifications (before the email address).
Profile (MAPI) (Windows DS-Client only)	Select the mail profile for DS-Client to use. Mail profiles are maintained by your mail client. DS-Client currently supports only one mail client: Microsoft Outlook. • If no profiles are listed, the mail client is not installed or no profiles were created under the DS-Client service account. • To create a mail profile, see your email server’s documentation.
E-Mail notification subject	

Backup activity	Specify what appears in the subject line of notification emails for backup activities. • This box has a limit of 256 characters. • You can enter any text and combine it with the Backup activity placeholders. When a notification is sent, any placeholder is replaced with the corresponding data from the DS-Client database. • If you leave this box blank, a default subject line appears showing “DS-Client ({DSC_NUMBER}): {BACKUP_RUN_RESULT} - '\\{BACKUP_SOURCE}\{BACKUP_SET_NAME}({BACKUP_SET_OWNER})'”. • Placeholders are case-sensitive and must be entered between the { } brace characters.

	Backup activity placeholders:
	• {DSC_NAME} // DS-Client computer name
	• {DSC_NUMBER} // DS-Client Number
	• {BACKUP_SET_NAME}
	• {BACKUP_SET_OWNER}
	• {BACKUP_SOURCE} // Backup source host name
	• {BACKUP_RUN_RESULT} // Backup activity finished or not, with {N} errors.
	• {USER_NAME} // user that initiated the activity
	• {BACKUP_STATUS} // backup result will return one of the following: {ERROR}, {WARNING}, {SUCCESSFUL}, or {INCOMPLETE}.

Admin activity	Specify what appears in the subject line of notification emails for Admin activities (Daily and Weekly). • This box has a limit of 256 characters. • You can enter any text and combine it with the Admin activity placeholders. When a notification is sent, any placeholder is replaced with the corresponding data from the DS-Client database. • If you leave this box blank, a default subject line appears showing “DS-Client ({DSC_NUMBER}) {ADMIN_TYPE}”. • Placeholders are case-sensitive and must be entered between the { } brace characters.

	Admin activity placeholders:
	• {DSC_NAME} // DS-Client computer name
	• {DSC_NUMBER} // DS-Client Number
	• {USER_NAME} // user that initiated the activity
	• {ADMIN_TYPE} // admin activity type: Daily admin or Weekly admin

Administrator Setup section	
Admin E-Mail	Specify the Administrator's email address. • DS-Client can send notifications to multiple email addresses if you separate them with a comma (,) or semicolon (;). • **Test**: Click this button to test the notification configuration. DS-Client will send a notification to the destination email(s). Select the email account(s) to verify the configuration works.

Pager E-Mail	If the Administrator can be paged by email, specify the pager email address. The format of this box is the same as for Admin email. • DS-Client can send notifications to multiple email addresses if you separate them with a comma (,) or semicolon (;). • **Test**: Click this button to test the notification configuration. DS-Client will send a notification to the destination email(s). Select the pager(s) to verify the configuration works.
Daily / Weekly Admin Setup section	
Send summary	This will send a summary email to the Admin email account. It will contain a summary of Admin process information and backups processes (since the last Daily / Weekly Admin process).
Send backup details	Includes the backup details with the summary. (Send summary must be selected.)
Send E-Mail using HTML Format	(Email only). Select this box to send the summary in HTML format. Otherwise, it will be sent in plain text format.

DS-Client Configuration Parameters Tab

Use this dialog box to view and change the DS-Client parameters.

Admin Process	
Daily start	Select the check box if you want to the Daily Admin process to be performed on schedule. Enter a time of the day when you want the Daily Admin process to start. If you want the Daily Admin process to be performed on demand only, clear the check box.
Weekly start	Select the check box if you want the Weekly Admin process to be performed on schedule. Enter a time of the day when you want the Weekly Admin process to start. If you want the Weekly Admin process to be performed on demand only, clear the check box.
Every	Select the day of the week on which you want the Weekly Admin process to run. This box is available only if you have selected the check box to enable the Weekly Admin process to be performed on schedule.
Reboot after admin	Select this box to reboot the DS-Client computer after an Admin process is completed.

CDP Strategy	Select how the DS-Client should handle backup sets with CDP enabled when the Daily Admin or Weekly Admin is scheduled to run: • **Skip**: Backup sets with CDP enabled will continue to run while the Admin process is in progress. DS-Client will skip over backup sets with CDP enabled and will not perform the Admin process on these backup sets. • **Suspend**: Backup sets with CDP enabled will be suspended while the Admin process is in progress. DS-Client will perform the Admin process on these backup sets. Backup sets with CDP enabled will restart after the Admin process is finished.
Database options	
DS-Client Database Backup	Use this drop down list box to select the DS-Client Database Backup option. This is a disaster recovery service option that saves the DS-Client database to the DS-System. You can select **with Daily**, **with Weekly**, or **None**.
DS-Client database dump file (Microsoft SQL Server only)	Choose what to do with the DS-Client database dump file: • **Do not delete**: The file remains in the DS-Client Buffer until it is overwritten. • **Delete after successful backup**: The file is deleted after it has been successfully backed up to the DS-System. • **Always delete**: The file is always deleted after a Daily Admin or Weekly Admin. To speed up the Daily Admin process, Windows DS-Client uses differential backups if a full database dump exists on the DS-System. A differential backup creates a copy of all the pages in a database modified since the last full database backup. During Weekly Admin, DS-Client always performs a full database dump. If Weekly Admin is disabled, a full database dump is performed during Daily Admin every 6 days (the full backup rotates the day on which it occurs). The database dump of dsclient and dsdelta contains the following: • xxxxxxxxxxxx.dmp (full backup) • xxxxxxxxxxxx_diff.dmp (differential backup) • dsdelta.dmp (full backup) • dsdelta_diff.dmp (differential backup) For more information, see Section 3.11.2, “Managing administrative processes”, on page 72.
Keep DS-Client logs	Choose the period that you would like to maintain System Logs on the DS-Client. You can select either **six months**, or from **one** to **seven years**.
Backup/Restore Options	

Attempt to reconnect [...] times	If the connection between the DS-Client and DS-System is lost during the backup or restore process, the DS-Client will automatically attempt to reconnect for this number of times. The default value is 3. A value of 0 means that no reconnection will be attempted. **Note:** This parameter applies to scheduled and on-demand backup and restore activities.
at [...] -minute intervals	Shows the interval between reconnection attempts in minutes. The default value is 5.
Skip pre-scan for scheduled backups	• On: (Default) If selected, DS-Client skips running a pre-scan on all scheduled backup sets (this makes the process faster). • Off: Clear to force a pre-scan for all scheduled backup sets. Note the potential performance implications, however you will be able to view an estimated completion time for each scheduled backup set in the Process Window.
DS-Client Buffer	Specify the local disk location that DS-Client will use to save **Use Buffer** dumps. Windows DS-Client will also save its own database dumps from Daily/Weekly Admin activities here. • Grid DS-Clients: This is the Global Setting for all nodes of the Grid DS-Client. To change the buffer for each node individually, click on the Advanced Tab (DS-Client Configuration Advanced Tab dialog box). • For more information see Section 6.1.2.5, “Using the DS-Client buffer”, on page 122.
Local Storage Path	Specify the default path that will be used for backup sets configured to use one of the features that require a local storage path (Self-Contained backup sets, Local-Only backup sets, Save on Local Storage, Use Local Storage Cache). This option is enabled per backup set (Set Properties - Options tab). • **IMPORTANT NOTE**: Backup sets that use any local storage location require an extra table in the DS-Client database to manage the data stored on the DS-Client side. Make sure enough space is allocated for the DS-Client database when using any feature that requires a local storage path.
Instant Recovery Storage Options (Linux DS-Client only)	
ZFS mount path	Specify the path on the remote machine where the ZFS storage volume is mounted.
IP/DNS	Type the IP address or DNS name of the ZFS storage volume.
User name	Type the user name DS-Client will use to access the ZFS storage volume.
Password	Type the password for the user credentials.
ZFS volume name	Click the [...] button to choose the ZFS storage volume. This is the location where all the instant recovery backup set data will be stored.

DS-Client Configuration Roles Tab

Use this dialog box to view and change the User / Group Roles configuration.

Users & Groups Role	**A list of Users and Groups and the Roles assigned to them.**
	Icon: Identifies if the Role applies to a User or Group. User / Group: Name of the User or Group. From: Computer or Domain from which the User or Group will be Authenticated. Role: Administrator, Backup Operator, or Regular User.
Add	Click this button to add a User or Group to the Users & Groups Role list. This opens the New / Edit User / Group Role.
Modify	Click this button to modify the highlighted item from the Users & Groups Role list. This opens the New / Edit User / Group Role.
Delete	Click to delete the highlighted item in the Users & Groups Role list. You must click OK in the Configuration dialog box to confirm any modifications.

DS-Client Configuration Setup Tab

Use this dialog box to view the configuration options for your DS-Client. These settings are established during the DS-Client Installation.

DS-Client setup section	
Account name	Your customer account name.
Account #	Your customer account number on the DS-System.
DS-Client #	The DS-Client's number on the DS-System.
Modify	Click to modify the DS-Client's customer registration information.
Register Now	Click to re-register the DS-Client's hardware installation with the DS-System. • This must be performed together with your service provider, who must permit the DS-Client to re-register.
Encryption setup section This section shows whether the DS-Client's encryption keys are set. Once set, they cannot be changed.	
DS-Client private key set	Key used to encrypt files specific only to your DS-Client.
Account key	Each DS-Client has a unique key, but DS-Clients from the same Customer share a common Account Key.
Encryption key safeguard section This section allows you to decide the Encryption Key safeguard policy.	
Enable encryption key forwarding to DS-System	Select to enable DS-Client to forward its encryption keys to the DS-System. They will be stored in the DS-System database, in an encrypted format. • DS-Client private key: indicates if this key has been forwarded. • Account key: indicates if this key has been forwarded.
Forward Now	Forward the key(s) immediately to the DS-System.

Request Deletion	Instruct DS-System to delete the forwarded encryption key(s) from its database.

DS-Client Configuration SNMP Tab

The SNMP tab allows you configure DS-Client to work with SNMP to send traps. (You need to have SNMP management software installed if you wish to receive and handle the trap information).

Destinations Section	
Community	Communities are groups of hosts to which a server running the SNMP service belongs. You can specify one or more communities to which the computer that uses SNMP sends traps. The community name is placed in the SNMP packet when the trap is sent.
• Add to List • Remove	Click Add to List / Remove to add or remove from the Community list.
Destination Host List	A list of Host Name(s) or IP Address(es) belonging to the Community selected from the list.
• Add • Edit • Remove	Click the corresponding button to add, edit, or remove a destination host or IP address to the list.
Send Traps as heartbeats every '...'	Select to activate. Select the frequency from the minutes list.
Notes • 1) Load the asigra.mib file (found in the DS-Client installation directory) with your SNMP software to receive the traps sent by DS-Client. • 2) Trap Contents (For OID description, refer to "asigra.mib" file.)	

Trap Contents for heartbeat		
timestamp	trap time	
sender's IP Address	DS-Client IP	
sender's OID	OID for "DS-System Traps"	
Varbind		
	OID	OID for the heartbeat
	Type	Integer
	Data	0

Trap Contents for others		
timestamp	trap time	
sender's IP Address	DS-System IP	
sender's OID	OID for "DS-System Traps"	
Varbind		
	OID	OID for the specific event

	Type	Integer
	Data is a flag	0: New event, 1: Repeat event.

DS-Client DS-Tools

This is a read-only screen that shows the DS-Tools enabled for the DS-Client account. These configurations are made on the DS-System.

DS-Client Grid Log

[Grid DS-Client]

The Grid Log displays all events specific to the Grid configuration.

Event List	• Icon - Shows the severity of the corresponding event. • Time - Shows the date and time of the corresponding event. • Node ID - Shows the Grid ID of the Node for the corresponding event. • IP Address - Shows the IP address of the Node for the corresponding event. • Event - Shows the event ID • Text - Shows additional information for the corresponding event.
Select by	• From - Type the earliest date you want to display in this box. No events older than this time will be displayed. • To - Type the latest date you want to display in this box. No events newer than this date and time will be displayed. • Event Type - Select a specific event type if you want to see only messages of that type. The default selection is <All>.

DS-Client System Status

The DS-Client System Status dialog box allows an administrator the flexibility of viewing detailed information about Network and Database connections as well as message queues.

This dialog box also permits an administrator to send messages to users and disconnect users from the DS-Client System. It is important to note that this dialog box is a snapshot of the activities on the system at the current moment. This dialog box is useful as a troubleshooting tool.

Node ID (Grid DS-Client)	Select which Node of the Grid DS-Client to view.
Cached Buffers (Windows DS-Client)	Number of cached buffers.
In KB/Sec (Windows DS-Client)	Shows rate that data is being received to indicate the throughput on the DS-Client.
Out KB/Sec (Windows DS-Client)	Shows rate that data is being sent to indicate the throughput on the DS-Client.
Refresh	Click this button to update the display.

Tabs	**This dialog box contains the following tabs:** • Network Connections Tab • Database Connections Tab • Message Queues Tab (Windows DS-Clients) • Threads Tab (Windows DS-Clients)
Network Connections Tab Connection List • Type: Type of connection that has been established (ex: Backup, Restore, User). • Name: Name of the user associated with the network connection. • In Queue: Position where the connection stands in the receive message queue (if applicable). • Out Queue: Position where the connection stands in the send message queue (if applicable). • Create Time: Time when the connection was established. • Description: Shows more detailed information about the connection, such as backup destination (if applicable). • ID: Connection ID number for the highlighted connection.	
Send Message	Click to bring up the Enter Message dialog box. A message will be sent to the highlighted user(s).
Disconnect	Click to disconnect the highlighted user(s).
Cached Buffers (Linux DS-Client)	Number of cached buffers.
In KB/Sec (Linux DS-Client)	Shows rate that data is being received to indicate the throughput on the DS-Client.
Out KB/Sec (Linux DS-Client)	Shows rate that data is being sent to indicate the throughput on the DS-Client.
Database Connections Tab Connection List • In Queue: Place where the process stands in the receive message queue (if applicable). • Process Start: Time when the process began. • Name: Name of the process in the message queue. • Description: Contains details about the connection (if available). • ID: Connection ID associated with the process.	
Message Queues Tab (Windows DS-Clients) Queue List • In Queue: Place where the process stands in the receive message queue (if applicable). • Process Start: Time when the process began. • Name: Name of the process in the message queue. • ID: Connection ID associated with the process.	
Threads Tab (Windows DS-Clients) Thread List • Thread ID: Unique thread ID. • ID: Connection ID associated with the process. • Description: Shows details of the process.	

DS-Client Version Info

This dialog box shows additional information about the DS-Client and items that are associated with it.

Item List

Item	Shows the name of an item.
Value	Shows the corresponding value for the item (e.g. version number, build number, etc.).

DS-Clients Auto Search (Print Global Report)

This dialog box displays all the running DS-Clients visible to the DS-User.

DS-Client List	To select multiple DS-Clients with your mouse, press the CTRL-key. • **DS-Clients** - Computer name of the DS-Client • **Description** - Shows the DS-Client Customer Account Name • **IP Address** - IP address of the DS-Client
Add Selected	Click to select the highlighted DS-Client(s).

DS-NOC Settings

This dialog box only displays information if the DS-Client is being monitored by a DS-NOC server. These settings are configured on the DS-NOC and 'pushed' to the DS-Client through the DS-System.

DS-NOC Settings • Use Proxy: For Windows DS-Clients, this checkbox enables / disables use of the proxy server when DS-Client needs to connect to the DS-NOC. Proxy settings are configured in DS-Client > Setup Menu > Configuration > Connections Tab. This rest of this section is Read-Only. • Monitored by DS-NOC • DS-NOC Address • DS-System Name • Connection Frequency (to DS-NOC) • Retry When Failure (to connect to DS-NOC) • Last Connection (to DS-NOC) • Last Successful (connection to DS-NOC)	
Check New Settings	Connects immediately to the DS-System to obtain the latest settings. (DS-Client will check for updated settings on every connection to DS-System.)
Connect to DS-NOC	Connects the DS-Client to the DS-NOC server to update its monitoring information.

DS-User Initialization - Connection

(Optional – this dialog box can be left empty. If empty, DS-User will scan the local computer and the local computer's subnet. Applies to Java version only.) Use these settings to indicate a specific IP or DNS address for a DS-Client. This can speed up your login in larger network environments.

LAN search time '...'	Time (in seconds) DS-User will spend scanning the LAN for DS-Clients. • If you set this value to "0" the DS-User will not search the LAN. Only the local DS-Client will appear in the DS-Client(s) Connection List (if it is running).
Additional DS-Clients	
New	Add a new DS-Client IP or DNS address to the search list. Opens the Add / Modify DS-Client (DS-User Initialization) dialog box.
Modify	Modify the highlighted DS-Client entry.
Remove	Remove the highlighted DS-Client entry.
Additional Subnets	
New	Add a new subnet to the search list. The DS-User will search for any DS-Clients on the specified subnet(s). • Opens the Add / Modify Subnet dialog box.
Modify	Modify the highlighted subnet entry.
Remove	Remove the highlighted subnet entry.
Logon using security context • These options are for Windows DS-Client only. • The network credentials used are only for logging into the DS-Client (local or remote). They are not used for creating backup sets. Creating backup sets always requires input of specific user credentials.	
Target Name	The name in this box is only used if the DS-User is connecting to a DS-Client located in a Windows Domain. • The default Target Name is `CloudBakSvc`. • You must have your network administrator create and register this Target Name (or any other name you choose to use) with Active Directory using a tool like Microsoft setspn.exe provided with Windows Support Tools. • This is an advanced configuration option that requires the assistance of a network administrator.

Auto-connect	This configures how this installation of the DS-User will behave when it launches. • **Last DS-Client**: DS-User will search for the last DS-Client it successfully connected with. If that DS-Client is not available, the DS-User will prompt the user to choose the desired DS-Client. • **Local DS-Client**: DS-User will search for the local DS-Client. If the local DS-Client is not available, the DS-User will prompt the user to choose the desired DS-Client. • **Last or Local DS-Client**: DS-User will search for the last connected DS-Client first. If the last connected DS-Client is found, DS-User will attempt to connect using the already logged on user credentials from the current Windows login session (provided that the same username and password is provided). If however, the last connected DS-Client is not available DS-User will connect to the local DS-Client using the current security context. • **Local or Last DS-Client**: (Default) DS-User will search for the local DS-Client first and connect using the current security context. If the local DS-Client is not found, DS-User will attempt to connect to the last connected DS-Client using the current security context (provided that the same user network credentials are used, and that the local user exists on the remote DS-Client, and appropriate user permissions are there in the remote DS-Client). • **Disabled**: Users can select this option to turn off the auto-connect functionality. Users will see the Connect to DS-Client Service at startup.

DS-User Initialization - Keep Alive

These settings limit the amount of idle time on DS-User, after which the connection with DS-Client will be terminated.

Keep Alive Settings	
Send "Keep Alive" probes when a connection is idle for [...] seconds	If DS-User does not receive data from DS-Client for this period of time, DS-User will start to send "Keep Alive" probes to detect if the DS-Client is running.
Send keep alive probes every [...] seconds	Once DS-User starts sending "Keep Alive" probes, it will repeat sending probes at this interval until it receives a response, or the maximum number of probes is sent.
Terminate Connection after trying [...] times	DS-User will terminate the connection with DS-Client after it has tried this number of "Keep Alive" probes without response.

DS-User Initialization - Look & Feel

(Optional – this dialog box can be left empty.) Applies only to the Java version with the Metal theme selected (Setup > Look & Feel > Metal). Use these settings to customize the look of DS-User.

DS-User Initialization - Plugins

(Optional – this dialog box can be left empty. Applies to Java version only.) Some plug-ins are automatically applied, depending on the DS-Client's configuration. Others can be manually enabled / disabled, and configured.

Enabled	Use the checkboxes beside each listed plug-in to enable or disable that feature.
Description	Short description of the available plug-in.
Configure	Click to configure the highlighted plug-in. (Some plug-ins do not have configuration options.)

DS-User Initialization - Regional

(Optional – this dialog box can be left empty. Applies to Java version only.) Use these settings to change or customize the date and number formatting.

GUI Language	Select a language from the list available. You must exit and restart DS-User before the new settings take effect.
Format Using	Select a language. The standard formatting conventions of that language will be used.
Custom Formatting	Select to specify your own formatting for each of the available data types.
Date Format Strings	You can customize these strings, as required.
Number Format Strings	You can customize these strings, as required.

Duplicates

LAN STORAGE DISCOVERY TOOL / ONLINE FILE SUMMARY TOOL

Shows the duplicate instances of a particular file version (same size, date, etc.). Use this list to manage the redundant data you have. If it is online, you can delete some versions. If it is on the LAN, you can choose to rearrange the location(s) to save space.

Backup Set / Share Name	Shows the backup set (online) or share (LAN) containing the duplicate file instance.
Directory	Shows the directory where the file is located.
File	Shows the filename.
Backup Time / Last Scan	Shows the backup time (online) or last scan time (LAN).
Description	Additional information (if any).

E-Mail Details

This dialog box displays information about a selected email.

Enter API Access Credentials (Client ID for native application)

This dialog box allows you to provide the credentials that are required in the **Client ID for native application** logon mode for Cloud (Google G Suite) backup sets. These credentials are used by DS-Client to access the backup source during backup configuration and backup activities or to access the restore destination during restore activities.

Client ID	Click **[...]**, browse, and then select the JSON file that contains the OAuth 2.0 client ID and the client secret for the G Suite account for which you want to back up data when configuring a backup set, or to which you want to restore the data when configuring a restore activity. The name of the file starts with `client_secret`. Alternatively, type the client ID. **Note**: It is assumed that you have already generated the required credentials in advance in Google API Console. For details on prerequisites, see the Knowledge Base article in Section 15.23, “Backup from the Cloud (Google G Suite)”, on page 595.
Client secret	If you have selected a JSON file in the **Client ID** box, this box is automatically filled. Otherwise, ensure that you have selected the appropriate JSON file. If you have typed the client ID instead of selecting a JSON file, type the client secret that corresponds with the client ID.

Enter API Access Credentials (Service account)

This dialog box allows you to provide the credentials that are required in the **Service account logon** mode for Cloud (Google G Suite) backup sets. These credentials will be used by DS-Client to access the backup source during backup configuration and backup activities or to access the restore destination during restore activities.

Google account	Type the user name of the Google administrative account that you have used to create the service account that you will now use for API access. The domain name that you have entered in the previous dialog box is displayed.
Email address	Click **[...]**, browse, and then select the JSON file that contains the client email address of the same service account. Alternatively, type the service account client email address.
Private Key	Click **[...]**, browse, and then select the PKCS12-format (or P12) private key generated for the same service account. This private key is a binary file with a .p12 extension.

Enter Database Credentials

Connect as	Enter a valid user name to the selected database.
Password	Enter a valid password for the user name.

Service (ORACLE)	Specify the Service Name. You must know the name of the database you wish to backup.

Enter Local Storage Path

This dialog box allows you to specify the Local Storage path for a specific backup set.

- If you do not specify a path, the Local Storage Path configured in the DS-Client Configuration Parameters Tab will be used.

Enter Lock Key For Credentials (Print Global Report)

This dialog box allows you to enter the key to lock / unlock the list of DS-Client Connection Entry credentials:

- **Load**: Unlocks the list of DS-Client Connection Entry credentials in the DS-User installation to the Select DS-Client (Print Global Report) dialog box.
- **Save**: Locks the list of DS-Client Connection Entry credentials in the Select DS-Client (Print Global Report) dialog box with the DS-User installation.

Enter Message

Send Message	Type any message text
Send	Click to send the message.

Enter NAS API Parameters (Windows DS-Client)

This dialog box allows you to enter the NAS API credentials and parameters. You can click [...] beside any **User Name** box to browse for an encrypted key file (one that contains the user credentials). If the file is valid, you must enter the correct key to unlock the file. Opens the Enter unlock key dialog box.

NAS	**NAS API Parameters and Credentials**
NAS Type	Specifies the NAS device type, vendor or specific model. Currently supported types: • NetApp FAS filers
API Protocol	Specifies the protocol for accessing the API. Commonly used protocols are HTTP or HTTPS. • The specific protocol must be enabled on the NAS device.
Port Number	Specifies the port number for accessing the API. • The specific protocol must be open on the NAS device.

User Name	Specifies the User Name for a user on the NAS device. • This user requires permissions to execute the API commands on the NAS device and usually needs to be a member of the Administrators group.
Password	Specifies the corresponding password for the NAS user.

Enter Restore Path (Microsoft SQL Server)

This dialog box allows you to specify the restore path for the database's log or data files.

Enter unlock key

Use this dialog box to provide the key to unlock the credentials stored in the file.

Event Filter

The Event Filter allows you to alter the Event Log by over-ruling an event's default severity with your custom setting.

Event Filter List	
Icon	Shows the severity of the event that occurred: • Information message. • Warning message. • Error message.
Event #	Contains an event ID code.
Category	Shows the category of the message. The category can be any of the categories listed in the event Category drop down list.
Description	Displays a description of the highlighted event.
New	Click to add a new event filter. • Opens the Add / Edit Event Filter dialog box.
Edit	Click to edit the highlighted filter from the Event Filter List. • Opens the Add / Edit Event Filter dialog box.
Remove	Click to remove the highlighted filter from the Event Filter List.
OK	Click to save the settings as configured in the Event Filter List.

Event Log Viewer

Use this dialog box to examine the Event Logs. This displays the error, warning, and information messages that occurred during DS-Client activities for the period selected. If you highlight an event, the full text of the description column will appear in the description section.

Event List

Icon	Shows the severity of the event that occurred: • Information message. • Warning message. • Error message.
Time	Shows the date and time that the event occurred.
User	Shows the name of the user associated with the event (if any).
Category	Shows the category of the message. The category can be any of the categories listed in the event Category drop down list.
Event #	Contains an event ID code.
ID	Contains the Session ID number associated with the event.
Text	This box can display the IP connection (if applicable).
Node ID (Grid DS-Client)	Contains the DS-Client node associated with the event.
Description	Displays a description of the highlighted event.
Select By Section	
From	Type the earliest date you want to display in this box. No events older than this time forward will be displayed.
To	Type the latest date you want to display in this box. No events newer than this date and time will be displayed.
Type	Select a specific event type if you want to see only messages of that type. The default selection is <All>.
User	Enter the name of a particular user, if you want to search for only that one person's events.
Category	Select a specific type of event if you want to see only event of that type. The default selection is <All>.
ID	Enter a specific ID, to see only those events associated with that ID.
Event #	Enter a specific Event Number, to see only those events of that type.
Exclude	Click to edit a list of error IDs to exclude from the list of Events. Opens the Exclude Event # dialog box.
Find	Updates the event log display based on the Select By parameters.

Exclude Event

Use this dialog box to edit the list of events that will be excluded from Event Log searches. These exclusions only apply to the current Event Log that is open (it will be reset once you close that dialog box).

Event #	You can manually enter an event number in this box. • All events that you exclude appear in the exclude list underneath this box. • Since event numbers tend to be long, you can use the Select button to choose from all events that occurred in the period covered by the Event Log.
Add	Click to add the number in the Enter # box to the exclude list.
Remove	Click to remove the highlighted items from the exclude list.
Clear	Click to clear the entire exclude list.

Select	Click to view all the events for the corresponding Select By period in the Event Log. Opens the Select Event # dialog box.

Exclude Old Files

Use this dialog box to exclude old files from backup for the corresponding backup set. (Note: The age of a file is determined by its “Last Modified” date.)

No exclusion	
Exclude files older than [...] days / weeks / months / years	At backup time, files older than the specified age will be excluded. • Note: If the backup fails, the exclude period will be extended to reflect the conditions of the failed backup, until a successful backup is completed.
Exclude files older than [date]	All files older than the specified date will be excluded from backup.

Export DS-Client configuration to XML

- **Windows DS-Clients**: The “Export to XML” feature is not supported for Local DS-VDR or Permissions-Only backup sets.

Use this dialog box to export the DS-Client configuration, schedules, retention rules, and backup sets to an XML file named “config-update.xml”.

Options	• DS-Client Configuration: exports all settings from the DS-Client Configuration dialog box tabs (Setup, Defaults, Notification, SNMP, Parameters, Connections, Roles). • Backup Schedules: Exports all (or selective) Backup Schedules from the DS-Client. • Retention Rules: Exports all (or selective) Retention Rules from the DS-Client. • Backup Sets: Exports all (or selective) backup sets from the DS-Client. [Note: Recovered ‘orphaned’ backup sets that have not been ‘migrated’ (or had their backup information for connection, backup items, and schedule re-specified) cannot be exported.]
Expand All / Collapse All	Expands or collapses the list in the Options window.
Meta Symbol (Windows DS-Client only)	Select to use a Meta Symbol wherever necessary. This will allow the XML file to be used interchangeably in different localization environments. • For example: An XML configuration file made from an English installation of DS-Client will also work for a German DS-Client installation. Current Meta Symbols: • %ComputerName% - the DS-Client computer name. • %MSNetProvider% - the string representing the Microsoft Network Provider that is different depending on the localization of the operating system.

Include Encryption Keys (Configuration must be selected)	Select to include the DS-Client Encryption Key and Account Encryption Key in the XML file (they will be encrypted).
Save As	Click to save the selected items to an XML file. • To use this file, make sure it is named "config-update.xml", and place it in the folder containing the DS-Client service.

Export Grid DS-Client Address

Exports the current Grid DS-Client's connection address information to a text file for quick distribution.

The exported file can then be imported to any other DS-User installation using the "Load" button in the "Add a DS-Client" dialog box.

Address Type	• **Internal Address**: This exports the internal (LAN) IP Addresses. This can be used to quickly configure other internal DS-User installations with this Grid DS-Client. • **External Address**: This exports the external (WAN) IP Addresses (if they are configured). This can be used for DS-User installations if they need to connect to the Grid DS-Client from the WAN (external connection).

Extension Report

View by size	Shows the graphic sorted by size.
View by number of files	Shows the graphic sorted by number of files
List	**Shows the files sorted by extension specified.**
Top Report	Allows you to search for the most frequent file extensions.
Customize Report	Allows you to search for specific file extensions.

Failed Files During Backup

Use this dialog box to view files that failed to back up from the selected backup set.

File List	Shows a list of files that failed to back up. • You can select all or some of the files from this list for exclusion.
Custom Exclude	• Select one of the failed files and select "Custom Exclude". This will exclude all files in the same path with the same extension. • You must click the Exclude button to apply this custom exclusion filter.
Exclude	Click to add the exclusion(s) to the backup set items.

File Filtering Option

Use this dialog box to define an individual option for a File Filtering Rule (for the list of Rule Options).

Rule for item	You must select one of the following: • **Inclusion** - to include the files covered by the filter in the time-push. • **Exclusion** - to skip the files covered by the filter (do not push).
Filter Rule	
File Filter	You must select one of the following: • **Filter** - specify the filter pattern to apply. • **Directory** - specify the online backup directory where you want to apply the filter. You must enter the full \\share_name\directory_path where the filter will be applied. For example “C:\temp\files\” will archive files fitting the filter pattern from that specific path. Each filter must be applied to a specific directory path (do not leave this box blank). • **Include sub-directories** - select to include all the sub-folders in the specified directory.
Regular Expression	Regular Expression can provide more specific filtering at the filename or file pattern level. However, you must learn the Regular Expression software syntax. • Click [>>] to open the Regular Expression.

File Filtering Rule

Use this dialog box to define a File Filtering Rule (for the list of Archive Rules).

Rule Name	Enter a unique name to describe this File Filtering Rule. Make it as descriptive as possible, especially if you define several different rules.
Rule Options List • Each item in the list is a separate file filtering option for this rule.	
Add	Adds a new option to the list for this File Filtering Rule.
Edit	Edits the selected option in the list for this File Filtering Rule.
Remove	Deletes the selected option from the list for this File Filtering Rule.

File Size Report

List	**List of large files discovered by the LAN Storage discovery tool:** • Share • Directory • Name • Size • Duplicates • Modify Time • Create Time
Select Top	Shows the largest […] number of files

Duplicated at least […] times	Searches only for files with many duplicates. This allows you to identify the location of the largest files on your network. In particular, you can see how many times they are duplicated on the LAN.
Share	Show results for all shares, or for a specific share.
Find	Click to search based on the options selected.

Files in Directory '...' (Select Items for Backup)

This dialog box allows you to view / select specific:

- File(s) in a directory
- Database items (Linux DS-Client)
- Emails in a directory
- Calendars / Contacts / Documents / Emails / Sites in account '...' ("Backup from the Cloud" - G Suite)
- Tables in a database ("Backup from the Cloud" - Salesforce.com)

File List / Item List	• **File Name**: Shows the name of the file. • **File Size**: Shows the original file size of the backup file. • **Last Modified**: Indicates the date that the information in this file was last changed.
E-Mail List (DS-MLR)	• **E-Mail Subject**: Shows the subject line of the E-Mail. • **E-Mail Size**: Shows the original file size of the E-Mail. • **Received Time**: Indicates the date that the E-Mail was received.
Table List (Backup from the Cloud - Salesforce.com)	• **File Name**: Shows the name of the table in the Salesforce.com database.
Item List (Backup from the Cloud - G Suite)	• **Item ID**: Shows the Google Item ID. • **Item Name**: Shows the Google Item name. • **Date Modified**: Indicates the date that the information in this file was last changed.
Item List (Backup from the Cloud - Microsoft Office 365)	• **Folder path**: Shows the folder location of the item. • **Subject**: For email messages, this shows the email subject. For contacts, this shows the complete name of the contact. For calendar items, this shows the appointment subject. For tasks, this shows the task subject. • **Item ID**: Shows the Microsoft Exchange item ID. • **Size**: Shows the size of the item on the source server in MIME format.
Add / Select	Click to add the selected backup item(s) to the Selected Files for Backup List. If this button does not appear when this dialog box is read-only.
Exclude	Click to exclude the selected item(s) from the Selected Files for Backup List. (The parent directory must be selected for backup.)

File Info (Show Archived Files only)	Click to view details about the highlighted file. • Opens the Backup Generations for '...'.
Navigation buttons If over 1000 items exist, the items are displayed on multiple pages. Each page lists up to 1000 items. Use the following buttons to navigate between the pages. These buttons are available only for Microsoft Exchange Server (using EWS) backup sets or Cloud (Microsoft Office 365) backup sets (Windows). **Important:** When you click **Add** or **Exclude**, only items that are selected on the current page will be added or excluded. To ensure that your selected items are added or excluded, click **Add** or **Exclude** before navigating to another page.	
|<<	Click to move to the beginning of the list.
<	Click to view the previous page.
>	Click to view the next page.
Finish	Click this button after you have added or excluded the required items in the backup set.

Find Backed Up File

The Find Backed Up File dialog box allows a user to search all of the files in the backup set for a specific file or file pattern.

Files List • The number of columns that appear depends on the kind of backup set you are searching.	
Generation	Shows the "Generation ID". • In most cases, this will be the Generation ID of the file stored online. In some situations, it will only show the latest Generation ID of the file (for all generations of the same file).
Backup Time (Restore from BLM & Disc/ Tape only.)	Shows the backup time of the file.
Last Modified	Shows the last date and time that the file was modified.
File Size	Shows the file size.
File Name	Shows the file name.
Directory Name	Shows the full directory path.
File ID	Shows the ID of the file (automatically assigned by the DS-Client).
Directory ID	Shows the ID of the directory (automatically assigned by the DS-Client). Note: • File and Directory ID numbers are automatically generated by the DS-Client, and can be used for troubleshooting. This number is also the filename/ dirname used by the DS-System.

Search for Select the search column and enter the text. • Do not use quotation marks • Type in the exact content of the cell or use wild cards • The search is not case-sensitive on Windows DS-Client • Searchable columns vary depending on the kind of backup set	
File name	[Default] Searches for files by name.
File ID	Searches for files by their File ID.
Name/ID	Enter the file name/ID number or file pattern (example: *.exe), in this box to search the selected backup set for that specified file/pattern.
From This Session Only	Select to search for only those files backed up from the selected session. (This option appears when searching from the Detailed Log.)
Find	Click to search the backup set for files of the specified pattern in the Name/ID box.
Select (Restore Only)	Click to select the highlighted file.

Generate Global Report (Print Global Report)

This dialog box allows you to view the progress as DS-User connects to each DS-Client and generates the Global Report. You can stop this process by clicking the Stop button.

Generate Reports

This dialog box allows you to select the LAN Storage Discovery reports that you want to export.

Select Reports	Select the report that you want to export, and then specify any applicable options on the right.
Package all reports for DS-NOC when generating reports	[DS-NOC] Select this check box to place a copy of all the exported reports in a .ZIP file that can be uploaded to the DS-NOC.
Generate	Click to export reports that you have selected.

Getting Started

Once you have successfully completed a full installation, you will find all the necessary applications in the corresponding Start Menu or Application folder. The two major applications on your system are **DS-Client** and **DS-User**.

DS-Client is a service program. It is intended to run in the background at all times (this allows it to perform unattended backups when you are not at the computer). You can start and stop the DS-Client with the DS-Client Service Manager.

DS-User is the user interface that allows you to create backup sets and perform backups and restores using the DS-Client. To use DS-User, you must connect to a DS-Client that is running.

You are prompted for your user credentials when you attempt to log on to the DS-Client. Use the same credentials as you use to log on to your computer.

The first time you successfully connect to the DS-Client, the New Backup Set Wizard pops up automatically. For more information, see Section 2.2, “Connecting to a DS-Client”, on page 15.

Grid Status

[Grid DS-Client]

The Grid Status dialog box gives you a visual display of the nodes on a Grid DS-Client.

This dialog box can display the following views: • Graph View • List View	
Grid Formation	The Main Node will usually be the DS-Client service that started first. Once other Nodes that are configured as part of the Grid DS-Client start, they will join as Leaf Nodes.
Main Node	The Main Node instructs all Leaf Nodes about what activities to perform. It is the only one that listens for incoming DS-User connections. The Main Node also perform backup and restore activities with DS-System.
Leaf Node	A Leaf Node performs backup and restore activities with DS-System as instructed by the Main Node. It does not listen for incoming DS-User connections. A Leaf Node always maintains an open connection to the Main Node (via TCP port 4410).

Graph View	**Graph view shows a visual representation of the Grid status.** • **Graph Layout**: Select the layout for the graph (Linear or Star).
List View	**List view shows information from the common Grid DS-Client database, sorted by node.** • **ID**: ID of the corresponding DS-Client node. • **Name**: Server name of the corresponding DS-Client node. • **Address**: IP Address of the corresponding DS-Client node. • **Type**: Shows if the node is the Main Node, a DS-Client node (Leaf), or if it is not connected. • Status • CPU Usage (%) • Activities • Task Limits • Memory Load (%) • Memory Commit (MB) • Send (Kilobytes/second) • Receive (Kilobytes/second) • At the bottom of the list is the Grid DS-Client database node.

Stop Node (List View)	Allows you to stop the highlighted node in the list. • Opens the Stop DS-Client Node dialog box.
Export	Allows you to export the IP Addresses of the current Grid DS-Client. • Opens the Export Grid DS-Client Address dialog box.
Options	**Refresh every [...] seconds**: The graph or list is automatically updated at this interval.

Growth Report

View	• Table of Time, Size, and number of Files • Bar chart, sorted by size • Bar chart, sorted by files
From	Earliest date to search.
To	Latest date to search.
Interval	Interval between days in the list / chart.
Share	<All> or a specific share.
Type	Total or New files only.

Initial Backup Settings

When you are creating a new backup set, this dialog box allows you configure the path location to which initial backup data will be sent.

When you are creating a new VM replication set to perform offline VM replication, this dialog box allows you to configure the local disk location to which DS-Client will save the initial VM replication data.

Path List • Icon: For initial backup, a key in this column indicates the Initial Backup will encrypt the meta-data. A green key means the DS-Client key will be used for encryption. A red key means a user-defined key will be used for encryption. For offline VM replication, a green key means DS-Client will encrypt the VM replication data using a randomly generated encryption key. • Path: This column shows the paths that are available for you to select. For offline VM replication, the path that you select must be a local disk location of the source DS-Client. • Total Space: Size of the volume that the path points to. • Available Space: Free space remaining on the volume that the path points to.	
Add	Click this button to add a new path using the *Select Initial Backup Destination Path* dialog box.
Delete	Select a path, and then click this button to delete the path.

Initial Backup Status

This dialog box allows you to monitor Initial backup sets. Once an Initial backup set has been imported to the DS-System, it will disappear from this dialog box.

Backup Set List Each line represents a different Initial backup set, where the columns represent the following: • Icon: Indicates the current status of the Initial backup set: incomplete or completed. • Set ID: The backup set ID. • Server Name: The corresponding computer name where the backup set is located. • Set Name: The corresponding backup set name. • Set Status: All Initial backup sets in the same Initial Backup Path must be “completed” before you send the buffer (physical media) to your service provider. • Destination: The Initial Backup Path (Buffer) where the backup data is located.	
Refresh	Click to update the list.
Mark Completed	Make the corresponding Initial backup set’s status “completed”. You can do this if some backup data is in the buffer (for example: if the Initial Backup was interrupted).
Mark Incomplete	Removes the “completed” status from the highlighted Initial backup set. (This allows you to change the Initial Backup Path, or run another backup of the set.)

Initial DS-Client Configuration / Modify DS-Client Configuration

This dialog box allows you to make the initial DS-Client configurations required to connect to a DS-System. It automatically appears after login to an unregistered DS-Client.

Customer Registration Info	
Browse	An alternative to manually entering this information is to use a .CRI file supplied by your service provider. • Click Browse to search for this file on your network.
Customer Name	Enter a descriptive name for the DS-Client. • This name appears in brackets after the computer name in the list of available DS-Client computers (when sorted by Name).
Account #	Enter your Account number. This number is provided to you by your service provider.
DS-Client #	Enter your DS-Client number. This number is provided to you by your service provider.
DS-System Info	
Address	Enter an IP address or DNS name for the DS-System your DS-Client will be using. • Multiple addresses can be entered, separated by a semi-colon (;).
Add	Click to add the address(es) in the Address box to the connection list.
Remove	Click to remove the highlighted address from the connection list.

<table>
<tr><td colspan="2">Encryption Keys
• An encryption key is case sensitive. Its length (in characters) depends on the type and level of encryption selected. DES requires 8 characters, AES-128 requires 16 characters, AES-192 requires 24 characters, and AES-256 requires 32 characters. For better security, do not use dictionary words or proper names. Try to mix numbers with letters randomly.
• Auto-complete feature: If you do not specify the full amount of characters in the Key box, DS-User will fill in the remainder by repeating the string of characters you have entered. (e.g. entering “123” with AES-128 will generate an encryption key of “1231231231231231”, or entering “a” for DES will generate the encryption key “aaaaaaaa”).
• Keep the key(s) in a secure location. Your ability to select the same encryption type and re-enter the same key is necessary if you ever need to reinstall your DS-Client to a new computer (e.g. if the computer is destroyed in a disaster).</td></tr>
<tr><td>Private Key</td><td>You must set a private key for the DS-Client. Backup data from your DS-Client installation will be encrypted with this key.
• Type: Select from the available types. Stronger encryption requires longer keys.
• Key: Enter the key.
• Confirm: Re-enter the key to verify the string is correct. You cannot change this key once it is set.</td></tr>
<tr><td>Account Key</td><td>You must set an account key if more than one DS-Client belongs to your customer account. Common backup data from all your DS-Client installations will be encrypted with this key. Once the account key is set, all DS-Clients from this customer must be configured with that same account key.
• Type: Select from the available types. Stronger encryption requires longer keys.
• Key: Enter the key.
• Confirm: Re-enter the key to verify the string is correct. You cannot change this key once it is set.</td></tr>
<tr><td colspan="2">Allow encryption key forwarding to DS-System
• Select to have DS-Client forward the encryption key(s) to the DS-System the first time it connects with DS-System.
NOTE: If you forward the keys, they will remain encrypted on the DS-System. However, your service provider will be able to create a valid .CRI file containing the encrypted keys. This file will be able to recreate a working version of the DS-Client. Make sure this conforms to your security policies before enabling this option.</td></tr>
<tr><td colspan="2">User Info
You must supply the requested information about your organization by choosing from the drop-down list options.
• Country
• Number of Employees
• Industry Verticals</td></tr>
</table>

Input encryption key

This dialog box appears if USER-DEFINED encryption has been applied to the data on the media. Enter the key to proceed with decryption.

<table>
<tr><td colspan="2">Meta data encryption key
• Enter the key to proceed to access the data.</td></tr>
<tr><td>Import</td><td>You can import from any valid file containing an exported key string.</td></tr>
</table>

Export	You can export the text in this box (in encrypted format) to a text file for distribution, if necessary.

Input the credentials

UNPROTECTED LAN RESOURCE DISCOVERY TOOL

The Discovery Wizard helps you to identify all the unprotected resource (shares) on your LAN. This dialog box allows you to specify which credentials to use when connecting to the shares on the LAN.

Credentials List Lists the credentials to use for the Discovery Scan Process. It is highly recommended that you supply network administrator-level credentials to successfully scan the selected shares. • **Connect As**: Shows the username. • **From**: Shows the domain or computer name of the user credential. Leave blank to use the corresponding user account on the local computer (where the Discovery process is attempting to scan). • **Priority**: Shows the order of credentials that the DS-Client will use to attempt to scan each share. If the highest priority credentials fail, the DS-Client tries the next in line until it succeeds (or runs out of additional credentials).	
Add	Click to add a new credential entry. Opens the Set Credentials.
Modify	Click to modify the highlighted credential entry. Opens the Set Credentials.
Delete	Removes the highlighted credential from the list.

Instant Recovery - Select volume (Linux DS-Client)

Use this dialog box to select the ZFS storage volume for instant recovery storage. Choose a volume from the list, and then click **Select**.

Instant Recovery Delete Wizard - Select instant recovery backup session for deletion

Use this page to select the instant recovery backup session to delete from the instant recovery vault.

Instant Recovery Status

This dialog box shows the completion status after you finish the Instant Recovery Wizard.

Instant Recovery Virtual Machine Delete Wizard - Select the virtual machine (VMware VADP)

Use this page to select the recovered VMware VADP virtual machines to delete from the instant recovery vault.

Instant Recovery Wizard - Select backup components for instant recovery

This page appears for instant recovery backup sets that have selectable backup components.

Select backup components for instant recovery • Select or clear the check box beside each backup component you want to recover.	
Select All	Click to select all components.
Deselect All	Click to clear all selections.

Instant Recovery Wizard - Select backup components for instant recovery (VMware VADP)

This page appears when performing instant recovery of a VMware VADP backup set.

Select backup components for instant recovery • Select or clear the check box beside each backup component you want to recover.	
Select All	Click to select all components.
Deselect All	Click to clear all selections.

Instant Recovery Wizard - Select backup session for instant recovery

Use this page to select the backup session to recover.

Select backup session for instant recovery • This section contains the list of backup sessions you can choose for instant recovery.	
Selected	This box shows the backup session that will be recovered.
Verify VSS Component (VSS-aware backup sets)	Click to verify if the VSS component was backed up successfully for the selected backup session. • This opens the VSS Component Details dialog box.

Instant Recovery Wizard - Set share name used by instant recovery

Use this page to configure the share name for instant recovery. Users need to map to this computer and share it to access the instant recovery data.

Computer name	This shows the computer name where the instant recovery backup data resides.
NFS share name / Share name	Type the name of the share that will be created for this instant recovery backup set. • For VMware VADP backup sets, this must be an NFS share.

Instant Recovery Wizard - Snapshot clone creation (Linux DS-Client)

Use this page to configure the target folder for instant recovery. Users must connect to this location to access the instant recovery data.

Snapshot clone folder	This shows the path of the selected backup session on the instant recovery vault.
Snapshot clone subfolder	Type the name of the subfolder where the instant recovery data is cloned into. • The snapshot in the instant recovery vault will be cloned to this location.

Instant Recovery Wizard - Specify backup set options (Hyper-V)

This page appears when performing an instant recovery of a Microsoft Hyper-V (VSS-aware) backup set.

Hyper-V Server	
Mount Virtual Machines to Hyper-V Server	Select to mount the virtual machines after instant recovery.
Hyper-V Server	Click [...] to open a popup dialog box, where you can specify the target Hyper-V server. The Hyper-V server must be running.

Instant Recovery Wizard - Specify backup set options (SharePoint and SQL)

This page appears when performing an instant recovery of a Microsoft SharePoint Server (VSS-aware) or a Microsoft SQL Server (VSS-aware) backup set.

Microsoft SQL Server	
Attach database to Microsoft SQL Server	Select to attach the database to a Microsoft SQL Server after instant recovery.

SQL Server	Click [...] to open a popup dialog box, where you can specify the target Microsoft SQL Server. The Microsoft SQL Server must be running. Once connected, the Instance box will be populated with information from the server.
Instance	Select from the available target instances.

Instant Recovery Wizard - Specify backup set options (VMware VADP)

This page appears when performing an instant recovery of a VMware VADP backup set.

VMware vCenter	
vCenter IP address	Click [...] to open a popup dialog box, where you can specify the target vCenter IP address. The vCenter must be running. Once connected, the Data Center and Host boxes will be populated with information from the vCenter.
Data Center	Select from the available target locations.
Host	Select from the available target hosts.
Power on virtual machine	Select to power on the virtual machine after instant recovery.

Java Runtime Environment Properties

This dialog box shows additional information about the computer where this instance of the DS-User is running.

Item List	
Property	Shows the name of an item.
Value	Shows the corresponding value for the item (e.g. version number, build number, etc.).

LAN Storage Discovery Tool

LAN Storage Discovery is a tool to analyze the LAN data available for backup. File redundancy (duplication), and frequency of data changes are identified by this tool.

LDAP User Validation

This dialog box shows the LDAP validation status, and allows you to configure the LDAP user account that the DS-System will validate before permitting activities.

Status	This read-only section shows the latest status of LDAP validation from the DS-System.

LDAP user settings	
User name	User name on the LDAP server that the DS-Client will use for authentication.
Password	Type the password for the LDAP user.
Confirm password	Re-type the password.
Domain	Type the domain where the LDAP user account is defined.
Validate Now	Click to send the credentials to DS-System immediately to validate with the LDAP server. If the validation is successful, the status changes to **Validation passed** and the boxes are cleared.
Save	Click to save the credentials in the LDAP user settings section. These are stored until the first instance validation is required by DS-System. If the validation is successful, the status changes to **Validation passed** and the boxes are cleared.

Listening Ports

This dialog box shows the default port used.

Port List	
Listening Server	This component listens on the corresponding default port for connections from the client-component.
Client	This component initiates connections on the corresponding default port to the server-component.
Port	This shows the default setting. It does not change if you modify the port.

Load Summary

The Load Summary can help administrators analyze the load on the DS-Client computer for a selected period of time. Use the Tool Bar at the top of this dialog box to modify the appearance of the graph

Chart Type	Select from Line or Bar Chart
From Date	Select the first day in the period that you want to view. By default, this is set to 7 days prior to the current date and time.
To Date	Select the last day of the period you wish to see. By default, this is set to the current date and time.
Interval	Choose the interval for the horizontal axis of the graph. You can specify an interval of 5, 15, or 30 minutes, 1 hour or 1 day. The default is 1 day.
Node ID (Grid DS-Client)	Select which Node of the Grid DS-Client to view.
Series	Allows you to add or remove information displayed in this dialog box. Opens the Load Summary Series dialog box.

Load Summary Series

This dialog box allows you to change the information that is displayed in the Load Summary.

Send:	The data throughput sent from the DS-Client (KB/sec).
Receive:	The data throughput received through the DS-Client (KB/sec).
CPU Load:	The processor time (% of the elapsed time that a processor is busy executing a non-Idle thread).
Memory Load:	The memory usage (%).
Memory Commit:	The paging memory used (MB).
Activities:	The DS-Client number of activities.

Local DS-VDR Settings

These are optional settings. If supplied, DS-Client / Local DS-VDR Tool will use these credentials to connect to the Converter Server (where the “VMware vCenter Converter” is running).

Local DS-VDR Tool Setup

Use this dialog box to configure the Local DS-VDR Tool that the DS-Client uses.

Local DS-VDR Tool IP	Enter the IP address of the Local DS-VDR Tool. • It must be accessible by the DS-Client via TCP port 4407 (default).
Reset Hardware Cookie	DS-Client stores a hardware cookie of the Local DS-VDR Tool computer on the first connection from the tool. On each subsequent connection, DS-Client will verify the cookie to ensure connection from the same installation. • You only need to reset the cookie if you change the Local DS-VDR Tool (to another installation) or if you alter the hardware on the existing Local DS-VDR Tool machine.
Test Connection	Click to test the DS-Client’s connection with the Local DS-VDR Tool at the IP address listed in the “Local DS-VDR Tool IP” box. • The results of the test are displayed in a text message at the bottom of this dialog box.
Synchronize Database	Click to update the Local DS-VDR Tool’s database with the DS-Client’s current Local DS-VDR backup set configurations. • This process is also run automatically with the DS-Client’s Daily Admin or Weekly Admin.

Log Warning (Activity, Event, etc.)

This dialog box appears if the search returns a large number of logs.

All	Display all logs.

First [...]	Enter a number. Only this number of logs will be displayed from the start of the list.

Mailbox Details

This dialog box displays information about a selected Mailbox.

Maximum Online for '...'

This dialog box allows you to set and adjust the online storage limits for users or groups. A Maximum Online limit is an administrative tool to control storage amounts (and invoice charges).

No Limit	Assigns the user or group unlimited online storage capacity. Clear this box to set an Online storage limit.
Online storage limit (MB)	You can specify a maximum online storage amount in this box. User limits apply to specific users, Group limits apply to each user who is a member of the specified Group (e.g. all Users in a Group with a 100MB limit would have a 100MB limit). To access this box, clear the **No Limit** check box. Note: The online amount is tracked during backups, by taking the current online amount and adding the new backups. Once the online limit is reached, the backup will stop (even if it is not completed). However, if two backup sets of the same user are scheduled concurrently, the DS-Client will allow both backup sets to use up the full remaining online amount. This means it is possible for the online storage to exceed the maximum online limit.

Migrate Shares

Migrate Backup Set Wizard - Match shares / instances

The Migrate Backup Set Wizard uses the same dialogs as with creating a new backup set. You follow the same steps as creating a backup set, with the exception that you are in fact specifying a new path from which the DS-Client will look for the backup files.

This dialog box is intended to match the share(s) on the source computer, with the share(s) on the destination computer. (In the case of databases, you must match each database instance from the source to the destination computer.)

Source	Shows the current source share of the selected backup set.
Destination	Double click on this cell to bring up a drop down list, containing all of the shares on the selected destination node. Select the share where the source data has already been moved to.

Modify DS-Client address

This dialog box allows you to modify an existing DS-Client DNS host name or IP address.

Mount Recovery Database (Exchange Item-Level)

This dialog box is read-only. You must wait as DS-Client takes the selected Microsoft Exchange database file and prepares it for Item-Level restore. You can only proceed to the next dialog box when all checks have passed.

Process list • Shows each process DS-Client runs to mount the recovery database.	
Re-run	Starts the entire mount process again.
Details	shows information for any item highlighted in the process list.

Multi-Tenant Management

[Multi-Tenant mode only]

Use this dialog box to configure (1) “customers”, which are arbitrary groupings under which backup sets can be categorized, and (2) customer grouping assignment for user groups or individual users, especially regular users.

Customers This section lists all existing customer grouping • Name - Type a name for the customer. This is the name that appears in the Backup Sets tree. • Contact - Type the name of the contact person associated with this customer. • Address - Type the mailing address of the customer. • Note - Type any additional information about the customer.	
Add	Click to add a new customer.
Modify	Click to edit the highlighted customer.
Delete	Click to delete the highlighted customer from the Customer List. (A customer can only be deleted if it does not have any backup sets assigned to it.)
Users & Groups This section lists all existing customer grouping assignments. • Name - Select a user or user group to which you want to assign a customer. • Customer - Select the customer that you want to assign to the user or user group. • Note - Type any additional information about the user or group.	
Add	Click to add a new customer grouping assignment.
Modify	To edit a customer grouping assignment, select the assignment, and then click this button.
Delete	To delete a customer grouping assignment, select the assignment, and then click this button.

New / Edit Bandwidth Throttle Schedule Detail

Use this dialog box to add or edit details to the Bandwidth Throttle's Exceptions List. Each Bandwidth Throttle Schedule Detail that you specify is an "exception" to the default throttle setting. Exceptions always over-rule the default setting.

Week Days • Select the day(s) of the week when you want this Schedule Detail to apply.	
Starting At	Start time of the Schedule Detail period.
Ending At	End time of the Schedule Detail period. (This must end on the same day.)
Bandwidth Throttle	• **Unlimited**: No throttle is applied during the Schedule Detail period. • **Limited to [...] KB/Sec**: Throttle of this amount of KB/Sec applies during the Schedule Detail period.

New / Edit Password Rotation Rule

Use this dialog box to add or edit a Password Rotation Rule.

Name	
Length Constraints • Min. Len.: The minimum length (in characters) of the rotated password. • Max. Len.: The maximum length (in characters) of the rotated password.	
Complexity Constraints • Min. Count: The minimum number of characters from the corresponding character set that must be included in the rotated password. • Character: Shows the character set for the corresponding complexity rule.	
Add	Click to add a Complexity Constraint to the list. • Opens the Add / Edit Complexity Rule.
Edit	Click to edit the highlighted Complexity Constraint from the list. • Opens the Add / Edit Complexity Rule.
Remove	Deletes the highlighted Complexity Constraint from the list.
OK	Click to save or update this Password Rotation Rule.

New / Edit User / Group Role

Use this dialog box to add or change the user / group roles configuration.

User / Group	Select either a user or group to add to a role.
User Name / Group Name	Enter the name of the user or group.
From	Select the computer or domain from which the user or group will be authenticated.

DS-Client Role	Assign the user or group to one of these roles: • DS-Client Administrator • DS-Client Backup Operator • DS-Client Regular User For more information on roles, see Configuring the user and group settings.

New Backup Set Wizard - Input DB2 userexit log path

This Wizard dialog box only appears if you selected “Online Backup” in the Specify backup set options dialog box.

- If ‘User Exit’ is OFF on the DB2 database server, you can leave this box empty.
- If ‘User Exit’ is ON on the DB2 database server, you must enter the path for the DB2 Archive Logs.

Archive Log backup path	This is the path where the DB2 Archive Log files are written by the ‘User Exit’ program. • Click [...] to specify the path. This opens the Select Directory dialog box.

New Backup Sets Summary

UNPROTECTED LAN RESOURCE DISCOVERY TOOL

The Discovery Wizard helps you to identify all the unprotected resource (shares) on your LAN. This dialog box allows you to view the new backup sets that were created by the last scan process.

New Backup Set List • Server Name - Network name of the backup computer. • Backup Set Name - Backup set name on the DS-Client. • Owner - Backup set owner. • Connect As - Credentials used to connect to the share.	
Select By • Server Name - Allows you to filter for a specific computer.	
Refresh	Update the list based on the Select by options.

New DS-Client address

This dialog box allows you to add a DS-Client address entry.

Host name or an IP address	Use this box to enter a specific DNS host name or IP address.
IP range (Add only)	Use this option to specify the start and end of an IP range (e.g. 10.20.30.40 to 10.20.30.43). This allows you to quickly populate a large list of sequential IP addresses.

New Mailbox (Exchange Item-Level)

Use this dialog box to create a new mailbox on the target Microsoft Exchange Server.

Mailbox Name	Enter the name of the mailbox you want to create.
User Logon	Enter the user name for this mailbox. • In the dropdown list, select the domain from the list, if applicable.
Password	Assign this user a password.
Re-type password	Confirm the user's password.
Mailbox	You must assign the user to one of the mailbox databases of the Exchange server.

New Time Retention Option

Use this dialog box to create a time-based retention option.

Time Retention Option	**A time retention option keeps one generation from each time interval that fits into the retention span.**
Keep one generation every	Select the interval of time. When this rule is enforced, the most recent generation from the interval is kept, for as many intervals that can fit into the retention rule's length. • See note (at the end of this help dialog box) about the behavior of this option.
Keep one generation every week on or before [day] at [time]	When this rule is enforced, the most recent generation from each interval is kept.
Keep one generation every month on or before the [x] day at [time]	When this rule is enforced, the most recent generation from each interval is kept.
Keep one generation every year on or before the [x] day of [month] at [time]	When this rule is enforced, the most recent generation from each interval is kept.
Retention option valid for	Select the retention option's length (the time span it covers). At least one generation interval must fit into this retention length. • By default, this period is 1 week. If you select a time retention option that spans a longer period, you should extend this value to at least match that period.

Note:

- When selecting the option "Keep one generation every <n> years", the generations will be considered for the interval between January 2nd 00:00 until January 1st 23:59:59 next year. This might not be what is expected by users (e.g. January 1st 00:00 to December 31 23:59:59 same year).

- Instead, users can implement retention with the rule “keep one generation every year...”, where users can specify the start date and time of the interval (e.g. “Last day of December at 23:59:59” for an interval between January 1st 00:00 and December 31st 23:59:59).
- Note that if you can specify the start date for a retention option, it will count backwards from that date by the specified interval.

Nimble Storage Integration Settings

This dialog box allows you to configure the settings that are required for you to integrate Nimble Storage with a Microsoft SQL Server (VSS-aware) backup set.

If Nimble snapshot fails, use default provider	Select this check box to back up data using the default system VSS provider that is available in cases when attempts using the VSS Nimble Provider fails,
IP address	Type the management IP address of your Nimble Storage Array.
Port number	Type the management port number of your Nimble Storage Array. The default is 5392.
User name	Type the required credentials for DS-Client to access the Nimble Storage Array Management IP via REST API.
Password	Type the required credentials for DS-Client to access the Nimble Storage Array Management IP via REST API.
Retention: [ ] snapshots to keep	Enter the maximum number of snapshots that you want DS-Client to keep on the production Nimble Storage for this backup set. You can enter a number from 1 to 1000.
Enable replication	Select this check box if you want hardware snapshots to be replicated to a Nimble Storage replication partner.
Number of generations to keep	Enter the maximum number of snapshots that you want the Nimble Storage replication partner to keep.
Replication partner	Type the name or IP address of the replication partner on which you want hardware snapshots to be replicated to a Nimble Storage replication partner.
Enable CHAP log on	If the Nimble Storage you want to back up is configured with CHAP log on, select this check box.
Name	Type the required credentials for CHAP log on.
Target secret	Type the required credentials for CHAP log on.

Nimble Volume Snapshots

This dialog box allows you to specify the recovery target and select the mount setting for the Microsoft SQL Server host.

Revert entire volume to the snapshot	Select this check box if you want the entire volume on which each of your selected database(s) resides to return to the state of the hardware snapshot. • You must ensure that no databases other than the ones that you have selected to be restored are online and use the volumes to be reverted to snapshots. • You must also ensure that no other processes use the volumes to be reverted to snapshots.
Restore only selected databases from the snapshot	Select this check box if you want to restore only the selected databases.
Use automount for restore (for production Nimble arrays only)	Select this check box if you want DS-Client to automatically establish the connection between the Microsoft SQL Server host and the production Nimble Storage in which the hardware snapshot is located. Do not select this check box if you want to restore data from a snapshot in a Nimble Storage replication partner.
When **Use automount for restore (for production Nimble arrays only)** is not selected, this table allows you to specify the mount point for the Microsoft SQL Server host.	
Volume	This column displays the volume in which each of your selected databases resides.
Snapshot	This column displays the snapshots of each of your selected database(s).
Mount Point	Click this box and then click **[>>]** to select a drive letter that you have assigned to the Microsoft SQL Server host.

Online / LAN File Summary

LAN STORAGE DISCOVERY TOOL

This dialog box provides a list of the online or LAN files.

Global View • Online File Summary: for each row, a file is only counted once (even if there are multiple generations of that file).	
Category	• All files • Duplicate files - Total number of files that have more than one copy, minus one for each unique common file group. • Duplicate groups (LAN File Summary only) - Number of unique common file groups. All identical files are members of a unique file group. • Changed and new files - Files that are new or different from the start of the search period. • Unchanged files - Files that have not changed since the start of the search period. • Not accessed files - (LAN File Summary only) Files that have not been accessed since the start of the search period.
Files	Number of files.
Files (%)	Percentage of the total number of files.
Size (MB)	Size of the files.

Size (%)	Percentage of the total size.
Last ... days	Displays results for the last number of days specified.
Filtered View The content of this section is based on the filters applied at the bottom of the dialog box (filter, category, duplication, totals, share/set). It is updated each time you click “Find”. • Online File Summary: for each row, a file is only counted once (even if there are multiple generations of that file).	
Category	• All - Shows all the categories in the Filtered View list. • All files - Shows the total number of files that fit the selected filter(s) in the corresponding backup set (Online File Summary) or share (LAN File Summary). • Duplicate files - Total number of files that have more than one copy, minus one for each unique common file group. • Duplicate groups (LAN File Summary only) - Number of unique common file groups for the corresponding scope. All identical files in the corresponding scope are members of a unique file group. The scope can be the sum of the whole Filtered View, or a more specific part, like an individual share. • Changed and new files - Files that are new or different from the start of the search period. • Unchanged files - Files that have not changed since the start of the search period. • Not accessed files (LAN File Summary only) - Files that have not been accessed since the start of the search period.
Files	Number of files.
Files (%)	Percentage of the total number of files.
Files (% of Global)	Percentage of the total number of files (from the Global View at the top of the dialog box).
Size (MB)	Size of the files.
Size (%)	Percentage of the total size.
Size (% of Global)	Percentage of the total size (compared to the Global View at the top of the dialog box).
Backup Set / Share Name	Shows the corresponding backup set or share name.
Filter	Allows you to search exclusively for files matching the specified pattern (e.g. *.doc).
Category	Allows you to narrow your search by type of files (All, Duplicate, Changed & New, or Unchanged).
Duplication	Allows you to narrow your search by the duplication level (e.g. "2" means there must be at least two copies (duplicates) of the file on the selected share/set).
Totals only	Select this box to display only the totals (it will be faster).
Share / Set	Allows you to search only a specific share/set (faster). Click the >> button to browse the network.
Set Types... (Online File Summary only)	Allows you to add an additional filter based on backup set type. • Opens the “Backup set type” dialog box.
Options	
Status (Online File Summary only)	Shows the status of the online search.

Find	Click to search (update the dialog box) based on your selections.
Details	Opens the Details dialog box for the highlighted item in the list.
Chart	Click to see a chart based on your selections.

Orders for Disc / Tape

Use this dialog box to view your Disc/Tape orders. You can also track the status of your order.

Information in this dialog box comes directly from the DS-System. You should click Refresh after any activity to make sure you have the most up-to-date information.

Order ID	Unique sequential order number.
Backup Set	Shows the backup set you requested to be burned to a Disc/Tape.
Time Issued	Shows the time the request was made.
Status	Shows the latest status message from the DS-System (in chronological order): • Purchased - You have submitted the Disc/Tape order to the DS-System. • Finished - Your order has been written to the requested media (Disc/Tape) by the DS-System. • Mailed - Disc/Tape has been mailed to you.
Media	Shows the number of discs/tapes that will be sent.
Type	Shows the media type you have selected.
Options	Shows if the request is for a: • Snapshot - the latest generation of all files in the backup set • Selective Restore - customized request for specific files / folders
Files Failed	Shows the number (if any) of files that were not successfully processed.
Refresh	Updates the list with the latest information from the DS-System.

Password Management

Use this dialog box to manage the list of usernames that will have their passwords randomized. Once a password is rotated, no one will know what it is. This means the only way you can use this username is by applying it to a backup set through this feature.

Managed Passwords List	
User Name	This is the actual user account name from a Windows computer or domain.
From	This is the corresponding computer or domain where the user account is located. • For accounts on the local computer (that is running the DS-Client), you can use the dot '.' character.

Backup Sets	The number of backup sets that are using these credentials. • This association is done in the Password Management - Backup Sets Tab.
Rotation	The frequency at which the corresponding user account password is randomized. • This is set from the Password Management - Password Rotation Tab.
Last Updated	Shows the last time the password of the corresponding account was randomized.
Add	Click to add a user to the Managed Passwords List. • Opens the Password Management - User Details Tab.
Edit	Click to edit the highlighted user from the Managed Passwords List. • Opens the Password Management - User Details Tab.
Remove	Deletes the highlighted user from the Managed Passwords List. • NOTE: You cannot remove a user if it is associated with any backup sets. Remove the backup set associations first.
Rotate Now	Click to rotate the highlighted user's password immediately. The change is reflected in the "Last Updated" column.

Password Management - Backup Sets Tab

This dialog box allows you to select backup sets to use with this user account. Once applied, all associated backup sets will use this user account and its (rotated) password.

Associated Backup Sets	
Computer	This is the source computer for the backup set.
Set Name	This is the actual backup set name.
Owner	Shows the current owner of the backup set.
Select	Select the backup sets to associate with this user account. • This opens the Select Backup Sets (Password Management) dialog box.

Password Management - Password Rotation Tab

Use this dialog box to specify the password rotation settings.

Enable Automatic Password Rotation	Select this box to activate this option. • If unselected, you must manually rotate the password from the Password Management.
Rotation Settings	
Rotation Rule	Select the Rotation Rule to apply to this user account. • This opens the Available Password Rotation Rules dialog box.
Rotation Frequency	Select the frequency at which the corresponding user account password is randomized.

Password Management - User Details Tab

This dialog box allows you to add or view a user's logon information.

Logon Information	
User Name	This is the actual user account name from a Windows computer or domain.
From	This is the corresponding computer or domain where the user account is located. • For accounts on the local computer (that is running the DS-Client), you can use the dot '.' character.
Password	[Add user only.] Enter the current valid password for this user. This is required when adding a user account for the first time to enable the randomization. • Once this user's password becomes randomized, no one will be able to enter the credentials. (Only administrators can re-set the password from the operating system.)
Last Psw. Change	[Edit user only.] Shows the last time the password of the corresponding account was randomized.
Note(s) • This area allows you to enter text for any notes you wish to leave about this user account.	

Permissions

Use this dialog box to view, add, or remove permissions for the selected backup set to other users / groups.

Permissions List • Each entry in this list represents permissions for this backup set that are granted to that user or group. • The backup set owner and users with the "DS-Client Administrator" role automatically have all permissions to any backup set even though they are not listed here. Users with the "DS-Client Backup Operator" role have 'backup' permission to any backup set.	
Icon	Shows what the corresponding entry refers to: • a specific user • a group
Name	Shows the name of the user or group.
Description	Shows a description (if any) of the user's full name or the function of the group.
Domain	[Windows only] Shows the domain or server where a user or group is defined.
Type	Shows the types of permissions allowed to the respective user or group. The codes represent (B)ackup, (R)estore, (M)odify, and (D)elete.
Add	Click to give a specific user or group permissions to this backup set. • Opens the Add / Edit Permissions for a User or Group.
Edit	Click to edit the user or group selected in the Permissions List.
Remove	Click to remove the user or group selected in the Permissions List.

Pie Chart for

Shows a chart of the selected information.

Pre & Post Execution

Use this dialog box to specify a command to run before (Pre) and/or after (Post) execution of the backup/restore.

See Pre/Post Use Cases.

Execute on remote system	Select this box to execute the Pre/Post commands on the remote machine where the backup set's files are located. Clear this check box to perform the Pre/Post commands on the local DS-Client computer. Note: This box is disabled if the backup set is on the local DS-Client computer.
Perform this activity before backup / restore	
Run command	Runs the command entered in the Command box. You must type “cmd /c” before the command if it is not the name of an executable file. (This command must not run anything that requires user input.) • Local machine - The DS-Client will terminate the process if it detects that the command requires user input. • Remote Windows - The backup set's Connect As information must have administrator privileges, since the Schedule service is used to run the command on the remote Windows machine. (The DS-Client only knows if the command has started to execute, and not whether it has completed. Therefore, you can wish to delay the start of the backup if the command will take a few minutes to finish). • UNIX - The rexec service must be running on the remote machine.
Stop service	Stops the Service specified in the Command box.
Start service	Starts the Service specified in the Command box.
Run NCF (NetWare)	Runs the command batch file specified in the box on the remote NetWare server. All the rules for running NCF from the console are applied - if the NCF is not in the search path, you must provide the full path (sys:dir_name\name.ncf). The NCF file must be in 8.3 name format, since the console does not understand long file names. (Must have Console Operator Rights.)
Unload NLM (NetWare)	Unloads the NLM (NetWare Loadable Module) specified in the box. (Must have Console Operator Rights.)
Load NLM (NetWare)	Loads the NLM (NetWare Loadable Module) specified in the box. (Must have Console Operator Rights.)
Command Field	Enter the command to perform. For Services, type the service name or use the >> button to select the service.

Command Execution Results	Command Execution Results - You can specify conditions, based on the results of the command execution: • On exit code (Local commands) - Specifies the condition to be = (equal) or <> (not equal) to the exit code in the box to the right. This is useful if you know that the command will produce a particular exit code when finished. • On file existence - Specifies the condition to be whether a particular file exists or not. Enter the full path (include the drive on local machines; include the share but not the server on remote machines) in the box to the right. • On output string (Local commands & UNIX only) - Specifies the conditions to be whether the command output contains a particular string or not. Enter the string (case sensitive) in the box to the right. (If the output is large, only the first 16K are checked for occurrences of the string.) • On execution success - Specifies the condition applies if the command succeeds to execute. • On execution failure - Specifies the condition applies if the command fails to execute. • Or execution failure - Allows you to combine either the Exit Code, File Existence or Output String conditions with the Execution Failure condition.
Don't perform post activity	Will not perform the Post Activity on fulfillment of the Command Execution Results.
Don't Perform Backup/ Restore	Will not perform the backup/restore on fulfillment of the Command Execution Results.
Delay Backup/Restore [...] Sec	Allows you to delay the backup/restore. This is useful in cases where the command activates background processes responsible for creating data for backup. Also allows time for the pre activity to terminate properly.
Perform this activity after backup / restore	
Perform this Activity After Backup.	Each of the following activities are the same as for Pre-Backup: • Run command. • Stop service. • Start service. • Run NCF (NetWare). • Unload NLM (NetWare). • Load NLM (NetWare).
Command Field	Enter the command to perform. For Services, type the service name or use the >> button to select the service.
Don't perform Post activity if	Will not perform the Post Activity if the backup / restore: • Always perform - Will always perform the Post Activity. • Successful - Will not perform if the backup/restore was successful. • With errors - Will not perform if the backup/restore had errors. • Incomplete - Will not perform if the backup/restore was incomplete.

Test Pre **Test Post**	Click to test the command in the Pre or Post section. A results dialog box appears, displaying whether the command executed, the exit code, and the Execution condition. NOTES: 1. Do not use Test Pre with the Delay option, since a delay of over 60 seconds will result in a Timeout message. 2. Using Test with some Pre/Post commands like Stop Service/ Start Service, will only accomplish the first part (i.e. only the Pre command), effectively rendering a service 'stopped' until manually restarted.

Pre & Post Execution (Linux DS-Client)

Use this dialog box to specify a command to run before (Pre) and/or after (Post) execution of the backup/restore.

See Pre/Post Use Cases.

Before backup	
Execute	Enter the command to perform.
Test	Click to test command
On exit code	You can specify conditions, based on the results of the command execution: • On exit code (Local commands) - Specifies the condition to be = (equal) or <> (not equal) to the exit code in the box to the right. This is useful if you know that the command will produce a particular exit code when finished.
Do not perform backup	Will not perform the backup on fulfillment of the exit code condition.
Do not perform post activity	Will not perform the Post Activity on fulfillment of the exit code condition.
After backup	
Execute	Enter the command to perform.
Test	Click to test command
Execute after data has been copied to DS-Client buffer (if applicable)	(Only for backups sets with the “Use buffer” option selected.) Select to perform the Post command immediately after the data has been copied to the DS-Client buffer. • The default setting (if not selected) is to perform the Post command after full backup completes.
Before restore	
Execute	Enter the command to perform.
Test	Click to test command
On exit code	You can specify conditions, based on the results of the command execution: • On exit code (Local commands) - Specifies the condition to be = (equal) or <> (not equal) to the exit code in the box to the right. This is useful if you know that the command will produce a particular exit code when finished.

Do not perform restore	Will not perform the restore on fulfillment of the exit code condition.
Do not perform post activity	Will not perform the Post Activity on fulfillment of the exit code condition.
After restore	
Execute	Enter the command to perform.
Test	Click to test command

Pre/Post Use Cases

What you want to do:	**How to do it?**
Start a remote program. (Including programs that require interaction.) DS-Client will not wait for the program to close:	Leave all boxes on the right blank. DS-Client will not wait for the program to close. However, it will know if the program has been submitted for execution. (This allows you to check for the exit code.)
Start a remote program. (Including programs that require interaction.) DS-Client will wait for the program to close:	Select “Don't perform Post” and/or “Don't perform backup”. If the program requires interaction, DS-Client will wait until the program is closed.
Run a remote batch file. DS-Client will not wait for the results:	Leave all boxes on the right blank. DS-Client will not wait for the batch file to finish. However, it will know if the batch file has been submitted for execution.
Run a remote batch file. DS-Client will wait for the results:	Select either "Don't perform Post", or "Don't perform backup", or both. DS-Client will wait until the batch file finishes the execution.
Check for exit code, file existence, output string, etc.	Select from the appropriate radio button or checkbox.
To apply an (unconditional) delay:	Select "On execution success" and check "Or execution failure", and select the delay in seconds.
To Start/Stop a service:	Enable the Stop / Start Service option. Select the Service using the >> button.
If you want to run a local program (on the DS-Client machine):	Call your service provider for assistance.

Print Backup/Restore Summary & Backup Trends Report

This dialog box allows you to print the Backup/Restore Summary report and the Backup Trends report. A differently titled dialog box comes up depending on the selected report.

Node/Set	You can type the backup node, or backup node & backup set name that you want to view. By default, this box is blank, allowing you to see the activities of all users. • **Select**: Click to choose a specific computer or backup set. • By default, this box is blank, allowing you to view all backup sets (if you have sufficient authority).
User	You can type the User Name whose activities you wish to see in this box. By default, this box is blank, allowing you to see the activities of all users.
From Date	Type the earliest date you want to display in this box. No data older than this date will be displayed.
To Date	Type the latest date you want to display in this box. No records newer than this date will be displayed. By default, this is set to the current date and time.
Summary (Backup Trends only)	The Backup Trends report can show either weekly or monthly statistics: • **Weekly**: Select to view a weekly report. • **Monthly**: Select to view a monthly report.
Set Type	You can select any or all of the following type(s) of backup sets to include in this report: • **Online**: [Default is on.] Includes data from all online backup sets. • **Statistical**: Includes data from all statistical backup sets. • **Self Contained**: Includes data from all current self contained backup sets. • **Local-Only**: Includes data from all Local-Only backup sets. • **Deleted**: Includes data from all deleted backup sets (online, statistical, self contained, and Local-Only). This uses data from the Activity Log. • **Local DS-VDR**: Includes data from all Local DS-VDR backup sets (DS-System data storage and transmission amounts do not apply). • **Instant Recovery**: Includes data from all instant recovery backup sets.
Customer	If the Multi-Tenant feature is enabled and configured, you can select the customer for which you want to generate the report. If you are a regular user, only customers that have been assigned to you are displayed. The report will only display data for the backup sets associated with the customer.

Print Backup Groups

Use this dialog box to print the Backup Groups report, view the report and set up your printer. Only Administrators can view all backup group reports.

Group Name	Type the name of the user group for which you want to create a report, or click >> to select from a list of the user groups. Leave this box blank to create a report that includes all users.

Set Type	You can select any or all of the following type(s) of backup sets to include in this report: • **Online**: Includes data from all online backup sets. • **Statistical**: Includes data from all statistical backup sets. • **Self Contained**: Includes data from all current self contained backup sets. • **Local-Only**: Includes data from all Local-Only backup sets. • **Local DS-VDR**: Includes data from all Local DS-VDR backup sets (DS-System data storage and transmission amounts do not apply).
Customer	If the Multi-Tenant feature is enabled and configured, you can select the customer for which you want to generate the report. If you are a regular user, only customers that have been assigned to you are displayed. The report will only display data for the backup sets associated with the customer.

Print Global Report - Backup / Restore Report

Use this dialog box to print or view the Backup / Restore report.

Note: You will only be able to print reports for backup sets to which you have sufficient rights.

DS-Client(s)	Lists the DS-Clients you want to include in the Global Report. • [...]: Opens the Select DS-Client (Print Global Report) dialog box.
Report Selection	
User	You can search for a specific user (backup set owner). Leave blank to show all users.
From Date	Enter the earliest date you want to display in this box. No data older than this date will be displayed.
To Date	Enter the latest date you want to display in this box. No records newer than this date will be displayed. By default, this is set to the current date.
Set Type	You can select any or all of the following type(s) of backup sets to include in this report: • **Online**: [Default is on.] Includes data from all online backup sets. • **Statistical**: Includes data from all statistical backup sets. • **Self Contained**: Includes data from all current self contained backup sets. • **Local-Only**: Includes data from all Local-Only backup sets. • **Deleted**: Includes data from all deleted backup sets (online, statistical, self contained, and Local-Only). This uses data from the Activity Log. • **Local DS-VDR**: Includes data from all Local DS-VDR backup sets (DS-System data storage and transmission amounts do not apply).
OK	Opens a preview of the report. You can print from the preview.

Print Global Report - Backup Groups Report

Use this dialog box to print or view the Backup Group report.

Note: You will only be able to print reports for backup sets to which you have sufficient rights.

DS-Client(s)	Lists the DS-Clients you want to include in the Global Report. • [...]: Opens the Select DS-Client (Print Global Report) dialog box.
Report Selection	
Group Name	You can search for a specific user group. The default is to leave this box blank, which will create a report that includes all users from each DS-Client.
Set Type	You can select any or all of the following type(s) of backup sets to include in this report: • **Online**: [Default is on.] Includes data from all online backup sets. • **Statistical**: Includes data from all statistical backup sets. • **Self Contained**: Includes data from all current self contained backup sets. • **Local-Only**: Includes data from all Local-Only backup sets. • **Local DS-VDR**: Includes data from all Local DS-VDR backup sets (DS-System data storage and transmission amounts do not apply).
OK	Opens a preview of the report. You can print from the preview.

Print Global Report - Backup Items Report

Use this dialog box to print or view the Backup Items report.

Note: You will only be able to print reports for backup sets to which you have sufficient rights.

DS-Client(s)	Lists the DS-Clients you want to include in the Global Report. • [...]: Opens the Select DS-Client (Print Global Report) dialog box.
Report Selection	
Set Type	You can select any or all of the following type(s) of backup sets to include in this report: • **Online**: [Default is on.] Includes data from all online backup sets. • **Statistical**: Includes data from all statistical backup sets. • **Self Contained**: Includes data from all current self contained backup sets. • **Local-Only**: Includes data from all Local-Only backup sets. • **Local DS-VDR**: Includes data from all Local DS-VDR backup sets (DS-System data storage and transmission amounts do not apply.
OK	Opens a preview of the report. You can print from the preview.

Print Global Report - Backup Sets Report

Use this dialog box to print or view the Backup Sets report.

Note: You will only be able to print reports for backup sets to which you have sufficient rights.

DS-Client(s)	Lists the DS-Clients you want to include in the Global Report. • [...]: Opens the Select DS-Client (Print Global Report) dialog box.
Report Selection	

Set Type	You can select any or all of the following type(s) of backup sets to include in this report: • **Online**: [Default is on.] Includes data from all online backup sets. • **Statistical**: Includes data from all statistical backup sets. • **Self Contained**: Includes data from all current self contained backup sets. • **Local-Only**: Includes data from all Local-Only backup sets. • **Local DS-VDR**: Includes data from all Local DS-VDR backup sets (DS-System data storage and transmission amounts do not apply).
OK	Opens a preview of the report. You can print from the preview.

Print Global Report - Backup Trends Report

Use this dialog box to print or view the Backup Trends report.

Note: You will only be able to print reports for backup sets to which you have sufficient rights.

DS-Client(s)	Lists the DS-Clients you want to include in the Global Report. • [...]: Opens the Select DS-Client (Print Global Report) dialog box.
Report Selection	
User	You can search for a specific user (backup set owner). Leave blank to show all users.
From Date	Enter the earliest date you want to display in this box. No data older than this date will be displayed.
To Date	Enter the latest date you want to display in this box. No records newer than this date will be displayed. By default, this is set to the current date.
Weekly / Monthly	You must select whether to display the trends grouped by week or by month.
Set Type	You can select any or all of the following type(s) of backup sets to include in this report: • **Online**: [Default is on.] Includes data from all online backup sets. • **Statistical**: Includes data from all statistical backup sets. • **Self Contained**: Includes data from all current self contained backup sets. • **Local-Only**: Includes data from all Local-Only backup sets. • **Deleted**: Includes data from all deleted backup sets (online, statistical, self contained, and Local-Only). This uses data from the Activity Log. • **Local DS-VDR**: Includes data from all Local DS-VDR backup sets (DS-System data storage and transmission amounts do not apply).
OK	Opens a preview of the report. You can print from the preview.

Print Global Report - Backup Users Report

Use this dialog box to print or view the Backup Users report.

Note: You will only be able to print reports for backup sets to which you have sufficient rights.

DS-Client(s)	Lists the DS-Clients you want to include in the Global Report. • [...]: Opens the Select DS-Client (Print Global Report) dialog box.
Report Selection	
Set Type	You can select any or all of the following type(s) of backup sets to include in this report: • **Online**: [Default is on.] Includes data from all online backup sets. • **Statistical**: Includes data from all statistical backup sets. • **Self Contained**: Includes data from all current self contained backup sets. • **Local-Only**: Includes data from all Local-Only backup sets. • **Local DS-VDR**: Includes data from all Local DS-VDR backup sets (DS-System data storage and transmission amounts do not apply).
OK	Opens a preview of the report. You can print from the preview.

Print Global Report - Export Backup Sets Information

Use this dialog box to export Backup Sets information to a file.

Note: You will only be able to export information for backup sets to which you have sufficient rights.

DS-Client(s)	Lists the DS-Clients you want to include in the Global Report. • [...]: Opens the Select DS-Client (Print Global Report) dialog box.
Export Options	
Save As	Choose where you want the report information saved.
File Format	Choose the format you want to save the report in from this drop down list.
OK	Generates the report. Opens the Generate Global Report (Print Global Report) dialog box.

Print Global Report - Restorable Volume Report

Use this dialog box to print or view the Restorable Volume report.

Note: You will only be able to print reports for backup sets to which you have sufficient rights.

DS-Client(s)	Lists the DS-Clients you want to include in the Global Report. • [...]: Opens the Select DS-Client (Print Global Report) dialog box.
Report Selection	

Set Type	You can select any or all of the following type(s) of backup sets to include in this report: • **Online**: [Default is on.] Includes data from all online backup sets. • **Statistical**: Includes data from all statistical backup sets. • **Self Contained**: Includes data from all current self contained backup sets. • **Local-Only**: Includes data from all Local-Only backup sets. • **Local DS-VDR**: Includes data from all Local DS-VDR backup sets (DS-System data storage and transmission amounts do not apply).
OK	Opens a preview of the report. You can print from the preview.

Print Global Report - Statistical Summary Report

Use this dialog box to print or view the Statistical Summary report. This shows useful statistics and compression ratios for backups performed by the DS-Client.

Note: You will only be able to print reports for backup sets to which you have sufficient rights.

DS-Client(s)	Lists the DS-Clients you want to include in the Global Report. • [...]: Opens the Select DS-Client (Print Global Report) dialog box.
Report Selection	
User	You can search for a specific user (backup set owner). Leave blank to show all users.
From Date	Enter the earliest date you want to display in this box. No data older than this date will be displayed.
To Date	Enter the latest date you want to display in this box. No records newer than this date will be displayed. By default, this is set to the current date.
Backup set type to include: • **Online**: [Default is on.] Includes data from all online backup sets. • **Statistical**: Includes data from all statistical backup sets. • **Self Contained**: Includes data from all current self contained backup sets. • **Local-Only**: Includes data from all Local-Only backup sets. • **Local DS-VDR**: Includes data from all Local DS-VDR backup sets (DS-System data storage and transmission amounts do not apply).	
Group report by: You must specify how the Statistical Summary will group the information: • Machine • Backup Set • User	
Update Statistics: • **Gather new statistics before preview/print** - Indicate if you want to update the statistics before you preview or print this report. If checked, each DS-Client will run an Update Statistics Process (part of the Daily/Weekly Admin). This can take some time, depending on the size of the database.	
OK	Opens a preview of the report. You can print from the preview.

Print Report

This is a common print dialog box for the following reports:

- Backup Sets
- Backup Users
- Restorable Volume
- Backup Items

Note: You will only be able to print reports for backup sets to which you have sufficient rights.

Report Selection	
Set Type	You can select any or all of the following type(s) of backup sets to include in this report: • **Online**: Includes data from all online backup sets. • **Statistical**: Includes data from all statistical backup sets. • **Self Contained**: Includes data from all current self contained backup sets. • **Local-Only**: Includes data from all Local-Only backup sets. • **Local DS-VDR**: Includes data from all Local DS-VDR backup sets (DS-System data storage and transmission amounts do not apply). • **Instant Recovery**: Includes data from all instant recovery backup sets.
Customer	If the Multi-Tenant feature is enabled and configured, you can select the customer for which you want to generate the report. If you are a regular user, only customers that have been assigned to you are displayed. The report will only display data for the backup sets associated with the customer.
OK	Opens a preview of the report. • You can print from the preview by clicking the print icon.

Print Restore Activities Report

Use this dialog box to print or preview the Restore Activities report.

From Date	Type the earliest date you want to display in this box. No data older than this date will be displayed.
To Date	Type the latest date you want to display in this box. No records newer than this date will be displayed. By default, this is set to the current day
Backup Type	You can select a specific type of backup set from this dropdown list. • Default is <All>.
Order report by	You can select which column will be used to sort this report: • Machine • Backup Set Name • Restore Date
Customer	If the Multi-Tenant feature is enabled and configured, you can select the customer for which you want to generate the report. If you are a regular user, only customers that have been assigned to you are displayed. The report will only display data for the backup sets associated with the customer.

Print Spreadsheet

Use this dialog box to print the contents of a spreadsheet. You can print all the rows, or only a selected range of rows.

Header	Type a title for the printout.
Print All	Select to print all of the rows of the spreadsheet.
Print Selection	Select to print only a range of rows, as defined in the From Row and To Row boxes.
Print Row Nums	Select to print row numbers on the printout.
Print Colors	Select to print the spreadsheet in color or shades of gray, depending on your printer. If this box is cleared, there is very little shading; most of printout is black and white.
From Row	Enter the first row you want to print. Leave this box blank to print all the rows.
To Row	Enter the last row you want to print. Leave this box blank to print all the rows.

Print Statistical Summary

Use this dialog box to preview and/or print the Statistical Summary. This shows useful statistics and compression ratios for backups performed by the DS-Client.

Report Selection	
Node / Set	Leave blank to show all computers / backup sets. • Click the Select button to browse for a specific backup set.
User	Leave blank to show all users. • Click the Select button to browse for a specific backup set.
From Date	Specify a start date for the Report period.
To Date	Specify an end date for the Report period.
Customer	If the Multi-Tenant feature is enabled and configured, you can select the customer for which you want to generate the report. If you are a regular user, only customers that have been assigned to you are displayed. The report will only display data for the backup sets associated with the customer.
Backup set type to include: • **Online**: [Default is on.] Includes data from all online backup sets. • **Statistical**: Includes data from all statistical backup sets. • **Self Contained**: Includes data from all current self contained backup sets. • **Local-Only**: Includes data from all Local-Only backup sets. • **Local DS-VDR**: Includes data from all Local DS-VDR backup sets.	
Group report by: You must specify how the Statistical Summary will group the information: • Machine • Backup Set • User	

Update Statistics: • **Statistics updated on** - Shows the last time when the DS-Client's statistics were updated. • **Gather new statistics before preview/print** - Indicate if you want to update the statistics before you preview or print this report. If checked, DS-Client will run an Update Statistics Process (part of the Daily/Weekly Admin). This can take some time, depending on the size of the database.	
OK	Opens a preview of the report. • You can print from the preview by clicking the print icon.

Process Window

This dialog box displays the progress of DS-Client activities.

Stop	**Click to attempt to stop the process. This cannot be undone.**
Ready	**If the process is waiting for user input (e.g. a CD), this button will activate. Click to continue the process.**
Working On Section • Note: Since most processes are multi-threaded, they can finish faster than DS-User can refresh the dialog box.	
File	Shows the item currently being processed. • Since only one item can appear in this box at a time, not all files processed can be displayed and only larger files have the probability of appearing. • Percentage bar: Shows the progress of the current item being processed. This only appears if the file's processing time is long enough to be visually represented.
Dir	Shows the last directory scanned. • Note: This is independent of the file that is displayed as being processed.
Set	Shows the backup set or VM replication set (including the network resource).
Details Section	
Total Amount	Shows the total amount of data processed so far.
Total Files	Shows the total number of files processed so far.
Amount Left	Shows the total amount of data left to process.
Files Left	Shows the total number of files left to process.
Status	Shows any relevant status comments about the activity
Progress	If the percentage bar appears, it shows the progress for the overall process.
Warnings	Shows the number of warnings that occurred during the activity (if any).
Errors	Shows the number of errors that occurred during the activity (if any).
Event Log	Click to view the event log, which shows any error information about the session.
Statistics Section	

Digital Time Counter(s)	Shows the time that has elapsed since the beginning of the activity. If you chose to run PreScan in the Select Files for Demand Backup Dialog Box, a second time counter appears to display the estimated time remaining for the activity.
KB/sec	Shows the data transfer rate between the DS-Client and the network resource. The data transfer rate is dependent on your communications infrastructure. Communication can be over a public network or through a direct LAN connection with DS-System. Check with your service provider to determine which connections are supported in your service area. Note that the data transfer rate also depends on the file type and the compression ratio achieved on the file. • Note: For some processes (e.g. delete) this rate is measured in Files per second.

Proxy Server Settings

This dialog box allows you to configure the DS-Client to use a Proxy Server when connecting to the DS-NOC and when working with 'Backup from the Cloud' backup sets.

No proxy	(Default) If selected, the DS-Client will connect directly to the DS-NOC or Cloud site.

Auto-detect proxy settings for this network	If selected, DS-Client will try to find the proxy server automatically. The auto-detection method depends on the type of DS-Client. Linux DS-Client searches for the URL http://wpad/wpad.dat. If the URL exists, DS-Client acquires a proxy server and port from the URL and uses the proxy server to connect to DS-NOC / Cloud site. Windows DS-Client tries to find the proxy server using one of the following methods. If one method fails, the next method is tried. • **Web Proxy Auto-Discovery Protocol (WPAD) URL**: This method locates the URL of a configuration file using DHCP and/or DNS discovery methods. – Windows DS-Client checks the DHCP server first. Ensure that the DHCP server is configured to serve up the “site-local” option 252 (“auto-proxy-config”) with a string value of http://xxx.yyy.zzz.qqq/wpad.dat where xxx.yyy.zzz.qqq is the IP or DNS address of a web server. – If DHCP fails to provide the required information, Windows DS-Client tries to find the URL of the configuration file by checking the DNS server. If the network name of the DS-Client computer. – If DS-Client finds the WPAD URL (using either DHCP or DNS), it will load and analyze it. Then it will use the proxy server specified to connect to DS-NOC / cloud site. – If DS-Client fails to find the WPAD URL, it will try the next method: • **Internet Explorer’s configuration**: This method is the equivalent checking the proxy server settings in Internet Explorer (if logged on as the DS-Client service account). – Windows DS-Client tries to find the DS-Client Service Account’s Internet Explorer configuration to get the proxy server settings. – If DS-Client fails to find a proxy server, it will try the next method: • **WinHTTP settings**: This method checks the DS-Client computer’s registry for a default proxy server setting. The WinHTTP default setting is saved in the Windows Registry and is defined by using the "netsh winhttp" command.
Manual proxy configuration	If selected, you must enter the address of the proxy server in the corresponding boxes, including the port number to use. • **Use the same proxy server for all protocols**: Select to use only one Proxy Server address and port number for HTTP, HTTPS and IMAP connections.
Automatic proxy configuration URL	If selected, you must enter a URL to a Proxy Auto Configure file accessible to the DS-Client. The DS-Client will obtain the proxy server address and port number to use from this file. • Enter the full URL in this box, starting with “http://”.
Server requires authentication If required, supply the credentials to the Proxy Server here. • User Name • Password • Confirm	

Recovery Info

Use this dialog box to view or change information about the backup set to be recovered. Some information might not be available. In such cases the backup set will be recovered with default values (i.e. <Unknown>).

Owner	Shows the user name of the owner of the backup set.
Network Provider	Shows the Network Provider on which the Backup Set's computer is located.
Computer	Shows the source computer for the files and directories or the backup set.
Set Name	Shows the name of the backup set. You can change this box to change the name of the backup set.
Note	
1	In some cases you might be forced to choose an Owner or Network Provider (ex: if there are more than one user/network provider computer available with the same name).

Regular Expression

Use this dialog box to specify the regular expression to exclude from (or apply to) backups.

A regular expression provides more specific filtering than the regular exclude filter. Regular expressions are applied globally to an entire set (not only specific items) to either exclude or include filenames and/or directories based on RegEx pattern(s).

NOTE: You should only use this option if you are familiar with the regular expression syntax.

Edit	
Expression	• **Pre-defined**: Select from one of the pre-defined expressions in the list. • **Custom**: Enter the regular expression string to exclude.
Match Options • The default match options are to exclude the expression, with case sensitive filtering, against files and directories.	
Case Sensitive	[Default is selected.] Indicates if the expression matching is case sensitive.
Negate	Negates the expression. This means it will exclude any files not matching the regular expression. This has the effect of permitting the negated expression to be backed up. • This option only works at the individual file level (not on directories). • For example, negating the pre-defined `.*\.tmp` expression allows you to exclude any files that do not have the `.tmp` extension.

Inclusion	Inverts the regular expression to filter for the specified pattern. • If you add one inclusion to the list of items to be backed up, only files matching the inclusion will be backed up. No other files will backed up, unless additional inclusion expressions are added. • For example, selecting this option with the pre-defined `.*\.tmp` expression allows you to include all `.tmp` files from the shares and directories selected for backup. • Add multiple inclusion expressions to search for only the specified names or patterns.
Match	Select what this regular expression will filter: • **files and directories**: Not available with the Negate option. • **files only**
Test	
Match against	Checks the regular expression against a string you enter. Click the check icon to verify if the string matches the regular expression.

A regular expression is a pattern that is matched against a subject string from left to right. Most characters stand for themselves in a pattern, and match the corresponding characters in the subject. The power of regular expressions comes from the ability to include alternatives and repetitions in the pattern. These are encoded in the pattern using meta-characters. There are two different sets of meta-characters: those that are recognized anywhere in the pattern except within square brackets, and those that are recognized in square brackets. Outside square brackets, the meta-characters are as follows:

\	General escape character with several uses.
^	Assert start of string (or line, in multiline mode).
$	Assert end of string (or line, in multiline mode).
.	Match any character except newline (by default).
[	Start character class definition.
|	Start of alternative branch.
(	Start subpattern.
)	End subpattern.
?	Extends the meaning of (0 or 1 quantifier Quantifier minimizer
*	0 or more quantifier
+	1 or more quantifier Possessive quantifier
{	Start min/max quantifier.

Part of a pattern that is in square brackets is called a “character class”. In a character class the only meta-characters are:

\	General escape character.
^	Negate the class, but only if the first character.
-	Indicates character range.
[	POSIX character class (only if followed by POSIX syntax).

]	Terminates the character class.

If you add multiple regular items to the set, and then add one or more negated RegEx exclusions that do not match the regular items, they are excluded. For example, if you add the following as regular items:

```
F:\Dir1
F:\Dir2
F:\Dir3
```

and then add a negated RegEx as:

```
~REGEX: (Exclusion, Case insensitive, Match files only) F: -
\\Dir3\\.*\\ToBackup\\.*
```

This RegEx indicates to exclude everything that does not match `F:\Dir3\.*\ToBackup\.*`.

Since RegEx expressions are applied globally to the entire set, `F:\Dir1` and `F:\Dir2` will be excluded, as they do not match the regular expression. If someone wants to include `F:\Dir1` and `F:\Dir2`, they have several options:

- Modify the negated RegEx to include `Dir1` and `Dir2` as follows:

  ```
  ~REGEX: (Exclusion, Case insensitive, Match files only) F: -
  \\(Dir1|Dir2|(Dir3\\.*\\ToBackup)\\.*
  ```

- Transform the negated RegEx to an inclusion. Then someone could either modify that inclusion to include the extra regular folders:

  ```
  REGEX: (Inclusion, Case insensitive, Match files only) F: -
  \\(Dir1|Dir2|(Dir3\\.*\\ToBackup)\\.*
  ```

Or, add several RegEx inclusions:

```
REGEX: (Inclusion, Case insensitive, Match files only) F: -
\\Dir1\\.*

REGEX: (Inclusion, Case insensitive, Match files only) F: -
\\Dir2\\.*

REGEX: (Inclusion, Case insensitive, Match files only) F: -
\\Dir3\\.*\\ToBackup\\.*
```

- Use one set for those regular items that do not need RegEx and another set for those that require RegEx.

Remove Backup Set

Confirm the delete by pressing the **OK** button.

Move to BLM Select to have DS-Client instruct DS-System to copy all this backup set's online data to the BLM Archive before deleting the backup set. [Note: If this option is unavailable but the checkbox is selected, it means the data must be moved to BLM. This occurs if the backup set has the “BLM (Infinite Generations)” option selected (Backup Set Properties > Options tab).] • **Use new archive package**: Select to use a new archive package. Otherwise, this Archive request will be added to the current archive package on the BLM Archiver. Archive packages are specific to a particular backup set. • **Session Label**: Each Archive Package is automatically time-stamped, but you must add your own label (alpha-numeric string) to demand BLM requests. This will make it easier to search an Archive Package.

Rename Component

This dialog box applies to alternate location restores of VSS-aware backup sets. The content depends on what was backed up (Microsoft SQL Server, Microsoft Exchange Server, Microsoft Hyper-V Server, or Microsoft SharePoint Server).

Source : Target Mapping List • Each line in the list shows a source component from the VSS-aware backup. By default, it will be restored to the alternate location with the same component name. • This list allows you to rename individual components by editing the name or path in the ‘target’ column.	
Load XML	Loads the mapping contents from a previously saved XML file. • A mapping will only be loaded if the Logical Path and Source Component columns from the XML file match exactly with those that are displayed in the list.
Save XML	Saves the contents from the current Source:Target Mapping List to an XML file for later use.

Repair DS-Client

These advanced options permit administrators to repair and/or recover the DS-Client database. For more information, see Recovering the DS-Client database and Viewing the system status.

Recover	
DS-Client & delta databases (Windows DS-Client)	Flags the DS-Client Database to be restored. The last backed up version of the **dsclient** and **dsdelta** databases will be restored.
DS-Client database (Windows DS-Client)	Flags the DS-Client Database to be restored. The last backed up version of the **dsclient** database will be restored (without the dsdelta database).
DS-Client database (Linux/Mac DS-Client)	Flags the DS-Client Database to be restored. (On Linux/Mac DS-Clients, there is no separate dsdelta database.) The last backed up version of the **dsclient** database will be restored.

Orphaned backup sets	Opens the Backup Set Recovery, which displays any backup sets found by the last Weekly Admin process to exist on the DS-System, but not in the DS-Client database. (Orphaned sets are found by the Weekly Admin. process.)
OK	Click to recover to specified radio button item. **IMPORTANT**: After you click **OK** for database recovery, the process starts, and your existing database(s) will be replaced. This operation cannot be undone.

Request for Permission

This dialog box appears when you have provided credentials required for the **Client ID for native application** logon mode for Cloud (Google G Suite) backup sets (Windows). This dialog box allows you to sign in to a Google account and to grant the application the permission to access data on the Google account.

Google Accounts This section displays the Google sign-in page. 1. Sign in to the Google account for which you want to back up data and, therefore, to which the application needs permission to access. This Google account must be the same account with which you generated the credentials that you have provided in the previous dialog box. 2. On successful sign-in, grant the permission for the application to access data on the Google account. After you have granted the permission, a verification code is displayed.	
Code	Copy the entire string of the verification code displayed in the **Google Accounts** section, and paste the code into this box. The verification code is displayed only after you have signed in and granted the application the permission to access the Google account.

Restore Resume Status

Use this dialog box to view the upload status of a specific Salesforce.com backup set.

Backup Set	
Create Time	
Table Status List This list shows the restore status of individual tables from a Salesforce.com backup set. • Table Name • Rows • Current Status • Uploaded	

Resume restore processing for Salesforce

This dialog box shows any Salesforce.com backup sets that had an interrupted restore which can be resumed at the point of interruption.

Backup Set List This list shows any Salesforce.com backup sets that have interrupted restores that can be resumed. • The backup set must have been restored using the "Save temporary database file in local storage for resume" option.	
Show Status	Show more details about the highlighted backup set's restore status. • Opens the "Restore Resume Status" dialog box.
Restore parameters	Shows additional information used by the backup set to Salesforce.com.
Resume	Click to resume restoring the highlighted backup set.

Retention Rule Wizard - Archive Old Data to BLM Options

This dialog box configures what data should be moved to BLM Archiver, based on age. This option applies last, to the files that remain online after the Delete Options and Time Retention Options have run (if defined).

Archive Rules List	Each item in the list is a separate rule that will be applied in sequence. • Online files that fall into the scope of the rule will be 'pushed' to the BLM Archiver. • Once files are 'pushed', they **cannot** be restored from the DS-System. They are moved to BLM and can only be written to a BLM Restorable Image if they need to be restored. • If the last (latest) generation of a file is 'pushed', an 'archive stub' (a small file containing only metadata) will be left on the DS-System online storage. This prevents that file from being backed up again by the DS-Client, unless the source file is changed. (Note for disambiguation purposes: In all other cases when a generation is archived to BLM, no such archive stub is kept online.)
Add	Click to add a rule to the list. • Opens the BLM Archive Rule dialog box.
Edit	Click to edit the highlighted rule in the list. • Opens the BLM Archive Rule dialog box.
Remove	Click to delete the highlighted rule from the list.
Options	
Compare backup time only	By default, a file's 'last modified time' and its 'backup time' are both used to determine if it qualifies as 'old data'. (The oldest of the two times is used.) • If this option is selected, only the 'backup time' of a file is used to determine if it qualifies as 'old data'. This means files that have not been modified for a long time will remain online until their 'last backup time' qualifies them as 'old data'.
Archive special files (Windows DS-Client)	[Default is selected.] Special files are the separate items that can be selected when backing up a file system, such as System State or Services Database. • If selected, the special files in a backup set that qualify as 'old data' are allowed to be archived.

Do not archive latest generation of special files (Windows DS-Client)	[Archive special files must be selected. Default is selected.] If selected, the latest generation of all special files (e.g. System State) is kept online. If not selected, any special files that qualify as 'old data' will be archived. • Select this option if this Retention Rule will be applied to any backup set that is used for Bare Metal Restore (BMR).

Retention Rule Wizard - Choose a name

Use this dialog box to choose the name of this retention rule.

Name	Enter a name for this Retention Rule.
Retention Option	
Delete obsolete data	If selected, all the data that is obsolete is deleted. • **WARNING**: Once enforced, any deleted data is gone forever!
Move obsolete data to BLM	If selected, a copy of all generations that are deleted will be sent to BLM. • Note: This option does not apply to Local-Only or Self-Contained backup sets.
BLM Option	
New Archive Package (only if "Move obsolete data to BLM" is selected)	Select to use a new archive package. Otherwise, this Archive request will be added to the current archive package on the BLM Archiver. Archive packages are specific to a particular backup set. Each BLM Request will be added to an Archive Package until it reaches a specified limit (# of files, size, time).
Summary	Shows a list of all the rules selected for this Retention Rule.

Retention Rule Wizard - Choose Retention Settings

Use this dialog box to select what types of retention options to include in this Retention Rule.

Online and Local-Only retention • Selections in this section affect the data that is stored online on the DS-System and the data that is stored (locally) for Local-Only backup sets.	
Deletion of files removed from source / HSMed data	If selected, this wizard displays the Retention Rule Wizard - Delete Options dialog box.
Time-based retention	If selected, this wizard displays the Retention Rule Wizard - Time Retention Options dialog box.
Archive old data to BLM	If selected, this wizard displays the Retention Rule Wizard - Archive Old Data to BLM Options dialog box (if applicable).
Local Storage retention • This option is only available if the DS-Client has the Local Storage Tool enabled. • Selections in this section affect the data that is stored in the local storage of the DS-Client. • This option only applies to Online backup sets configured with the 'Use Local Storage' option. (It does not apply to Local-Only backup sets.)	

Enable Local Storage retention	This option changes the behavior of the Local Storage Tool. • **Off**: When this option is off, only the latest generation of a backup file is kept in the Local Storage directory. • **On**: When you check this option, the DS-Client will store the same amount of generations in the Local Storage directory as are stored in the DS-System's online storage. If selected, this wizard displays the Retention Rule Wizard - Local Storage Retention Options dialog box.
Component data integration options for VSS-aware backup sets [Windows DS-Clients only] These options only apply to VSS-aware backup sets. VSS-aware backup sets are "component" based. A component is: • a database for Microsoft SQL Server • a Storage Group, database, or other components for Microsoft Exchange Server • a virtual machine for Microsoft Hyper-V • an OSearch, SPSearch or SQL database component for SharePoint **Unreferenced file:** A component consists of a group of files that are "integrated" together. If an individual file is not referenced by any component, it is "unreferenced" and is useless for component-level restore. However, it can be restored as a pure file (for troubleshooting purposes, etc.). **Incomplete component:** If any referenced file is missing from a component, that component is "incomplete" and cannot be restored (however the included individual files can still be restored as pure files). Unreferenced files and incomplete components are usually useless and should be removed. However, you might want to keep them for some reason (e.g. to restore as pure files to manually fix the component, or if the files might be referenced later). • **Delete unreferenced files**: If selected, this retention rule will delete any "unreferenced" files (see above). • **Delete incomplete components**: If selected, this retention rule will delete any "incomplete" components (see above).	

Retention Rule Wizard - Delete Options

The delete options (for files that have been removed from the backup source) will always apply. They are the first rules that are applied when a retention rule is enforced on a backup set.

Delete Options	Delete options only apply to files that the DS-Client detects **have been removed from the backup source**.
If files are removed from source after [...]	Delete if a file was removed from the backup source, and this amount of time has passed since it was removed. • **Keep generations [...]**: If specified, this number of generations of the file will be kept online (the latest generations are kept).

If a placeholder/stub is detected on the source [Windows DS-Client only]	This option can be used if you are using a third-party storage management (HSM) solution that migrates infrequently used files from the source, and leaves a small (size) placeholder/stub in its place. If DS-Client detects a placeholder / stub is created on the source, the assumption is that the file is already protected by the third-party solution, and does not need to be stored online. Only the backup of the placeholder/stub will remain online. • **Delete generations prior to the stub**: The latest placeholder or stub will be kept on DS-System. All generations prior to it will be deleted. • **Delete non-stub generations prior to the stub**: Keeps only the generations that are placeholders or stubs. All other generations prior to the latest stub will be deleted.

Retention Rule Wizard - Local Storage Retention Options

Use this dialog box to define the retention options for data in the Local Storage.

When this Retention Rule is assigned to a backup set that is configured for Local Storage, it changes the behavior of the Local Storage (for that backup set). Instead of a snapshot of the latest generation, local storage will backup the same number of generations as are online (on DS-System).

Note the storage implications. The local storage could grow substantially, therefore the Retention Rule should be enforced regularly.

Time-based local retention • Generations of a file that fit these categories will be kept on Local Storage. Everything else will be deleted from the Local Storage.	
Keep all generations for [...]	The latest generation is always kept. All older generations that fall within this time period will be kept (while those that do not will be deleted).
Deletion of files	
If files are removed from source	Select to enable this option. These options only apply to backed up files that DS-Client detects were deleted from the backup source. A backed up file qualifies for delete if: • **After [...]**: DS-Client detects this amount of time has passed since the file was removed from the backup source. • **Keep generations**: Specify the number of generations of the file to keep. The generations that are kept will be counted starting from the latest one. If “0” (zero), the entire file is deleted (all generations).

Retention Rule Wizard - Time Retention Options

Use this dialog box to define the time retention options.

When a retention rule is enforced on a backup set, the process will delete all of that backup set's data, except for file generations that fall into one of these selected time-retention options.

The retention options in a retention rule can overlap, with the result being that the option that leaves the most generations for the longest time is applied.

Time-based retention options Generations of a file that fit these categories will be kept. Everything else will be deleted. • For Online backup sets, this deletes data from online storage (on DS-System). • For Local-Only backup sets, this deletes data from local storage (because Local-Only backup sets are exactly like Online backup sets except that they backup to the DS-Client's local storage).	
Keep most recent generations [...]	The specified number of generations of a file will be kept. Any generations over this number will be deleted (unless they qualify for another retention option). For a Microsoft SQL Server database backup based on the **Transaction Log Only** database backup policy, you must specify a value of **0** in this box. For all other backup set types, specify a value of **1** or higher in this box.
Keep all generations for the last [...]	All generations that fall within this time period will be kept. Any generations outside this time period will be deleted (unless they qualify for another retention option). For a Microsoft SQL Server database backup based on the **Transaction Log Only** database backup policy, select this check box and specify a time period.
Time Retention Option List	Each line in the list is a different time-based retention option that applies to this Retention Rule. This list allows you define more complex retention options. • **Add**: Click to add a Time Retention Rule (Opens the New Time Retention Option dialog box.) • **Edit**: Click to edit the highlighted Time Retention Option. • **Remove**: Click to delete the highlighted Time Retention Option.

Retention Rules Tab

This tab appears in the DS-User dialog box. It allows you to manage the retention rules.

Retention Rules Tree	Shows a tree of the existing Retention Rules. The top-most container is <No Retention>. Backup sets in this container have no Retention Rule assigned. Expand a Retention Rule to show the backup set(s) associated with it.
Right-mouse click menu:	
New Retention	Click to create a new Retention Rule.
Edit Retention	Click to edit the highlighted Retention Rule.
Delete Retention	Click to delete the highlighted Retention Rule (only if no backup sets are assigned to it).
Expand All	Expands the retention branch.

Collapse All	Collapses the retention branch.
Assign to Retention (backup set level)	If a backup set is highlighted, you can use this option to select a Retention Rule. • You can also drag-and-drop the backup set into the Retention Rule container you want.

Scan Monitor

LAN STORAGE DISCOVERY TOOL

The Scan Monitor displays the scanned shares on the LAN. It displays a snapshot of the latest share information scanned by the LAN Analyze process.

Scan List	**List of scanned shares**
Enabled/Disabled	Icon shows whether the share has been enabled or disabled from the Scan Process.
Share Name	Shows the computer name and share name.
Shared Path	Shows the path on the computer.
Follow	Indicates if the scan will follow Reparse Points and scan their destination location (NTFS only).
File System	File system of the share.
Files	Number of files in the share.
Directories	Number of directories in the share.
Size	Size of the share (in bytes).
Last Scan Start	Date and time the share was last scanned.
Last Scan End	Date and time the share was last scanned.
Connect As	Shows the Username to connect to the share.
Description	Additional information regarding the share.
Scan Monitor Options	
Show disabled shares	Select to display any disabled shares. Clear to shorten the list to only those shares that are enabled.
Refresh every '...' seconds	Set the interval to update the information in the Scan Monitor.

Scan Shares

LAN STORAGE DISCOVERY TOOL

This dialog box configures and starts the process that scans the selected network shares.

Share List	Opens the “Share List” dialog box.
Settings	
Skip files smaller than […]	Does not scan files smaller than the specified size (in KB/MB/GB/TB). This will shorten the time to scan the majority of the LAN.

Delete scanned files from DB (smaller than […])	Removes any files smaller than the specified size (in KB/MB/GB/TB) from the database.
Threads	Set the number of threads to use for the scan. • A default number of threads appears, based on the DS-Client operating system and CPUs.
Scan	Start the scan. The Activity Monitor opens for the Scan Process.

Schedule

This dialog box allows Administrators and Backup Operators to create or modify Schedules. A Schedule is composed of one or more Details. Each Detail represents one specific set of tasks that will run at the defined frequency for the schedule.

Schedule	
Name	Enter or change the name of this Schedule.
Administrator only (Windows DS-Client only)	Specifies that only Administrators can use this Schedule.
DS-Client on portable computer	Indicates this schedule will be used by DS-Clients on laptops. The Schedule will check for a network connection to the DS-System. If it does not exist, the scheduled task(s) will not start. • The DS-Client will launch a popup message if the portable schedule misses more than two scheduled backups.
Limit CPU Usage to [...]%	Allows you to set a CPU limit for the DS-Client service process. This is useful if the portable computer is in use for other processes.
Details	
Detail List	Use this list to select the detail you want to edit. • New details will display <Detail_Type>:<new> until they are saved. • An existing detail will have a unique number assigned to it (e.g. Daily:3). • For DS-User, all details in the Detail List also appear in the tree on the left-hand panel of this dialog box.
Excluded	Select to create a “negative” detail – this will specifically not run a backup (or any other tasks) at the time and date of the detail. It will override any other details that are scheduled to run at that time.
New	Click to create a new detail.
Delete	Deletes the selected detail from the Detail List
Copy	Copies an existing detail (from any of the existing schedules). Opens the Select Schedule Detail.
Occurs	
One time	Enter the date and time to run the scheduled task(s) once.
Daily	Displays the Daily tab. To specify a daily schedule, enter the frequency of the Detail in the number box. (For example: if you enter “3”, it means the Schedule will run every third day. The intervals are based on the Start Date of this Detail.)

Weekly	[Default] Displays the Weekly tab. To specify a weekly schedule, enter the frequency of the Detail in the number box. (For example: if you enter “2”, it means the schedule will run every second week. The intervals are based on the Start Date of this detail.) You can also select the day(s) during the week that this schedule will run, by checking and clearing the appropriate days.
Monthly	Displays the Monthly tab. To specify a monthly schedule, select the frequency of the Detail from the two radio button options: • Day - Specify a day (from 1-28) of each month (or interval of months) to perform a backup • The - Specify the day (1st, 2nd, 3rd, 4th, or last) and associated weekday (Sunday-Saturday, day, weekday, or weekend day), of each month (or interval of months) to perform a backup (For example "the last Friday of every 3 months").
Detail Frequency	
Occurs once	[Default] Specifies a backup (or any other tasks) will occur once, during the time specified.
Occurs every [...] hours	Specifies that backups (or any other tasks) occur every **n** number of hours, during the time window specified. • If you select this frequency, you must specify an “Ending at” time.
Starting at	Indicates the start time for this Detail.
Ending at	You can specify an end time to create a time window. The drop-down list allows you to specify the number of days in the window (from “Same day” up to “in 9 days”). • Any scheduled Backup or Start LAN Scan Shares task(s) will terminate if the “Ending at” time is reached. • All other tasks (Enforce Retention, Perform Validation, Perform BLM, Clean Local-Only Trash) will run until they complete if they start before the “Ending at” time.
Detail Period	
Start date	You must specify a start date. For new Details, the default is the current date.
End date	(Optional) You can specify an end date for the schedule period. This Detail will cease to apply to the Schedule after the end date.
Tasks • Shows the tasks that this schedule detail will perform. Note that if any of tasks 1-4 are selected, they will be performed in that order on the backup set.	
1. Perform Backup	Select to include a backup task for this detail.
2. Enforce Retention	Select to enforce the Retention Rules for each backup set. • For a description of this process, see Chapter 5, “Working with retention rules”.
3. Perform Validation	Select to include a Validation task for this detail. The Verify Encryption Key dialog box appears and you must enter them before you can proceed. • Once you have entered the Encryption Keys, you can click >> to open the Scheduled Validation Options dialog box. • For a description of this process, see Section 7.15, “Deleting backup sets and backup set data”, on page 333.

4. Perform BLM	Select to include a BLM task for this detail. Click >> to open the Select BLM Options dialog box. • For a description of this process, see Section 12.3, “Backup Lifecycle Management (BLM)”, on page 432.
Start LAN Scan Shares	Select to start the LAN Scan Shares task for this detail. Since scanning the shares can take quite some time, this option for scheduling the task is provided. • See Section 13.5, “Configuring scanned shares”, on page 481.
Clean Local-Only Trash	Select to include a Clean Local-Only Trash task for this detail. • For a description of this process, see Section 7.15.4, “Deleting local-only backup set data”, on page 342.
Perform Replication	Select to start the replication for any VM replication sets scheduled with this detail. • For a description of this process, see Section 8.1, “About VM replication”, on page 345.

Schedule Calendar

Use this dialog box to view the backup sets scheduled to run on the DS-Client.

Schedule(s)	You can choose a specific Schedule to display, or select "All Schedules".
Week Starting	Select the starting day of the week you would like to display. The default is the current week.
Display Interval	Select the interval of schedule cells to display. The default is per hour.
Cell Numbers	The numbers that appear in each cell represent the number of backup activities scheduled / performed in that period. Numbers can appear different in the following cases: • Bold (Scheduled only) - The number of activities in the period exceeds the Maximum Concurrent Activities (set in the Registry for Windows, set in the <DS-Client HOME>/etc/dsclient.cfg file for Linux). The number in bold is the actual maximum concurrent amount allowed. • Light Green (Scheduled / Performed) - A backup set in the period overlaps with an Admin process. • Gray (Performed only) - A backup set in the period did not complete before the stop limit time.

Cell Colors (Legend)	The calendar will change, depending on the selection in the Schedule(s) list. • If you select “All Schedules”, the display will show every active schedule layered on top of each other. • If you select an individual schedule, you will only see the time(s) when that schedule will run (and any Admin processes). The color of a time cell represents the type of schedule that will run in that period: • Admin (Dark Blue) - The schedule is a Daily or Weekly Admin. • Regular (Yellow) - The schedule will run once during a fixed start and end period. • Recurring (Dark Green) - The schedule is configured with a “Detail Frequency” that will run more than once during the scheduled period. • No End (Light Blue) - The schedule is configured with no fixed “Ending at” time. • Overlapped (Red) - More than one schedule will run in that period. • Discontinued (White - Performed only) - The schedule no longer applies.

Schedule Tab

This dialog box allows you to choose a schedule for this set, or designate the set for manual backups or VM replication only.

Not Scheduled	• Backup set or VM replication set is only run on demand.
Scheduled	• Backup set or VM replication set will run based on the selected schedule. • Backup set or VM replication set can also be run on demand.
Available schedules	Contains a drop-down list of available schedules.
Edit	If you are an administrator or backup operator, you will be able to click this button to edit the selected Schedule. This brings up the *Schedule* with the current Schedule's settings.
New	If you are an administrator or backup operator, you will be able to click this button to create a new Schedule. This brings up the *Schedule*. Note: Only Administrators or Backup Operators can add new schedules.
Description	This section shows a description of the frequency and times of the selected schedule.

Scheduled Delete Options

Use this dialog box to set the parameters for scheduled delete.

Scheduled Validation Options

Use this dialog box to set the Validation Options to be used for all backup sets using this Backup Schedule.

Validate last generation only	Select to validate only the latest generation of backup data for the selected backup set.
Exclude files deleted from source	Select to skip validation of files that have been deleted from the source computer.
Resume from previously interrupted location	Select to configure this Schedule to resume validation from the point of interruption if the last scheduled Validation did not finish. This is useful for large backup sets that might not be completed in the Schedule's time window.

Select a Backup Session

The Select a Backup Session dialog box allows you to choose the specific backup session that you would like to work with.

Selection	
Selected time	Shows the selected backup session.
Revert	Click to revert to the default selection (when this dialog box was opened).
Known Backup Sessions List • Click on a backup session to select it.	
Icon	Shows if the session was CDP.
Start time	Shows the time that the backup session began.
End time	Shows the time that the backup session finished.
Errors	Shows if any errors occurred during the backup session.
Files	Shows the number of files backed up during the session.
Online Amount	Shows the size of online files.
Activity ID	Shows the corresponding Session ID number.
Note	
1	You can see only Session Start information in a list. This can occur due to recovery of orphaned backup sets. This indicates the DS-Client does not have an Activity Log record for this session.

Select a Deletion Time

Use this dialog box to select a backup session. Only backup sessions when deleted files were detected are displayed.

Deletion Time	Date and time of the backup session when file(s) were detected as having been deleted from the source.
Deleted Files	Number of 'deleted' files detected in that session. If those files are still backed up, they are flagged as 'deleted on the source'.
Select	Select the highlighted session.

Select a List / Customer List / Document Library (SharePoint Item-Level)

After you have chosen a Site Collection or Sub-Site, you can use this dialog box to choose a specific List, Customer List or Document Library from the Sub-Site (or entire Site Collection).

Lists, Customer Lists, and Document Libraries

- The items that are displayed depend on the Sub-Site that was selected. If the entire Site Collection was selected, all the SharePoint items available for restore are visible.
- Each item is either a List, Customer List, or Document Library containing its own set of items from the SharePoint database.
- You can select one, several, or all of the items that appear.
- Next / Finish: If you are selecting an entire list, click the “Finish” button. If you are selecting a list item, click the “Next” button.

Select a schedule for scanning

UNPROTECTED LAN RESOURCE DISCOVERY TOOL

The Discovery Wizard helps you to identify all the unprotected resource (shares) on your LAN. This dialog box allows you to choose a schedule for this scan, or designate it for manual scans only.

Not Scheduled	• Scan is only run on demand.
Scheduled	• Scan will run based on the selected schedule. • Scan can also be run on demand.
Available schedules	Contains a pull-down list of available schedules.
Edit	If you are an administrator or backup operator, you will be able to click this button to edit the selected Schedule. This brings up the Schedule with the current Schedule's settings.
New	If you are an administrator or backup operator, you will be able to click this button to create a new Schedule. This brings up the Schedule. Note: Only Administrators or Backup Operators can add new schedules.
Description	This section shows a description of the frequency and times of the selected schedule. • The scan will be the sixth task to run (in order of precedence).

Select a site collection / sub-site (SharePoint Item-Level)

Use this dialog box to choose the entire Site Collection for restore or limit the selection to a specific sub-site.

Site Collection List You can make the following selections in this dialog box. • Site Collection: Select the top folder "/" if you want to restore the from the entire SharePoint site collection. • Sub-Site: Select any of the sub-folders if you only want to restore items from that particular sub-site. • Lists: Highlight the folder containing the List, Customer List, or Document Library you want to restore, then click "Add List". • List Item: Highlight the folder containing the List, Customer List, or Document Library with the item(s) you want to restore, then click "Add List Item".	
Add	Adds the highlighted folder (Site Collection or Sub-Site) to the Restore Items list.
Add Lists	Selecting this level will prompt you with the following wizard pages: • "Select a List / Customer List / Document Library (SharePoint Item-Level)"
Add List Item	The most granular (specific) level. Selecting this level will prompt you with the following wizard pages: • "Select a List / Customer List / Document Library (SharePoint Item-Level)" • "Select SharePoint List Item (SharePoint Item-Level)"

Select Access Intervals

In this dialog box you can select the access intervals for two different reports: LAN Storage Discovery Access Report and Virtual Machines Summary.

For LAN Storage Discovery Access Report • Color: You can select the color this extension will display in the graph. • Modified Time: Each line represents a time interval. Items modified within this period will be grouped together.	
Add	Adds a new line to the extensions search list
Remove	Removes the highlighted line from the extensions list.
Share	Select <All> or a specific share.
For Virtual Machines Summary • Color: You can select the color this extension will display in the graph. • Last Storage Update: Each line represents a time interval. Virtual machines that updated their storage information within this period will be grouped together.	
Add	Adds a new line to the search interval list
Remove	Removes the highlighted line from the list.
Center / Host	The default is to show all information. • VMware vSphere: You can select a specific Data Center from this list to limit the display to only its virtual machines. • Microsoft Hyper-V: This will always show the IP of the scanned host.

Select Backup Set

[This topic is not currently in use.]

Use the Select Backup Set Tab to select the backup set that you want to work with. To search through the available backup sets, browse through the graphical tree by double clicking, where appropriate.

Backup Sets Tree	This section shows the available backup sets.
Detailed View	Displays backup sets grouped in the order \Network\Node\Set\User.
Group by User (only with Detailed View checked)	Displays backup sets grouped in the order \User\Network\Node\Set.
Properties	When you have highlighted a backup set in the graphical display, you can click this button to bring up the Backup Set Properties dialog box.
Note	
1	You will only be able to view sets to which you have sufficient rights.

Select Backup Sets

Use this dialog box to browse and select a backup set to work with.

Select Backup Sets (Password Management)

Use this dialog box to edit the list of backup sets that will use the selected user credentials.

Available Backup Set Credentials	
Checkbox	Select or remove a backup set association with this box.
Computer	Shows the target backup computer.
Set Name	Shows the name of the backup set.
Owner	Shows the current owner of the backup set.
OK	Click to associate the selected backup sets with the user.

Select BLM Options

Archive Options	Archive packages are specific to a particular backup set. • The default (if these options are not selected) is for each BLM Request to be added to the current Archive Package on the BLM Archiver.

Close active package	Select to use a new archive package. Otherwise, this Archive request will be added to the current archive package on the BLM Archiver. You must specify when the package will be closed: • at session start - makes a new Archive Package. This means the previous package (if one exists) will be closed, and the new request will go to the new package. • at session end - uses the current Archive Package. This means the new request will go to the current package, and after it finishes, the package will be closed. Once a package is closed, no new data will be added. Subsequent archiving requests will create a new archive package.
Reference previous archive packages	Select to allow the Archive Package to contain references to older packages. This can save space by removing data redundancy. • The default (if this option is not selected) is for each Archive Package to contain all of the required files.
Generations to include	• Latest generation - Creates a BLM Archive containing the latest generation of all items selected. • All generations - Creates a BLM Archive containing all the (online) generations of all items selected.

Select BLM Options (Request BLM Wizard)

Archive Options	Archive packages are specific to a particular backup set. • The default (if these options are not selected) is for each BLM Request to be added to the current Archive Package on the BLM Archiver.
Archive Label	Each Archive Package is automatically time-stamped. To make searching Archive Packages easier, you can add your own label (alphanumeric string).
Close active package	Select to use a new archive package. Otherwise, this Archive request will be added to the current archive package on the BLM Archiver. You must specify when the package will be closed: • at session start - makes a new Archive Package. This means the previous package (if one exists) will be closed, and the new request will go to the new package. • at session end - uses the current Archive Package. This means the new request will go to the current package, and after it finishes, the package will be closed. Once a package is closed, no new data will be added. Subsequent archiving requests will create a new archive package.
Reference previous archive packages	Select to allow the Archive Package to contain references to older packages. This can save space by removing data redundancy. • The default (if this option is not selected) is for each Archive Package to contain all of the required files.
Generations to include	• Latest generation - Creates a BLM Archive containing the latest generation of all items selected. • All generations - Creates a BLM Archive containing all the (online) generations of all items selected.

Select BLM Restore Path

Specify the path from which the DS-Client will read the restore data:

Computer	Click >> to open the Select the Computer dialog box.
Directory	Click >> to open the Select Directory dialog box.

Select Columns

Use this dialog box to specify the columns you want to appear in the Monitor dialog box. Settings are saved, and will be maintained for the next time you work with DS-User.

Simply highlight an item name, then click the appropriate arrow to move between sections. Use the up/down arrows to change the order of items in the column.

Available Columns	Lists the column items that have not been selected for display in the Monitor dialog box.
Selected Columns	Lists the column items that are selected for display in the Monitor dialog box.

Select database restore location (DB2)

[Linux DS-Client] Use this tab to select the database restore and destination options.

Restore To	
Original Location:	[Default] Restores files to the original location from which they were backed up.
Alternate Location:	Click this radio button to specify an alternate destination for the restore items. Click >> to select an alternate server.
Dump to	This box shows the location for the database dump. Click >> to change the specified path. This brings up the Select Directory dialog box.
Archive Log Path	This box only appears if the backup set was created with the DB2 “Online Backup” option selected (Set Properties Options Tab dialog box). • This is the path where the DB2 Archive Log files (that you are about to restore) will be retrieved by the ‘User Exit’ program. • Click [...] to specify the path. This opens the Select Directory dialog box.
Database Mapping List	Shows a list of the selected databases for restore, and their restore destination(s). • If you select the “Restore as Pure Files” option, you can change the restore destination by modifying the appropriate column.

	• **Icon** - Shows an icon to indicate whether the restore item is a database. • **Source** - Shows the source database's name. • **Destination** - Shows the database where the backup will be restored. Double Click on this cell to open a drop down list of all the available databases on the specified restore database server. • **Destination** (Restore as Pure Files) - Shows the available shares where the dump can be restored. • **Restore to** (Restore as Pure Files) - Shows the path on the destination share where the dump will be restored.
Restore as Pure Files	This option will only restore the dump file to the specified location. The dump will not be loaded to the database.
Notes	
1	See the Knowledge Base article in Section 15.9, “Backup / restore of DB2 database servers”, on page 535.

Select database restore location (Exchange Item-Level)

Use this dialog box to select the target Microsoft Exchange server where you will restore the items.

Mailbox Server	
Original Location:	[Default] Restores files to the original location from which they were backed up (i.e. the selected backup set’s source Microsoft Exchange server).
Alternate Location:	Click this radio button to specify an alternate Microsoft Exchange Mailbox Server. Click [>>] to select an alternate server.
Client Access Server Client Access Server and Mailbox Server are the same: • If the Mailbox Server also has the Client Access Server role and the DS-Recovery Tools is installed on it, you can select this option. • If the Client Access Server is on a different machine, specify that machine here.	
DS-Recovery Tools DS-Recovery Tools and Client Access Server are the same: • This is selected by default. The DS-Recovery Tools (separate installation required) must be running on the same machine as the Exchange Client Access Server you are using to access the Microsoft Exchange mailbox server.	

Select database restore location (Microsoft Exchange)

Use this tab to select the database restore and destination options.

Restore To	
Original Location:	[Default] Restores files to the original location from which they were backed up.
Alternate Location:	Click this radio button to specify an alternate destination for the restore items. Click >> to select an alternate server.
Restore Options	

Mount Database after Restore	Select to automatically mount the database after restore.
Restore via DS-Client pipe	Select to open a named pipe through the DS-Client to the target database for restore. This avoids the need for a buffer directory.
Dismount if Needed	Select to automatically try to dismount database (if mounted).
Delete all existing files	Delete all of the existing files in the restore directory.
Keep existing files	Keep all existing files in the restore directory.
Rename existing files	Renames the existing files, until all restore items are successfully restored. • This takes more space, but avoids problems of failed restores (if a restore fails without this option, the Microsoft Exchange Server will not function). • If this option is selected, then in case of failure, the original files will be renamed back and the Microsoft Exchange database will be mounted.
Temporary directory for logs	This is a location on the destination Exchange computer. There must be sufficient space to accommodate the log and patch files.

Select database restore location (Microsoft SQL / PostgreSQL / MySQL)

Use this tab to select the database restore and destination options.

Restore To	
Original Location:	[Default] Restores files to the original location from which they were backed up.
Alternate Location:	Click this radio button to specify an alternate destination for the restore items. Click >> to select an alternate server.
Dump to (Microsoft SQL)	This box shows the location for the database dump. Click >> to change the specified path. • This brings up the Select share & path for the database / data dump.
Database Mapping List	Shows a list of the selected items for restore, and their restore destination(s). You can change the restore destination by modifying the appropriate column. • **Icon** - Shows an icon to indicate the type of restore item. • **Source** - Shows the source item's name. • **Destination** - Shows the database where the backup will be restored. Double Click on this cell to open a drop down list of all the available databases on the specified restore database server.
Restore Options	
Restore only the dump file(s) (Windows DS-Client)	This option will only restore the dump file to the specified location. The dump will not be loaded to the database. (This option is not available if DS-Client Buffer or DS-Client Pipe is specified in the Dump To box.)

Restore as Pure Files (Linux DS-Client)	This option is available if “Alternate Location” is selected. It will restore only the data. This option will only restore the dump file to the specified location. The dump will not be loaded to the database.
Restore Path	When restoring to an alternate location, you can specify the path for the log and data files separately. Opens the Select Restore Path.
Preserve original database file location	This option only applies to restores to the original location. • Off (default) - The restored files will be placed on the target instance's default path(s). • On - The restore files must be placed in their original path(s). If the original path(s) do not exist, the restore will fail.
Ask for Network Credentials	Prompts you to type a valid user name and password for the selected computer. • This option is available for BLM and Disc/Tape restores, since the original backup set might no longer be on the DS-Client. If you do not select this option, DS-Client uses its own (service) credentials to access the network location.
Ask for Database Credentials (Databases only)	Prompts you to type a valid user name and password for the database server. • This option is available for BLM and Disc/Tape restores, since the original backup set might no longer be on the DS-Client. • For Microsoft SQL: If you do not select this option, DS-Client uses its own (service) credentials to access the database server. • For MySQL and PostgreSQL: You must select this option and provide credentials to access the database server.
Restore to a local database file (Salesforce.com - Table Restore)	To restore the dump file as an FDB file to a location that you specify on the DS-Client computer, select this option. Do one of the following to specify the location: • Click **>>**, and then in the Select Directory dialog box, browse to and select the location. • Type the path into the box. **Note:** UNC paths are not supported with this option.
Restore to multiple data files (CSV) (Salesforce.com - Table Restore)	To restore the database in CSV format to a location that you specify, select this option. Click **>>**, and then in the Select Directory dialog box, browse to and select the destination location. **Note:** Salesforce.com system tables are not restorable to the Salesforce.com online database. This option allows you to restore backed up Salesforce.com system tables. Each table will be a standalone CSV file in the destination folder.
Please select the path to put the database (Salesforce.com - Item-Level Restore)	In the first step of a Granular (Item-Level) Restore, you must select the location where you restore the Salesforce.com database file. For performance, it is preferable that this is a location on the DS-Client. • Click [>>] to open the “Select Directory” dialog box and specify the destination.
Notes	
1	If restoring to an alternate location, the database and table must exist on the database server where you are restoring.
2	Table restores will not restore indexes.

Select database restore location (Oracle)

Use this tab to select the database restore and destination options.

Restore To	
Original Location:	[Default] Restores files to the original location from which they were backed up.
Alternate Location:	Click this radio button to specify an alternate destination for the restore items. Click >> to select an alternate server.
Dump to	This box shows the location for the database dump. Click >> to change the specified path. • This brings up the Select share & path for the database / data dump.
Database Mapping List	Shows a list of the selected items for restore, and their restore destination(s). • **Icon** - Shows an icon to indicate whether the restore item is a Tablespace, Archived Logs, or the Control File. • **Source** - Shows the source item's name. • **Destination** - Shows the database where the backup will be restored.
Restore Options	
Restore only the dump file(s) (Windows DS-Client)	This option will only restore the dump file to the specified location. The dump will not be loaded to the database. (This option is not available if DS-Client Buffer or DS-Client Pipe is specified in the Dump To box.)
Restore as Pure Files (Linux DS-Client)	This option will only restore the dump file to the specified location. The dump will not be loaded to the database. (This option is not available if DS-Client Buffer or DS-Client Pipe is specified in the Dump To box.)
Create temp file(s)	[Applies to restores of the Control File] After restoring the control file, all temporary tablespaces with local extent management will not have any “temp” file. You must still manually add the “temp” file(s) after restore for the Oracle database to operate correctly. Select to have DS-Client automatically add a temp file for each of the tablespaces (in the default location).
Notes	
1	See the Knowledge Base article in Section 15.7, “Backup / restore of Oracle database servers”, on page 522.

Select database restore location (SharePoint)

Use this dialog box to choose the target Microsoft SQL server where you will restore the SharePoint database.

Select Computer	You must select a computer • Click [>>] to browse for the computer.
Instance Name	Once you have selected the computer with the Microsoft SQL database server, you must select the SQL Instance to restore to.

Physical File Location	You must select a physical location where the data will be restored on the selected target computer • Click [>>] to browse for the destination folder.
Database mapping	The mapping list is automatically filled, based on your target computer and instance selections. • Source Database: This is the original SharePoint database name. • Destination Database: This shows the name of the database as it will appear when restored to the selected target Microsoft SQL server.

Select datastore / folder

This dialog box allows you to specify directory details for the replication target virtual machine(s) on the destination server.

Depending on the button you click to open this dialog box, you can make one of the following selections for the replication target virtual machine(s):
- Datastore that you want to use for VM replication on the destination server
- Folder under which you want the replication target virtual machine(s) to be shown

Select directories / files (Restore / BLM / Delete / Validation)

This dialog box displays the contents of the backup set you have chosen.

Directory / Database Tree Shows the files and directories (or databases) available, based on the Backup Range and Storage selection (see Change Date). Select or clear a box to select/unselect that item.	
Show Files / Hide Files	Click to open or close the Files List section of this dialog box. A different list appears, depending on if you are in the Restore Wizard, BLM Wizard, Delete Wizard or Validation Wizard: • Files List (Restore Wizard) • Files List (BLM Wizard) • Files List (Delete Wizard) • Files List (Validation Wizard) - same as Files List (Restore Wizard)
Options	
Calculate amount	If selected, this Wizard will show the number of files selected and calculate the total amount selected (based on stream size) based on your selection in the Directory / Database Tree. • In the Activity Monitor, the progress section will estimate the completion time. • Note: By default, this option is off since very large selections can require some time for DS-User to perform the calculations.
Include SubDirs	This box is checked by default. When you select a directory, all of its subdirectories will be automatically included with it. Clear to select only the files in a selected directory (and not any subdirectories).

Filter	Enter a filter using the * character as a wildcard (ex: *.exe or dat*) if you want to narrow the list of files. Click Show Files to refresh the File List and show the files that correspond to the specified filter. This filter is case insensitive.
Change Filter (E-Mail Backups)	Click to change the filter you wish to apply for restore. Opens the Add / Modify Filter dialog box. This filter will allow only those emails that match the pattern specified to be restored.
Selection	Shows the items you have selected so far. This opens the Selection dialog box.
Find File	Click to bring up the Find Backed Up File dialog box. This will allow you to search through the backup set for a specific file or file pattern. (Note: you must open the Files List by clicking the Show Files button first.)
Advanced	[If this button is enabled, you can make further selections.] • Click to bring up the Advanced Options.
Files List (Restore Wizard) This list appears for the Restore Wizard when Show Files is clicked: • Check box: Select to choose the listed file. • Local Storage column: This column only appears if the backup set is configured to use Local Storage. If an “L” appears, it means that generation of the file is also in Local Storage. If a generation in Local Storage is selected, that copy will be restored (which offers the fastest restore speed). The “Selected total of ...” counter at the bottom of the dialog box will contain an additional set of numbers in parentheses (). These represent the totals for files in Local Storage. • Name: File Name • Subject: The subject of an email message or an entry. Applies only to Backup from the Cloud - Microsoft Office 365 backup sets (Microsoft Exchange Online). • Size: The **protected** size of **this** generation of the file. • Size: The size of the item in storage with full fidelity. Applies only to Backup from the Cloud - Microsoft Office 365 backup sets (Microsoft Exchange Online). • Last Modified: Date and Time file was last modified	
File Info	You can select a specific generation of the highlighted file for restore. • Opens the Backup Generations for ‘...’.
Show Modified / Add Modified	• **Show Modified**: Shows any modified files in the selected directory. The DS-Client will scan the backup source, and compare the files with the backup log. Files in the list that do not exist on the source, or are different (changed), will be highlighted. • **Add Modified**: If modified files exist, this button changes to Add Modified. Click to add all of the modified files to the restore selection.
Show Archived	Shows a list of any archived generations for the folder that is highlighted in the Directories / Database Tree. • Opens the Files in Directory ’...’ (Select Items for Backup).
VSS Component (VSS-aware backup sets)	This button appears if you are restoring (or deleting) a VSS-aware backup set with the (default) “VSS Restore” method. It does not appear for the “File Restore” method. You can click this button to open the VSS Component Details dialog box, which displays the files that are part of the highlighted VSS component. This dialog box is read-only and for information only.

Files List (BLM Wizard) This list appears when Show Files is clicked in the Request BLM Wizard or BLM Restore Wizard: • The list and buttons that appear have the same meaning as the Files List (Restore Wizard).	
Files List (Delete Wizard) This list appears for the Delete Wizard when Show Files is clicked: • Box: Select to choose the listed file. • #: Number of Generations available to delete (based on your specifications of how many generations to leave) • Size: The **combined** total size of the **selected** generations of the file for delete. • Name: File Name • Remove Time: Date and Time file was detected by DS-Client to have been removed from the source.	
File Info	You view the generation of the highlighted file that you are going to delete. • Opens the Backup Generations for '...'.

Select Directory

Use this dialog box to browse through the tree and select the share\directory path you want to use.

Shares and Directories Tree	Shows the available shares and directories.
Select	Click to select the highlighted directory.

Select Disc / Tape Restore Path

Specify the path from which the DS-Client will read the restore data:

Computer	Click >> to open the Select the Computer dialog box.
Directory	Click >> to open the Select Directory dialog box.
Encryption Key	This box activates if USER-DEFINED encryption has been applied to the data. Enter the key to proceed with decryption. • Import: You can import from any valid file containing an exported key string. • Export: You can export the text in this box (in encrypted format) to a text file for distribution, if necessary.

Select DS-Client (Print Global Report)

Use this dialog box to create a list of DS-Clients to include in the Global Report you wish to print.

DS-Client Connection Entry List	• **Name** - Computer name (or other descriptive name) • **IP Address** - IP address of the DS-Client • **User Name** - User account to connect to the corresponding DS-Client computer. • **From** - Server where the User Name and password will be authenticated.
Add	Click to add a DS-Client to the DS-Client Connection Entry List. • Opens the Add / Modify DS-Client Connection Entry (Print Global Report) dialog box.
Auto Search	Click to search for all visible DS-Clients on the network. • Opens the DS-Clients Auto Search (Print Global Report) dialog box.
Modify	Modify the highlighted DS-Client connection entry. • Opens the Add / Modify DS-Client Connection Entry (Print Global Report) dialog box.
Remove	Delete the highlighted DS-Client from the list.
Load	Loads the DS-Client Connection Entry List and credentials that are saved in the DS-User's user.ini file. • Opens the Enter Lock Key For Credentials (Print Global Report) dialog box.
Save	Saves the **current** DS-Client Connection Entry List and credentials that are in this dialog box to **the DS**-User's user.ini file. • Opens the Enter Lock Key For Credentials (Print Global Report) dialog box.

Select EDB file path and log folder path (Exchange Item-Level)

Use this dialog box to select the restored Exchange Database file and logs you want to use for restore.

Mailbox Server Name	This is read only. It shows the selected target Microsoft Exchange Mailbox Server where items will be restored.
EDB File	Browse and select the location of the Exchange Database File you restored in Granular Restore (Step 1. Database Restore).
Log Folder	This is automatically filled in if there is a corresponding Log folder under the same parent directory as the path to the EDB File.
Reuse existing recovery database	After you pass this dialog box, the DS-Client will prepare the EDB file into a "Recovery Database". • If selected, the DS-Client will reuse the previously generated recovery database.
Validate and repair the Exchange database and log files against corruption	Performs the specified validation and repair, if possible.

Select E-Mails for restore (Exchange Item-Level)

Use this dialog box to select the specific items that you want to restore.

E-Mails for Restore List This list shows the items selected for restore. • Icon: Shows what type of item (email, folder). • Mailbox: Show's the mailbox owner of the item. • Folder: For folders, shows the name. For individual emails, shows the path to the folder where they are located. • Subject: For individual emails, this shows the subject-line from the message. • Restore to: Shows the mailbox target, where the item will be restored.	
Mailbox	Click to add individual emails to your restore selection. • Opens a selection wizard on the "Select Source Mailbox and folder (Exchange Item-Level)" dialog box.
E-Mails	Click to add individual emails to your restore selection. • Opens a selection wizard on the "Select Search Criteria (Select E-Mails for restore wizard)" dialog box.
Remove	Removes the highlighted item(s) from the "E-Mails for Restore" List.
Details	Shows details of the highlighted item. • Mailbox: Opens the "Mailbox Details" dialog box. • E-Mail: Opens the "E-Mail Details" dialog box.

Select E-Mails for Restore (Select E-Mails for restore wizard)

Use this dialog box to select the specific items that you want to restore.

E-Mail List (available to restore) This top list shows the filtered items that are available for restore. • Mailbox • Folder • Subject • Sender • Recipient • Received at • Attachment	
Add	Selects the highlighted item(s) for restore and moves them to the bottom list.
Details	Shows details for any individual email highlighted from the list. Opens the "E-Mail Details" dialog box.
E-Mail List (selected for restore) This bottom list shows the emails that have been selected for restore. • The column meaning is the same as for the top list.	
Remove	Removes the highlighted item(s) from the restore selection.

Select Event

This dialog box shows the events from the corresponding Select By period in the Event Log.

Event List	
Icon	Error, Warning or Information icon.
Event #	Event number.

Description	Event description.
First Time	Date and time of the first occurrence of this event in the corresponding period from the Event Log.
Count	Number of occurrences of this event in the corresponding period from the Event Log.
Ignore	Indicates if this event is part of the exclude list.
Select / Deselect	Add or remove the highlighted event(s) from the exclude list.

Select Extensions (Customize Report)

Color	Select the color this extension will display in the graph.
Extension(s)	Enter the extension without a period “.” (e.g.: txt, exe, dll, pdf)
Add	Adds a new line to the extensions search list
Remove	Removes the highlighted line from the extensions list.
Include Other	Includes an <Other> item in the graph that represents the total of all other file extensions from the searched share(s).
Share	Select <All> or a specific share.

Select Extensions (Top Report)

Select top […] file extensions	Select the number of file extensions to display.
With greatest size	Searches for the largest files.
With biggest count	Searches for the greatest frequency (number)
Share	Select <All> or a specific share.
Include Total	Includes the total of all other files in the search share(s).

Select Filter

FIlter	Select from the list of available filters.
Add	Create a new filter.
Modify	Edit the selected filter.
Delete	Deletes the selected filter from the Filter list.
OK	Select this filter.

Select Group / User

This dialog box allows you to choose a group/user from the listed selection. If you are editing a backup set's permissions, it allows you to specify permissions for other users with your backup set. Depending from where you have opened this dialog box, some options can appear different. All possible options are described below.

Group/Name	Shows the available Groups and/or User Names.
Description/Full Name	Shows the description of a group, or the full name of a User.
From	Shows the server where the user or group is defined.
Select	Click to choose the highlighted selection.

Select how you want to delete

Use this dialog box to narrow the display of files and directories for delete.

Time based Delete Options	
From	Click [>>] to select the earliest time. • This opens the Select a Backup Session dialog box.
To	Click [>>] to select the earliest time. • This opens the Select a Backup Session dialog box.
Leave last […] generations	Allows you to specify the number of generation to leave (i.e. not select for delete) from the specified period. If you specify a number, you will only be able to select files and directories that have more generations, than the number specified in this box.
Only data removed since (days ago)	By default, this box is blank. This filter allows you to remove backed up directories and files that were intentionally deleted from the source computer. Enter a number in this box to show only directories and files that were deleted from the source computer more than that number of days ago.

Placeholder / Stub selection • [Windows DS-Client] This option can be used if you are using a third-party storage management solution that migrates infrequently used files from the source, and leaves a small (size) placeholder/stub in its place. If DS-Client detects a placeholder / stub is created on the source, the corresponding file on DS-System will be deleted, based on the specified conditions.
Keep the last placeholder / stub and subsequent generations • The last placeholder or stub will be kept on DS-System, as well as any full file generations that appear after that latest placeholder/stub.
Keep all placeholders / stubs • All placeholders or stubs will be kept on DS-System, as well as any full file generations that appear after that latest placeholder/stub.

Select how you want to delete (Delete Options)

Use this dialog box to narrow the display of files and directories for delete and specify any delete options.

Archive Options	
Archived Data Placeholders	These options relate to displaying generations that have already been 'pushed' to BLM from online storage (i.e. the actual file has been removed from online to BLM). This selection determines if these placeholders ('archive stubs') will be displayed in the next dialog box of the Delete Wizard: • **Include**: Displays any qualifying placeholders. • **Exclude**: No placeholders are displayed. • **Only**: Only placeholders are displayed (if they meet the other data selection criteria). Regular online files (that have not been pushed to BLM) are not displayed.
Delete Options	
Move to BLM	A copy of all data deleted from DS-System during this Selective Delete will be moved to BLM (Backup Lifecycle Management). This tool is provided by your service provider from the DS-System. • If this option is unavailable but the checkbox is selected, it means the data must be moved to BLM. This occurs if the backup set has the "BLM (Infinite Generations)" option selected (Backup Set Properties > Options tab).
Session Label	Each Archive Package is automatically time-stamped, but you must add your own label (alphanumeric string) to demand BLM requests. This will make it easier to search an Archive Package.
Use new archive package	Select to use a new archive package. Otherwise, this Archive request will be added to the current archive package on the BLM Archiver. Archive packages are specific to a particular backup set. Each BLM Request will be added to an Archive Package until it reaches a specified limit (# of files, size, time).

Select Initial Backup Destination Path

This dialog box allows you to add a new path for an initial backup or for offline VM replication.

When creating a new backup set to perform an initial backup, you can specify a new path to which DS-Client can write initial backup data and select an encryption method. When creating a new VM replication set to perform offline replication, you can specify a local disk location to which DS-Client can save the initial VM replication data.

This dialog box is slightly different, depending on the type of DS-Client: • Windows DS-Client • Linux DS-Client	
Windows DS-Client	
Computer	Click >> to select a computer in the *Select the computer* dialog box.
Directory	Click >> to select a directory within the selected computer in the *Select Directory* dialog box.

Select encryption method	The following encryption methods are available only to backup sets. For VM replication sets, DS-Client will encrypt VM replication data using a randomly generated encryption key. • **Don't Encrypt (NONE)**: The meta-data (the descriptive files used to manage the Initial Backup) will not be encrypted. • **Encrypt with DS-Client Private Key (CLIENT)**: The meta-data (and Initial Backup data) will be encrypted with a key based on the DS-Client's signature. The data can only be imported to the same registered DS-Client account on the DS-System. • **Encrypt with specified Key (USER-DEFINED)**: Enter (or import) your own alpha-numeric key of up to 32 characters for the encryption. You can export this key (in encrypted format) to a text file for distribution, if necessary.
Linux DS-Client	
Backup Path	Click >> to open the Select Directory dialog box.
Metadata Encryption	Select an encryption method. • **NONE**: The meta-data (the descriptive files used to manage the Initial Backup) will not be encrypted. • **CLIENT**: The meta-data (and Initial Backup data) will be encrypted with a key based on the DS-Client's signature. The data can only be imported to the same registered DS-Client account on the DS-System. • **USER-DEFINED**: Enter (or import) your own alpha-numeric key of up to 32 characters for the encryption. You can export this key (in encrypted format) to a text file for distribution, if necessary.
Encryption Key	This box activates if USER-DEFINED encryption is selected. Enter your own alpha-numeric key of up to 32 characters for the encryption. • Import: You can import from any valid file containing an exported key string. • Export: You can export this key (in encrypted format) to a text file for distribution, if necessary.

Select Items for Backup (Linux DS-Client)

Use this dialog box to browse and select the items to back up.

Shares & Directories List / Databases List Shows the shares and directories available to the backup set. • For database backups, this dialog box shows a list of databases.	
Add	To add an entire directory, browse through the Shares & Directories List until the directory you want appears, and then click it. • Note: You can add only one directory at a time. Subdirectories are automatically included, unless you clear the Include SubDirs check box.
Exclude	Excluding will prevent the selected directory from being backed up. Its parent directory must be selected for backup.
Add All (Oracle)	Adds all the database items in the list (including Tablespaces, Archive logs, and Control Files).

Files	To add specific files, browse through the Shares & Directories List until the directory the files are stored in appears. Click Files. A dialog box showing the list of files in that directory appears. Highlight the file(s) you wish to add to the backup set.
Items (Databases)	Click this button to view information about the items highlighted in the Databases List. A read-only Files in Directory '...' (Select Items for Backup) appears.
RegEx	Regular Expression is a more specific form of the Exclude function. It allows you to exclude at the filename or filepattern level. However, you must learn the Regular Expression software syntax. Opens the Regular Expression.
Filter	To add files that match a filter, in the Filter box, enter the file pattern that you would like to search for in the selected directory. (e.g. *.doc will search the directory for all files with the .doc file extension.)
Include SubDirs	Subdirectories are automatically included, unless you clear this check box.
Selected Items for backup List Shows the Items selected for backup. The icon describes the type of item and whether its subdirectories are included. The share and path is listed, and the extension indicates if a filter is used.	
Remove	Removes the highlight the item from the Selected Items for Backup list. Note: Removing a selected item for backup will not remove previous backups of that item. (You must use the delete function.)
Modify	Allows you to modify an existing Regular Expression. • Opens the Regular Expression for the highlighted item.

Select Items for Backup Set

Browse and select what you want to back up, restore, or replicate.

Shares & Directories List / Databases List / Users and Services List Shows the items available to add. • For database backups, this dialog box shows a list of databases that you can add to the backup set. • For SharePoint Granular Item-Level Restores, this dialog box shows a list of databases. You must select the database containing the restored SharePoint database you want to use for Item-Level restore. • For Salesforce.com Granular Item-Level Restores, this dialog box shows a list of tables and the number of rows in the table. You can click the [...] button in the corresponding cell to select individual items for restore from the table. Opens the "Backup Objects for '...' ('Backup from the Cloud')" dialog box. • For VM replication, this dialog box shows a list of virtual machines that you can add to the VM replication set. Two buttons are available for VM replication: *Add* and *Remove*.	
Add	**Backup** To add a directory, browse the Shares & Directories List, select the directory you want to back up, and then click **Add**. • Note: You can add only one directory at a time. Subdirectories are automatically included, unless you clear the Include SubDirs check box. **Replication** To add a virtual machine, browse the Shares & Directories List, select the virtual machine you want to replicate, and then click **Add**.

Exclude	Excluding will prevent the selected directory from being backed up. Its parent directory must be selected for backup. • For database backups this allows you to prevent the selected database from being backed up if the full database instance has been selected for backup.
RegEx	Regular Expression is a more specific form of the Exclude function. It allows you to exclude at the filename or filepattern level. However, you must learn the Regular Expression software syntax. Opens the Regular Expression.
Files	To add specific files, browse through the Shares & Directories List until the directory the files are stored in appears. Click Files. A dialog box showing the list of files in that directory appears. Highlight the file(s) you wish to add to the backup set.
Items	To add specific items, email messages, or entries inside a folder to the backup set, in the Users and Services List, expand the mailbox/user to which the folder belongs, select the folder, and then click **Items**. A dialog box that lists the content of that folder appears. Select the individual items, messages, or entries you want to add to the backup set, and then click **Add**.
Filter	To add files that match a filter, in the Filter box, enter the file pattern that you would like to search for in the selected directory. (e.g. *.doc will search the directory for all files with the .doc file extension.)
Include SubDirs	Subdirectories are automatically included, unless you clear this check box.
Exclude all system tables that are not restorable (Salesforce)	For Salesforce.com backup sets, the System Tables are not restorable to the online database. • Use this checkbox to configure the backup set to either automatically exclude or include Salesforce System Tables.
Backup Items Selected Shows the Items selected for backup. The icon describes the type of item and whether its subdirectories are included. The share and path is listed, and the extension indicates if a filter is used. **Replicated Items Selected** Shows the virtual machines that are selected for replication.	
Remove	**Backup** Select an item from the Backup Items Selected, and then click this button to remove the item from the backup set. Note: Removing a selected item for backup will not remove previous backups of that item. To remove previously backed-up data, use the Delete function. **Replication** Select a virtual machine from the Replicated Items Selected list, and then click this button to remove the virtual machine from the replication set.
Failed Files (Edit Items)	[Windows DS-Client - File system backup set only] • Click to view a list of files that failed to back up. This opens the Failed Files During Backup dialog box. • This is a cumulative list of files that failed since the backup set was created.

Modify	Allows you to modify an existing Regular Expression. • Opens the Regular Expression for the highlighted item.

Select items for demand backup

Use this dialog box to select all or part of a backup set for immediate backup.

Items & Options for backup • Shows a list of the item(s) specified for backup.	
Checkbox	Allows you to select or remove items from the demand backup.
Icon	Lists the type of backup item (directory, file, database, etc.)
Items	Lists the path of the backup item.
Options	The defaults are set in this backup set's Set Properties Items Tab. Some items might be unavailable (they cannot be changed for demand backups). Letters that appear in this column correspond to the following options: • P = Backup permissions / Backup ACL • S = Backup Streams • E = Extended Attributes • X = POSIX ACL • D = Run DBCC before backup • S = Stop on DBCC errors • T = Truncate Transaction Log / Truncate Archived Logs / Backup Transaction Log • L = Logical Corruption Check • B = Backup Only Current Archived Logs • R = Backup Resource • A = Backup File Attributes To add or remove an option, highlight the backup item from the list and check or clear the option box that appears beneath this list. See below for details about individual options.
Generations (Linux / Mac)	Shows the number of generations configured for the corresponding backup item.
Options • Highlight an item from the Items & Options for backup list, then click the checkbox of the option(s) you want to add.	
Backup permissions / Backup ACL	Select this box to backup the file permissions. (ex: ACL on NTFS volumes, or Trustees on NetWare volumes.)
Backup POSIX ACL (Linux)	This only applies to backups of the Local File System (Linux DS-Client only). Select this box to backup the "Extended ACL" (if configured). • These are the permissions set using the 'setfacl' command (and viewed using the 'getfacl' command).
Backup streams (Windows)	NTFS volumes support multiple streams of data associated with a particular file. Select this option if you have files that contain alternate data streams. • To change this option, you must use the Backup Set Properties dialog box, Backup Set Items Tab.
Backup Eattributes (NetWare)	These are the Extended File Attributes. (ex: Transactional and Compressed).

Run DBCC before backup (Microsoft SQL)	The Database Consistency Check (DBCC) verifies database integrity to ensure backup of a valid database dump. If this box is checked, an additional option appears.
Truncate transaction log (Microsoft Exchange Server)	Truncates the transaction log. • **Microsoft Exchange Server**: Transaction Logs are truncated after the backup.
Backup Transaction Log (Microsoft SQL Server)	The database must be configured with FULL or BULK_LOGGED recovery mode, otherwise this option will have no effect. • If selected, the DS-Client will dump the Transaction Log and send it to the DS-System in addition to the database(s). If selected, the Transaction Logs will also be truncated. The timing of the truncation depends on the Database Backup Policy (see Set Properties - Options tab). • Full - Transaction Logs are truncated before the database dump. • Differential - Transaction Logs are truncated before the database dump. • Incremental - Transaction Logs are first backed up, and then truncated.
Stop on DBCC errors (Microsoft SQL)	If DBCC errors are detected, this option will skip backing up the dump file.
Logical Corruption Check (Oracle)	(Default is on) Will perform a corruption check on the database prior to backup.
Truncate Archived Logs (Oracle)	Clear the Oracle Database logs associated with this item after backup.
Backup Only Current Archived Logs (Oracle)	Select to backup only those logs that are necessary for the Oracle database. This saves backup space, by avoiding backup of any older logs. Leave this box cleared if you want to backup all log files.
Backup Resource (Mac)	Select to backup the Macintosh Resource Fork information.
Backup File Attributes (Mac)	Select to backup the File Attributes for files on the Mac platform.

Select items for network share discovery

LAN STORAGE DISCOVERY TOOL

The Share Discovery Wizard helps you to identify all the available shares on your LAN. In this dialog box, you specify the items (computers) on your network(s) whose shares you want to discover.

Path	Enter a specific IP address or computer name (e.g. 10.10.10.10 or COMPUTER1).
Filter	If the Network tree contains a long list, you can filter by the first letter(s) of the computer names you want. This feature does not support wildcards.

Network Tree	Select from the available list of networks, domains/workgroups, and computers. • Filter: If the Network tree contains a long list, you can filter by typing the first letter(s) of the computer names you want in the “Filter” box above the tree. This feature does not support wildcards. • Select All Filtered: click to highlight all machines located with the filter.
Add	Adds either the contents of the Path box or the highlighted item from the Network Tree to the “Selected items for Discovery” list.
Import	This button allows you to import a list of computers from a text file. This allows you to import long lists of computers for share discovery. • The text file (*.txt) must contain each computer name or IP address on a separate line. • Once you import, the DS-Client pings each address in the list. A warning pops up for any computer(s) that could not be reached. • Each computer that is added appears on a separate line in the “Selected items for Discovery” list.
Selected items for Discovery Shows the list of items you have selected for share discovery.	
Remove	Removes the highlighted item from the “Selected items for Discovery” list.
Clean share list	Select to remove any shares from the previous scan that returned a ‘Scanned Size’ of “0”.

Select items for network share discovery (Linux DS-Client)

LAN STORAGE DISCOVERY TOOL

The Share Discovery Wizard helps you to identify all the available shares on your LAN. In this dialog box, you specify the items (computers) on your network(s) whose shares you want to discover.

Path	Enter a specific IP address or computer name (e.g. 10.10.10.10 or COMPUTER1). • You must specify the connection protocol before the IP / name (e.g. “UNIX-SSH\10.10.10.10” or “UNIX-SSH\localhost”)
Filter	If the Network tree contains a long list, you can filter by the first letter(s) of the computer names you want. This feature does not support wildcards.
Network Tree Select from the available list of networks, domains/workgroups, and computers. • Filter: If the Network tree contains a long list, you can filter by typing the first letter(s) of the computer names you want in the “Filter” box above the tree. This feature does not support wildcards. • Select All Filtered: click to highlight all machines located with the filter.	
Add	Adds either the contents of the Path box or the highlighted item from the Network Tree to the “Selected items for Discovery” list.

Import	This button allows you to import a list of computers from a text file. This allows you to import long lists of computers for share discovery. • The text file (*.txt) must contain each computer name or IP address on a separate line. • Once you import, the DS-Client pings each address in the list. A warning pops up for any computer(s) that could not be reached. • Each computer that is added appears on a separate line in the "Selected items for Discovery" list.
Options The available checkboxes change, depending on the network protocol selected (NAS, NFS, UNIX-SSH, etc.).	
Ask for credentials	Prompts you to type a valid user name and password for the selected network resource.
Ask for NAS API credentials (NAS only)	Prompts you to enter valid connection information for the selected NAS. • Opens the "Specify Credentials (Linux DS-Client)" dialog box.
'sudo' as an alternate user (UNIX-SSH only)	Shows the credentials that Linux DS-Client will use to access data on the network resource. • After successful login to the remote source, "sudo" (switch user) will be performed for Linux DS-Client to use these credentials.
Advanced Connection Option (UNIX-SSH only)	The default (if no selection is made) is for DS-Client to run a PERL script • Click [...] to edit the settings. See Advanced Connection Options (Linux DS-Client) for more information.
Selected items for Discovery Shows the list of items you have selected for share discovery.	
Remove	Removes the highlighted item from the "Selected items for Discovery" list.
Connection Messages Messages can appear here when you add individual items to the "Selected Items for Discovery" list.	

Select items for scanning

UNPROTECTED LAN RESOURCE DISCOVERY TOOL

The Discovery Wizard helps you to identify all the unprotected resources (shares) on your LAN. The scan will compare the DS-Client's backup set items with the network resources you choose in this dialog box.

Path	Enter a specific IP address or computer name (e.g. 10.10.10.10 or COMPUTER1).
Network Tree Select from the available list of networks, domains/workgroups, and computers.	
Ask for credentials	Prompts you to type a valid user name and password for the selected network resource.
Add	Adds either the Path or the highlighted item from the Network Tree to the Selected items list.

Exclude	Excludes the highlighted item from the Network tree. This only applies to sub-items (i.e. the parent must already be selected for discovery for a sub-item to be excluded).
Subnet	• Opens the Add / Exclude Subnet dialog box.
Select	• Opens the Add / Exclude item from scanning result dialog box.
Selected items for Discovery Shows the list of items you have selected to scan.	
Remove	Removes the highlighted item from the Selected items list.

Select Mailboxes to be searched (Select E-Mails for restore wizard)

Use this dialog box to select the mailboxes where you want to search for the emails.

Available Mailboxes List • This list shows the mailboxes in the mounted recovery database.	
Add	You can add as many mailboxes as you want, but must include at least one. Highlight, and then click “Add” to move items to the “Selected Mailboxes” list.
Selected Mailboxes List • This list shows the mailboxes selected for the email search.	
Remove	You can highlight and remove selected mailboxes, if required.

Select options for demand backup

Use this dialog box to specify options for the Demand Backup.

Backup Set Options • This section allows you to view and modify the options available for the entire backup set.	
Use Buffer	Uses the Use Buffer option. Files will be copied to the DS-Client Buffer (i.e. as fast as possible for the given server and LAN speed). This will free up the backup source as fast as possible. Then the DS-Client will send the files from the DS-Client buffer to the DS-System.
Detailed log	Records all files that are backed up.
Stop on errors	Sets an error limit, at which a backup will be stopped. Enter the maximum number of errors in the Stop on Errors box to the right.
Start at	Leave this box blank to start the demand backup immediately. Enter a time, if you wish to delay starting the demand backup until the time specified.
Instant Recovery	If selected, this backup set will send a copy of the backup data to the configured instant recovery location connected to the DS-Client.

Verify signature for unchanged files	DS-Client reads the digital signature from the latest online generation of each unchanged file and compares it with the digital signature that was generated from the current source file. If the signatures do not match, DS-Client will backup the file again in the same backup session. • This option is available only for File System backup sets and email message backup sets that use DS-MLR. • This option will apply only to the latest file generation. • This option cannot be used with the Use Buffer option. **WARNING**: Selecting this option will slow down the demand backup performance because the unchanged files that are normally skipped by a backup must be processed.
Backup as POSIX	
PreScan	Performs a PreScan of all files in the backup set to estimate a time for completion of the backup.
Open Files • This information instructs the DS-Client about how to deal with Open (i.e. locked) files. (If the open file has been locked with Deny write by another process, the backup for this file will fail.)	
Try deny write	Attempt to open backup file in 'Deny Write' mode. If this fails (because the file is already open), place the backup file in 'Allow Write' mode.
Deny write	This mode prevents any other process from writing to the backup file, while the DS-Client has it open. DS-Client will not back up the file, if another process has already opened it for write. (You can, however, instruct the DS-Client to retry backing up the open file.)
Prevent write	Attempt to open backup file in 'Deny Write' mode. If this fails (because the file is already open), then open in Allow Write mode and lock the file, thereby preventing any process from writing to the file. This ensures that the most recent version of the file is backed up.
Allow write	Allow another process to read/write to the backup file (no restrictions). Since other applications can write to the file while it is being backed up, this can affect file consistency.
Retry times	Specifies the number of times you want the DS-Client to attempt to backup the file. (Maximum of 10 retries).
Retry intervals	Specifies the interval between retries. (Maximum of 999 seconds).
Windows 2000 & up options • These options appear if supported by the backup set source computer's Windows operating system version. However, all selections are unavailable and cannot be changed from this dialog box. • To change any of these selections, you must edit this backup set's properties (Set Properties - Advanced Options tab (Windows DS-Client)).	
Backup data in Remote Storage	Backup all data on remote media. Some Windows operating systems have the functionality to migrate infrequently accessed data from the local hard drive to directly attached tape libraries. The local disk usage is reduced by replacing the file with a link (shortcut). If disabled, only the link (shortcut file) will be backed up.

Backup Single Instance Store file data	Backup each instance of a file separately. Some Windows operating systems have an optional service 'Single Instance Store' to handle multiple copies of the same file on the computer. Local disk usage is reduced by placing one copy of the file in the Single Instance Store, with links (shortcuts) in all associated directories. If disabled, only the link will be backed up. If you have activated the Single Instance Store Service, check this option.
Follow junction point	Junction points are links to other directories. If this option is enabled, all data in the directory referenced by the junction point will be backed up. If disabled, only links to the directory will be backed up (not the data within the directory). • Notes: Junction points that are mounted FAT or FAT32 volumes are not supported.
E-Mail Scan Policy • This section appears only for Microsoft Exchange Server email message backup sets (DS-MLR) that use MAPI. Note: Functionality for discontinued backup sets might still work, even though they are no longer officially supported.	
Default policy	• Shows the default policy configured for this backup set in the Backup Set Properties - Options tab.
Enforce perform	This option allows you to over-ride the default configuration for this demand backup only. • **Full scan**: Performs a full scan of all items in the target folder. • **Incremental scan**: Assuming at least one previous backup with has been performed, DS-Client / DS-MLR will only retrieve the new or modified items from each folder. (It does not detect items that have been removed from a target folder.)

Select options for demand backup (Linux DS-Client)

Use this dialog box to specify options for the demand backup.

Additional Backup Set Options	**The options in this section are specific to the type of backup set:** • MySQL backup sets. • PgSQL backup sets. • Oracle backup sets. • DB2 Server backup sets. • SSH backup sets.
Backup set options	
Use buffer	If checked, files will be copied to the DS-Client Buffer (i.e. as fast as possible for the given server and LAN speed). This will free up the backup source as fast as possible. Then the DS-Client will send the files from the DS-Client buffer to the DS-System.
Detailed log	Records all files that are backed up (you can view them in the Activity Log).
Stop on errors	Select this box to set an error limit, at which a backup will be stopped. Enter the maximum number of errors in the Stop on Errors box to the right.
Start at	Leave this box blank to start the demand backup immediately. Enter a time, if you wish to delay starting the demand backup until the time specified.

Instant Recovery	If selected, this backup set will send a copy of the backup data to the configured instant recovery location connected to the DS-Client.
PreScan	Performs a PreScan of all files in the backup set to estimate a time for completion of the backup.

Additional Backup Set Options	**MySQL backup sets.**
Add locks around insert statements	Lock tables before inserting data on restore. (See the MySQL manual page for 'mysqldump' for more information.)
Lock all tables for read	Prevent changes to data while backup is in progress. (See the MySQL manual page for 'mysqldump' for more information.)
Add MySQL specific table create options	Add MySQL specific extensions to the backed up database dump. (See the MySQL manual page for 'mysqldump' for more information.)
Insert statement type	Specify how table rows are inserted into the database dump (i.e. the style of the 'INSERT' statement). (See the MySQL manual page for 'mysqldump' for more information.) • Extended - Fast insert. Might not be useful for manual loading into non-MySQL databases. • Complete - Uses complete 'INSERT' statements that include column names when inserting rows. • Normal - Standard insert. Slower, but can be more portable to other databases.
Additional Backup Set Options	**PgSQL backup sets.**
Backup only the schema, not the data	Dump only the schema (data definitions).
Do not backup privileges (Grant / Revoke)	Will backup only the data, not including the privileges of the database.
Backup data as INSERT, rather than COPY	Dumps data as INSERT commands (instead of COPY). This will make restores very slow, but it will make those backups more portable to other SQL database packages.
Additional Backup Set Options	**Oracle backup sets.**
Logical Corruption Check	(Default is on) Will perform a corruption check on the database prior to backup.
Backup only current archived logs	Select to backup only those logs that are necessary for the Oracle database. This saves backup space, by avoiding backup of any older logs. Leave this box cleared if you want to backup all log files
Truncate archived logs	Clear the Oracle Database logs associated with this item after backup.
Additional Backup Set Options	**DB2 Server backup sets.**

Prune History / Logfile	Delete entries from the history file or log files from the active log path.
Online Backup	• If cleared, perform Offline DB2 backup. During an offline backup, applications cannot connect to the database. • If checked, perform Online DB2 backup. An online backup allows applications to connect to the database and read and write to tables during database backup. Log retain or userexit must be enabled for an online backup.
Additional Backup Set Options	**SSH backup sets.**
Do not follow the Mount Point	Select to backup only the Mount Point itself (not the data under any Mount Point).

Select options for demand backup (Windows database backup sets)

Use this dialog box to specify options for the on-demand backup of the following Windows database backup sets:

- Microsoft SQL Server
- Microsoft SQL Server (VSS-aware)
- Microsoft Exchange Server (VSS-aware)
- Microsoft SharePoint Server (VSS-aware)

This dialog box also appears for on-demand VSS-aware backups of:

- Microsoft Hyper-V Server (Standalone)
- Microsoft Hyper-V Server (Cluster)

These settings are applied for this backup only.

Backup Set Options • Options that are unavailable cannot be selected for demand backup.	
Use Buffer	[View only.] • This takes the “Use Buffer” setting from the Set Properties - Options tab (Windows database backup sets).
BLM (Infinite Generations)	[View only.] • This takes the “BLM (Infinite Generations)” setting from the Set Properties - Options tab (Windows database backup sets).
Detailed log	Records all files that are backed up.
PreScan	If checked, the backup set is flagged to scan all files in the backup set prior to backup to display an estimated completion time for the backup.
Stop on errors	Sets an error limit, at which a backup will be stopped. Enter the maximum number of errors in the Stop on Errors box to the right.

Start at	Leave this box blank to start the demand backup immediately. Enter a time, if you wish to delay starting the demand backup until the time specified.
Local Storage	[View only.] • This takes the “Use Local Storage - Save” setting from the Set Properties - Options tab (Windows database backup sets).
Cache	[View only.] • This takes the “Use Local Storage - Cache” setting from the Set Properties - Options tab (Windows database backup sets).
Database backup policy (Windows database backup sets & VSS-aware Hyper-V backup sets) • The default selection depends on the Database Backup Policy selected for this backup set in the Set Properties - Options tab (Windows database backup sets). • Some options might not appear, depending on the backup set type and configuration.	
Default Policy	Shows the configured Windows database backup policy for this set.
Enforce Perform	Select if you want to specify what type of dump will be performed. The options available depend on the settings for this backup set.
Full backup	This backup will perform a full dump of each database.
Differential backup	Performs a differential backup unless another full backup is needed (*). • The database can be selected with or without the Backup Transaction Log option.
Incremental backup	Performs an incremental backup unless another full dump is needed (*). • The database should be selected without the Backup Transaction Log option. (Even if selected, this option will be ignored if this backup policy is selected.) • The database’s Recovery Model must be: ‘full’ or ‘bulk_logged’.
Do not truncate transaction log	[Incremental backup only] • [Default is off.] Select if you do not want DS-Client to truncate the Windows database transaction log.
(*) A full dump is needed (other than first time) when: • a database has been backed up by another backup set (or manually from the SQL tools); • a database has been restored (either from another database or an earlier generation); • the database properties have been modified (recovery model switched to ‘simple’); • local storage cache is used for the backup set (This can occur for ‘Online’ backup sets with the option ‘Transmission cache on local storage’, but only when a generation must actually ‘pass through’ the local storage cache. If the connection to DS-System is down, then a full dump occurs and is written to the local storage cache. After that dump, DS-Client continues with the selected database backup policy.) • the DS-Client requires a Master generation (configured in the “MasterGenerations” value of the DS-Client Advanced Parameters - Setup Menu > Configuration > Advanced Tab).	
E-Mail Scan Policy • This section appears only for Microsoft Exchange Server email message backup sets (DS-MLR) that use MAPI. Note: Functionality for discontinued backup sets might still work, even though they are no longer officially supported.	
Default policy	• Shows the default policy configured for this backup set in the Backup Set Properties - Options tab.

Enforce perform	This option allows you to over-ride the default configuration for this demand backup only. • **Full scan**: Performs a full scan of all items in the target folder. • **Incremental scan**: Assuming at least one previous backup with has been performed, DS-Client / DS-MLR will only retrieve the new or modified items from each folder. (It does not detect items that have been removed from a target folder.)

Select Path

Use this dialog box to select a path.

Computer	Click >> to open the Select the Computer dialog box.
Directory	Click >> to open the Select Directory dialog box.
Path (Linux DS-Client)	Click >> to open the Select Directory dialog box.

Select Path to Import

This dialog box allows you to select a VM replication Initial backup set.

Select Path to Import Offline Set	
Computer	The machine where the offline replication files are located.
Directory	Directory path on the selected machine.
OK	Click to access the VM replication Initial backup set. • This opens the "VMR Offline Configuration" dialog box.

Select restore level (VMware VADP)

Use this dialog box to select the type of VMware VADP restore you want to perform.

VM-level Restore	Select this option to restore an entire virtual machine.
VM Disk-level Restore (Linux DS-Client)	Select this option to restore individual virtual disks from a virtual machine. This type of restore only restores individual virtual disks backed up from a virtual machine.
File-level Restore	Select this option to restore individual files or directories of a virtual machine. This type of restore only restores individual files or folder backed up from a virtual machine.
Attempt incremental restore (Linux DS-Client)	If you want DS-Client to attempt to perform an incremental restore of the selected virtual machine, select this option. For more information, see Section 15.14, "Incremental virtual machine restore of VMware VADP backups", on page 549.

Select restore location

Use this tab to select the restore options and/or restore destination. This process overwrites any existing files of the same name.

Original location	By default, backups are automatically restored to their original source location. **This process over-writes existing files of the same name.**
Alternate location	You have the option to Restore to an Alternate Location in this dialog box.
Dump to (SharePoint Only)	This box appears for Microsoft SharePoint backup sets only. • Click [>>] to browse and select a dump location on the restore target.
Salesforce DB (Salesforce.com Only)	This box appears for “Salesforce.com” backup sets only, when you are performing an Item-Level Restore. • Click [>>] to browse and select the Salesforce.com database file that was restored in Step 1 of the Item-Level Restore process.
Connect to Salesforce with (Salesforce.com Only)	This box appears for “Salesforce.com” backup sets only, when you are performing an Item-Level Restore. • Click [>>] to supply the credentials to connect to the Salesforce.com site where you want to restore.
Share Name List	
Icon	This column displays different icons, depending on the item type.
Source	Shows the source share from where the backup set files originated.
Destination	By default, the destination is the same as the source share. To change the destination share, double click on this cell and a drop down list allows you to select from all the available shares on the alternate location.
Restore To	Double click on this cell to select a location to restore to on the destination share. This brings up the Select Directory dialog box. You can also type the path directly into the cell.
Share Path	This column appears if you need to select an alternate server. If the share path cannot be obtained due to user privilege restrictions, you must type a path in manually. Notes: • Restoring to Windows: Share Path information appears automatically if you are restoring the Services Database, System State (Registry) or locked files.
Truncate	If the selected restore items contain a common path, you can shorten the common portion of the restore path by increasing the truncate level in the number box. Truncated portions of the restore path will disappear. Note: • Alternate location security: If the entire path is truncated, the alternate location directory will inherit the security of the truncated parent directory.

Restore from Nimble Storage snapshots	Select this check box to restore from the snapshots on the production Nimble Storage or Nimble Storage replication partner. This option is displayed only when you are restoring data for a Microsoft SQL Server (VSS-aware) backup set that is integrated with Nimble Storage.
Restore as Pure Files (Linux DS-Client)	[Alternate location restores] This option is available for some backup set types. It allows you to restore only the data files to the alternate location. This means no database loading or other special backup set type handling will be performed.
Restore Option File	This option only applies for VSS-aware backup sets, when restoring to an alternate location. • This option allows you to specify an XML file that contains specific VSS rules to apply for alternate location restore of a VSS-aware backup set.
Rename Component (Windows DS-Client)	[VSS-aware backup sets] This option is only available for alternate location restores. It allows you to rename individual components being restored. • Opens the Rename Component.
Restore database file only (DS-Client Buffer) (Windows DS-Client)	[“Backup from the Cloud” (Salesforce.com) backup sets] Restores the backed up data as a single, pure database file to the DS-Client Buffer, then copies the file to the final destination you specify. • Click [...] to open the Select Directory dialog box.
Restore to local disk (Windows DS-Client)	[“Backup from the Cloud” (Google G Suite & Microsoft Office 365) and Microsoft Exchange Server EWS backup sets] Restores the selected data to a disk location on the DS-Client computer. • Click [>>] to open the Select Directory dialog box and specify the location. **Note:** UNC paths are not supported with this option.
Archive restored files to PST (Windows DS-Client)	[“Backup from the Cloud” (Microsoft Office 365) and Microsoft Exchange Server EWS backup sets] Archives Microsoft Exchange data to a PST file at the location specified for Restore to local disk. This option is available when you have selected to restore Microsoft Exchange data to local disk. This option is unavailable when Microsoft SharePoint data is selected for the restore activity.
Custom Mail Label(s) (Google G Suite)	This check box appears if you are restoring a ‘Backup from the Cloud’ (Google G Suite) backup set. • This applies to email backups from G Suite only. • You must specify the label (folder) that will be created on the G Suite site. This is where the selected emails will be restored.
Virtual Machine List (VMware VADP backup sets only) • The columns are populated with default restore suggestions based on the selected restore server.	
Icon	This column displays different icons depending on the item type.
Datacenter	This column shows the source VMware vSphere datacenter from which the backup set files originated. **Alternate Location**: This option allows you to select a different datacenter, folder path, virtual machine name, host, and datastore to be the restore destination.

Folder Path	This column shows the destination folder location to which the target virtual machine will be restored.
VM Name	This column shows the name of the target virtual machine when it is restored.
Host	This column shows the destination ESXi host to which the virtual machine will be restored.
Datastore (Windows DS-Client)	This column shows the name of the datastore. For alternate location restores, this column lists the datastores that are available on the selected destination host to which you are restoring the individual disks.
Show Datastores / Hide Datastores (Linux DS-Client)	Opens or hides the Files List for the highlighted virtual machine. This option only appears if you are restoring a full virtual machine (VM-level Restore). • **Virtual Disk**: Shows the name of the individual Virtual Disk (*.vmdk). • **Datastore**: Shows the name of the Datastore. For alternate location restores, this box provides a dropdown list of available Datastores on the destination host where you can restore the individual disk.

Select restore location (Exchange DB - Granular Restore)

Use this tab to select the restore destination. This process over-writes any existing files of the same name.

Original location	• For the Exchange DB portion of a granular restore, even if you leave this at the 'original' location, you must specify a restore destination because the database is only being restored temporarily so you can browse it for the specific items you want.
Alternate location	If you select this radio button, you have the option to restore to a different server.
Database Name List (VSS-aware Granular Restore of Exchange Database)	
Icon	This column displays different icons, depending on the item type.
Database Name	Shows the backed up database name.
Restore To	Click on this cell to select a location to restore to on the destination location. • Click [>>] to bring up the Select Directory dialog box. You can also type the path directly into the cell.
Restore Logs To	Click on this cell to select a location to restore to on the destination location. • Click [>>] to bring up the Select Directory dialog box. You can also type the path directly into the cell.

Select restore media & options

You can request media containing either the last version of an entire backup set (Snapshot), or a selective restore of required files.

Media	Choose from the restore media list (e.g. CD, DVD, Tape, HDD, USB Drive, etc.). This list is defined by your service provider (it comes from the DS-System).
Snapshot	Creates a 'Snapshot' of the latest version of all files in the backup set. You will not need to select anything on the next tab.
Selective	Allows you to pick-and-choose directories/files for restore to disc / tape. This is the same as for regular restores.

Select restore options

Use this tab to select the restore options and/or restore destination. This process over-writes any existing files of the same name. Options that do not apply to the selected backup set are either unavailable or do not appear.

Permissions (File system backup sets)	
Yes	Restores permissions of the backed up files.
Skip	Skips restoring file security information (if any) for the selected files and directories. Newly created files and directories will assume the security of the parent directory. Notes: If you have been assigned ownership of another person's backup set(s) and you want to restore files from those sets with ACL, the following will occur: 1 – DS-User will check whether you have access rights to Take Ownership and Change Permissions of the restore file. 2 – If you do not have access rights, you will not be able to restore the ACL. You must choose Skip Permissions Restore to restore the file. 3 – If you have the access rights, but the file ownership is not yours, the file will be restored without ownership, and a corresponding error message will appear in the event log, describing the security error.
Only	Will restore permissions for the selected files and directories only. This will only apply permissions to existing files on the destination volume.
Method	
Save	Restores files to a temporary location first. If the file is restored successfully, then the original file is overwritten with the temporary file. This prevents partially restored files from overwriting an existing file. • For Linux DS-Client restores of Hard Links, this is the default restore method. The restore will only link those hard linked files that are selected in the same restore session. For more information, see the “Hard Links” sections in the Knowledge Base article in Section 15.2, “Backup / restore of UNIX file systems”, on page 507.

Use buffer	Restores files to the DS-Client buffer first. Then, the files are transferred to the restore destination. This ensures that the files are restored as fast as possible, given the speed of your LAN. Notes:The DS-Client Buffer will inherit the permissions of its parent directory. For example, if you specify C:\TEMP as the buffer, then the C:\TEMP\buf directory will inherit the permissions of the \TEMP directory. All files copied to the \buf directory will be accessible by users with permissions to \TEMP. You must have sufficient disk space in the DS-Client buffer to accommodate the entire restore amount.
Fast	Files are restored on a 'write-data-as-received' basis. Files are overwritten upon receipt of the first byte of data. • For Linux DS-Client restores of Hard Links, choosing this method allows you to restore a single hard linked file while preserving the existing hard links on the restore target. For more information, see the “Hard Links” sections in the Knowledge Base article in Section 15.2, “Backup / restore of UNIX file systems”, on page 507.
Locked Files (Windows)	
Rename	A locked file will be renamed while still in use (intended for System files). The renamed file will be registered with the operating system for delete, on reboot. (This feature is necessary when restoring system files that are opened before the operating system has the chance to replace the locked file.)
Don't rename	A locked file will be restored as a temporary file. This temporary file will be registered with the operating system to replace the locked file on reboot.
Skip	Skips restores of any files that are locked. An error will be reported in the Activity Log.
Skip offline files (stubs) (Windows)	Skips restores of any backed up “stub” files. • Skips restore if the online file is a stub (a small placeholder/ link file to the full file which was moved to other media).
Do not drop existing DB before restore (Linux DS-Client)	• **OFF (Drop database)** - If a database selected for restore already exists on the restore server, DS-Client will drop the existing database before performing the restore. • **ON (Do not drop database)** - If a database selected for restore already exists on the restore server, DS-Client will restore to that existing database. This option is useful if you want to keep any extra tables (and replace all existing tables) in the existing database.
Overwrite junction point	Replaces any junction points of the same name. Junction points are special directories (like shortcuts) that link to another location.
Load Cluster Quorum (Windows 2000 & up)	(This check box only appears if you are restoring a System State with a Cluster Quorum.) Automatically loads the Cluster Quorum after restore.
Detailed Log	Records all files that are restored.
Skip Pre/Post	Skips the Pre/Post restore process. Clear to display the Pre/ Post button.

Restore Reason	Depending on the backup set kind, this list can appear on this page or on a subsequent page. You must select a reason for the restore request from this list.
Restore Schemas (Salesforce.com databases)	This check box appears if you are restoring a 'Backup from the Cloud' (Salesforce.com) backup set's database. Restore Schema is performed at Table-Level only (not at database level). This option is useful if you have made changes to a table's structure since the backup session you are restoring. • If selected, the restore will wipe the entire table(s) selected for restore from the Salesforce.com database, then rebuild the table(s) with the backed up schema(s), then populate the table with the restore data.
Authoritative Restore (System State)	This option forces authoritative restore for Active Directory.
Compression Options	**This list only appears if the backup source and restore destination support file level compression (ex: NTFS, NetWare).** • **Default Compression**: Specifies that the restored files take on the compression attribute of the parent directory where they are restored. • **Preserve Compression**: Specifies that the restored files retain their original compression setting (as when they were originally backed up). • **Force Compress**: Specifies that the restored files are compressed using the destination file system's compression. • **Force Expand**: Specifies that all restored files are to be expanded (no compression).
Encryption Options (Windows File System only)	**If this list appears, you can instruct DS-Client how to handle backed up files encrypted with Windows File Encryption.** • **Include Encrypted Files**: (Default) Specifies that the restore process will attempt to restore any files encrypted with Windows File Encryption. • **Skip Encrypted Files**: Specifies that the restore process will skip any files encrypted with Windows File Encryption. This option can be useful if the target restore destination does not support this feature. • **Restore Encrypted Files only**: Restores only those files that are encrypted with Windows File Encryption.
Force Compress (Check Box)	(This check box only appears if the original volume does not support file level compression, but the restore destination does.) Compresses the restore files using the destination file system's compression.
Restore Permissions from (Permissions only restore)	Leave this box empty to restore all permissions backed up. Restores file and directory permissions for the specified path only. (e.g. \dir_path\(file_name) - where file_name is optional). You must know the specific path name to use this option.
Skip Subdirectories (Permissions only restore)	Skips restore of subdirectory permissions from the directory listed in the Restore Permissions from box.

Local Storage Restore Options This list appears only if the backup set has data stored in Local Storage and offsite on the DS-System. The DS-Client always attempts to restore from Local Storage first, but the options in this list address the specific scenario in which the DS-Client also needs to restore some data from the DS-System. • (Default) Stop, if connection to DS-System not available when needed. • Continue, even if connection to DS-System not available. • Try to connect to DS-System first. If connection fails, stop.	
Additional Restore Options (Linux - Permissions only backup sets)	
Restore files that match	Allows you to specify a filename pattern whose permissions will be restored.
Exclude files that match	Allows you to specify a filename pattern to exclude from the permissions restore.
Additional Restore Options (Linux DS-Client - VMware VADP backup sets) • The available restore options depend on the selected destination VMware server. • For each virtual machine selected for restore, you can specify additional restore options to be performed.	
Power on VM after restore	Starts each virtual machine that is successfully restored. Currently, this option is available only when you are configuring a **Full** virtual machine restore.
Unregister VM after restore	After successful restore, the virtual machine will be unregistered from the vCenter Server.
Add timestamp to VM name	Appends the restore time to the end of the virtual machine's name. For example, a virtual machine named "`RestoreVM`" will be restored as "`RestoreVM_[yyyy-mm-dd-hh:mm:ss]`" in the vCenter Server. Currently, this option is available only when you are configuring a **Full** virtual machine restore.
Use SAN with all disk types	If this option is selected and the configuration supports this option, DS-Client will try to restore the virtual machine using SAN Transport mode. • For more information, see the Knowledge Base article in Section 15.15, "VMware transport libraries", on page 553.

Select restore options (Exchange Item-Level)

Use this dialog box to choose the restore options for this Exchange Item-Level restore request.

Restore Options	
Detailed Log	Records all files that are restored (viewable from the Activity Log).
Remove recovery database after restore is finished successfully	If the selected restore item(s) are restored without errors, the database you used for the 'granular' restore (not the target) will be deleted.

Delete database file and logs after restore is finished successfully	If the selected restore item(s) are restored without errors, the database and log files you used for the 'granular' restore (not the target) will be deleted. • This is the file restored in Step 1 (Granular Restore > Step 1. Database Restore). • Because this might be a very large file, you might want to keep this for re-use later. If you delete this file, you will have to perform Step 1 of the granular restore again.

Select restore options (SharePoint Item-Level)

Use this dialog box to choose the restore options for this SharePoint Item-Level restore request.

Restore Options	
Detailed Log	Records all files that are restored (viewable from the Activity Log).
Overwrite if exists	• OFF (default): Items that already exist on the SharePoint server are not overwritten. • ON: If the selected restore item already exists on the target restore SharePoint server, it will be overwritten by the item being restored. (Note that any additional items in the target location will not be overwritten.)
Remove database after restore is finished successfully	If the selected restore item(s) are restored without errors, the database you used for the 'granular' restore (not the target) will be deleted.
Web Application URL	You must supply the URL of the Web Application that you are restoring. • This target URL must exist in the SharePoint Server Central Administration. • Select the Web Application URL by choosing the appropriate one from this drop down list.

Select restore options (SQL / Microsoft Exchange / Oracle / Salesforce.com)

Use this tab to select the restore options.

Restore Options	
Detailed Log	Records all files that are restored.
Skip Pre/Post	Skips the Pre/Post restore process. Clear to display the Pre/Post button.
Pre/Post	Opens the Pre & Post Execution dialog box (see Pre & Post Execution).

Leave Database(s) in 'RESTORING' state
- (Microsoft SQL Server backup sets only. Not valid for 'dump file only' restores.)
- **Off**: (DEFAULT) The database will be brought online after the restore.
- **On**: DS-Client will not bring the database online after the restore has finished. Instead, it will leave the database in 'RESTORING' mode to allow users to continue performing restore operations on the restored database.

Do not drop existing DB before restore
- (MySQL backup sets only.)
- **OFF (Drop database)** - If a database selected for restore already exists on the restore server, DS-Client will drop the existing database before performing the restore.
- **ON (Do not drop database)** - If a database selected for restore already exists on the restore server, DS-Client will restore to that existing database. This option is useful if you want to keep any extra tables (and replace all existing tables) in the existing database.

Restore Schemas
- (Salesforce.com databases)
- This check box appears if you are restoring a 'Backup from the Cloud' (Salesforce.com) backup set's database. Restore Schema is performed at Table-Level only (not at database level).
- This option is useful if you have made changes to a table's structure since the backup session you are restoring.
- If selected, the restore will wipe the entire table(s) selected for restore from the Salesforce.com database, then rebuild the table(s) with the backed up schema(s), then populate the table with the restore data.

Salesforce.com Restore options
For more information about Salesforce.com restores, see the Knowledge Base article in Section 15.22, "Backup from the Cloud (Salesforce.com)", on page 593.
- **Restore Schema**: Same as above for Table Restores.
- **Use Bulk API**: This option minimizes the number of API call counts made by the restore process and is selected by default. When files are uploaded via Bulk API, a file size limit of 10 MB is enforced by Salesforce.com. **NOTE:** Ensure that this check box is cleared if the data to be restored contains files that are larger than 10 MB.
- **Restore with automatic relationship fix**: If you restore multiple tables at the same time, with this option selected, DS-Client will try to trace the ID change and fill the foreign key with the new ID that was inserted, thereby maintaining the relationship between those tables. If this option is not selected, after the data has been restored into those tables, the relationship between the tables will be broken because all new inserted rows will have a new ID.
- **Include all referenced tables automatically**: Includes all the backed up tables that are related to the table being restored.
- **Additional relationship fix based on name comparison**: If this option is selected, DS-Client will try to find any missing referenced records based on a comparison of "Name" columns.
- **Detect duplicate records by name comparison**: Prevents data that already exists from being restored and duplicated. For more information, see Preventing duplicate records in a table-level restore.
- **Save temporary database file in local storage for resume**: Select this option if you want to the Salesfores.com data restore process to be resumable in the event that it is stopped during the uploading stage. See Section 6.6.6, "Resuming a Salesforce.com data restore process", on page 204 for more information.
- **Delete all records before restoring**: Empty the selected tables from the online Salesforce.com database, before performing the restore to re-populate those tables.

Local Storage Restore Options This list appears only if the backup set has data stored in Local Storage and offsite on the DS-System. The DS-Client always attempts to restore from Local Storage first, but the options in this list address the specific scenario in which the DS-Client also needs to restore some data from the DS-System. • (Default) Stop, if connection to DS-System not available when needed. • Continue, even if connection to DS-System not available. • Try to connect to DS-System first. If connection fails, stop.	
Additional Restore Options (Linux)	
Force pipe library path (Oracle)	If you are using DS-PIPE, this box appears. • RMAN requires the Media Management Library "libobk.so" to backup / restore using a PIPE. • The exact library name will be slightly different, depending on the platform. For more information, refer to the "Oracle Server Requirements" section of the Knowledge Base article in Section 15.7, "Backup / restore of Oracle database servers", on page 522. • You can specify the exact path (including filename) to the corresponding "libobk.so" for the Oracle server's platform. These library files can be found in the DS-Client installation directory. • If you do not specify a path, the default path will be used: "$ORACLE_HOME/lib/libobk.so" • Make sure Oracle has full rights to read and execute in the library path. • Note: DS-Client does not validate this path. It simply forwards it to RMAN.
Do not execute 'RECOVER' commands (Oracle)	This option will not issue the RECOVER command. This means the DS-Client will only restore the control file, archive logs and tablespaces back to the Oracle server. You must use RMAN to perform the DBPITR manually.
'RECOVER DATABASE' at: (Oracle)	This option will automatically recover database to the target time specified and open the database with the 'Resetlogs' option.
PITR of pluggable database(s) (Oracle 12 only)	This checkbox appears if the restore selection qualifies for PDB PITR. If selected, you must also select **'RECOVER DATABASE' at**.

Select restore options (VMware VADP on Windows DS-Client)

Use this tab to select the restore options and/or restore destination. This process overwrites any existing files of the same name. Options that do not apply to the selected backup set are either unavailable or do not appear.

Detailed Log	Records all files that are restored to the Detailed Log (in the Activity Log).
Restore Reason	Depending on the backup set kind, this list can appear on this page or on a subsequent page. You must select a reason for the restore request from this list.

Local Storage Restore Options This list appears only if the backup set has data stored in Local Storage and offsite on the DS-System. The DS-Client always attempts to restore from Local Storage first, but the options in this list address the specific scenario in which the DS-Client also needs to restore some data from the DS-System. • (Default) Stop, if connection to DS-System not available when needed. • Continue, even if connection to DS-System not available. • Try to connect to DS-System first. If connection fails, stop.	
Additional Restore Options (Windows DS-Client - VMware VADP backup sets) • The available restore options depend on the selected destination VMware server. • For each virtual machine selected for restore, you can specify additional restore options to be performed.	
Power on VM after restore	Starts each virtual machine that is successfully restored.
Unregister VM after restore	After successful restore, the virtual machine will be unregistered from the vCenter Server.
Add timestamp to VM name	Appends the restore time to the end of the virtual machine's name. For example, a virtual machine named "RestoreVM" will be restored as "RestoreVM_[yyyy-mm-dd-hh:mm:ss]" in the vCenter Server.
Use SAN with all disk types	If this option is selected and the configuration supports this option, DS-Client will try to restore the virtual machine using SAN Transport mode. • For more information, see the Knowledge Base article in Section 15.15, "VMware transport libraries", on page 553.

Select Restore Options (VSS-aware Exchange / SharePoint)

Use this dialog box to choose the restore options for the Exchange / SharePoint database.

Detailed Log	Records all files that are restored.
Skip Pre/Post	Skips the Pre/Post restore process. Clear to display the Pre/Post button.
Pre/Post	Opens the Pre & Post Execution dialog box (see Pre & Post Execution).
Send E-Mail notification when database restore finishes	Select to have DS-Client send a notification when the database restore is finished. This is useful if the restore is large and will take a significant amount of time.

Select restore options (VSS-aware restores)

Use this tab to select the restore options when performing a VSS-aware restore.

Restore Options	
Detailed Log	Records all files that are restored.
Skip Pre/Post	Skips the Pre/Post restore process. Clear to display the Pre/Post button.

Pre/Post	Opens the Pre & Post Execution dialog box (see Pre & Post Execution).
Leave Database(s) in 'RESTORING' state • (Microsoft SQL Server backup sets only. Not valid for 'dump file only' restores.) • **Off**: (DEFAULT) The database will be brought online after the restore. • **On**: The database will be left in 'RESTORING' mode to allow users to continue performing restore operations on the restored database. Select this check box if you plan to restore data from a Classic Microsoft SQL Server backup set that is based on the Transaction Log Only database backup policy to the same database(s) afterwards.	
Local Storage Restore Options This list appears only if the backup set has data stored in Local Storage and offsite on the DS-System. The DS-Client always attempts to restore from Local Storage first, but the options in this list address the specific scenario in which the DS-Client also needs to restore some data from the DS-System. • (Default) Stop, if connection to DS-System not available when needed. • Continue, even if connection to DS-System not available. • Try to connect to DS-System first. If connection fails, stop.	
Microsoft Exchange database restore options	
Mount database after restore	Select to automatically mount the database after restore.
Force allow overwrite database	Select to automatically set the Microsoft Exchange Server's "allow restore to overwrite database" parameter before restoring the database.
Existing file options	• **Delete** (default): Delete all of the existing files in the restore directory. • **Keep**: Keep all existing files in the restore directory. • **Rename**: Renames the existing files, until all restore items are successfully restored. This takes more space, but avoids problems of failed restores (if a restore fails without this option, the Microsoft Exchange Server will not function). In case of failure, original files will be renamed back and the Exchange database will be mounted.
DAG restore options	Depending on the DAG configuration that was selected when performing the backup, select the corresponding restore option. • **Restore from active node backup**: Select if the backup set is configured to "Back up active databases". • **Restore from passive node backup**: Select if the backup set is configured to "Back up passive databases".

Select Restore Path

Use this dialog box to select the individual restore path(s) for Microsoft SQL data and log files.

Source Database	Shows the source database's name.
Destination Database	Shows the database where the backup will be restored.
Type	Shows if it is the database's DATA or LOG file.
Path	Shows the path on the destination server where the corresponding item will be restored.
Modify	Click to modify the highlighted restore path(s).

Select Restore Performance Options (Windows DS-Client)

This dialog box allows you to make some optional performance configurations. In general, you should use the defaults unless you have a high performance environment and the backup selected for restore is very large.

Maximum pending asynchronous I/O for a file This is the maximum I/O operations the DS-Client will queue for each file during the restore process.	
Use DS-Client's settings	(Default) Uses the setting in the DS-Client Advanced Configurations > Category: Performance > Parameter: MaxPendingIOPerFile.
Use specific value	You can override the default and set a custom value that only applies for this backup set. • This option is intended for high performance backup environments. You must be able to test the different settings to determine the optimal value. • This is only useful if the target storage containing the backup data is fast and efficient enough to take advantage of the increased I/O. • WARNING: Slower storage might suffer performance drops if this value is increased too much.
DS-System side read threads This setting affects the DS-System side of the process. It instructs the DS-System how many files to read simultaneously for this restore process.	
Use DS-Client's settings	(Default) Uses the setting in the DS-Client Advanced Configurations > Category: Performance > Parameter: MaxRestoreReadThreads. • Note: The actual value used maybe limited for some special backup sets.
Use specific value	You can override the default and set a custom value that only applies for this backup set. • You must be able to test the different settings to determine the optimal value. • WARNING: Slower storage might suffer performance drops if this value is not properly set.

Select Restore Reason

At the end of the Restore Wizard, you are asked to provide a reason for the restore.

Restore Reasons	
Restore Reason	You must select a reason for the restore request from this list.
Restore Classification This section only appears if this backup set is currently in a scheduled "Recovery Drill" period.	
Real production recovery, resulting from data loss	This performs a normal restore.

Stop DR Drill restore if DR Drill capacity is fully used	This performs a restore that counts as a DR Drill for billing purposes. You will see boxes with the DR Drill capacity that has been allocated and used. During the restore, if all the DR Drill capacity is used up, the restore will stop.
Augment with production recovery capacity if DR Drill is fully used	This performs a restore that counts as a DR Drill for billing purposes. During the restore, if all the DR Drill capacity is used up, the restore will continue, but the balance of the restore capacity will count as a real production recovery for billing purposes.
Capacity Allocated	Shows how much data can be restored for this backup set and counted as a DR Drill for billing purposes. • You can change the display unit to GB, MB, KB or Bytes.
Capacity Used	Shows how much of the allocated DR Drill capacity that has already been restored for this backup set. • You can change the display unit to GB, MB, KB or Bytes.

Select Retention Rule

Use this dialog box to select the retention rule to use.

Create a new retention rule	
Use an existing retention rule	Select from the list by highlighting the rule to apply.

Select Schedule Detail

Use this dialog box to copy an existing detail from one of the existing Schedules. A tree of schedules is displayed, with branches representing each detail available.

Select Search Criteria (Select E-Mails for restore wizard)

This dialog box is used when searching for individual emails for Item-Level restore. Every selection in this dialog box is part of a search filter. The more you specify, the narrower the search results will be.

Subject	Search text string in the subject line of the email
Attachment	• Yes: Search for emails that have an attachment. • No: Search for emails that do not have an attachment. • Both: Ignore search and show either.
Recipient(s)	Search for the email address of the recipient(s).
Sender(s)	Search for the email address of the sender(s).
Body	Search for the text string in the body of the email.
From Time	Search only emails sent/received after this date.
To Time	Search only emails sent/received before this date.

Select Service

Use this dialog box to specify the Windows Service to backup.

Services List	Browse through the list of available services and highlight your selection.
Select	Click to select the highlighted item in the Services List.

Select share & path for the database / data dump

Use this dialog box to specify dump location.

Database Dump	
Dump Path	This box displays the selection for the database dump location. • **Remote dump location** (Microsoft SQL Server): You can type a valid UNC path into this box, if you want to specify a different computer for the database dump. The Microsoft SQL Server service account **and** the backup set user credentials must have administrator rights to access this UNC path (read-write permissions).
Directory	Browse the database computer and select a directory. There must be enough space on the database computer to accommodate the dump file.
DS-Client Buffer	Save the dump file to the local storage on the DS-Client computer. There must be enough space on the DS-Client computer to accommodate the dump file.
DS-Client Pipe	This option does not consume any additional disk space. During backups, the DS-Client reads from the pipe on the source database. This method is useful if your database is too big to be dumped to a file on either the database server or the DS-Client buffer.
VDI Tool Directory	Microsoft SQL Server requires a VDI Tool for backup and restore using DS-Client Buffer or DS-Client Pipe. This option allows you to specify the location on a remote computer where DS-Client will place and run the VDI Tool. If no specification is made, DS-Client will run the tool from a default directory on the target computer's "c:\" drive.

Select SharePoint List Item (SharePoint Item-Level)

After you have selected the List(s), Customer List(s) or Document Libraries for restore, you can use this dialog box to choose the specific list item you want to restore.

List Items
This list contains all the items that can be restored from all the selected List(s), Customer List(s) or Document Libraries. • Click on the list item(s) you want to restore (use CTRL + click for multiple items).

Select Source Mailbox and folder (Exchange Item-Level)

Use this dialog box to select the specific items that you want to restore.

Source Mailbox List • This list shows the mailboxes in the mounted recovery database. • You can add only one mailbox per pass through the wizard. To add more, open this wizard again.
Source Folder List • This list shows the folders in the selected mailbox. You can select <ALL> or individual sub-folders.

Select Synchronization Options

This dialog box allows you to check or synchronize between the DS-Client backup logs, and the DS-System online storage.

Normal	Select to compare and update where necessary, the DS-Client backup log (database) with the DS-System's Online storage information.
Check only	Select to perform only a check of the synchronization between the DS-Client's backup log and the DS-System's Online storage. This will only identify whether inconsistencies exist (i.e. no corrective action will be taken.).
DS-System based	Select to update the entire DS-Client backup log with the DS-System's online storage information. (Caution: A directory's “last seen” information is not recreated, since that information is not stored on the DS-System. The only difference this has is you cannot use the “...deleted from source...” filter option in either delete or restore operations for this backup set.)
Sync Local Storage	[Local Storage Tool Only] Select to compare and update where necessary, the DS-Client backup log (database) with the files in Local Storage.
Synchronize	Click to start the Synchronization using the method selected.
Note	
1	Since the DS-System does not store "last seen" information about directories, the DS-System based option will update the DS-Client backup log without a directory's "last seen" information. The only difference this has is you cannot use the "...deleted from source..." filter option in either Delete or Restore operations.

Select Target Mailbox and folder (Exchange Item-Level)

Use this dialog box to select the target mailbox and folder for the items that you have selected for restore.

Target Mailbox List • By default, the restore will be done to the original mailbox location. • You can choose to restore to alternate mailbox(es), but if you do this, all items you select will be restored to the target(s) you specify. • Click [>>] to open the “Select Target Mailboxes (Exchange Item-Level)” dialog box.

Target E-Mail Folder List • By default, the restore will be done to the original email folder location. • You can choose to restore to an alternate folder. • Top folder: Allows you to select from a list of common folders. • Sub-folder: Allows you to create a new target folder under the selected top folder.

Select Target Mailboxes (Exchange Item-Level)

Use this dialog box to select alternate target mailboxes for restore.

Available Mailboxes • Shows the list of available mailboxes on the target restore Microsoft Exchange Mailbox server. Columns include: • Mailbox: Name of the mailbox user • SMTP Address: Microsoft Exchange email address of the corresponding Mailbox user.	
Select	Selects the highlighted Mailboxes from the “Available Mailboxes” list.
New	Create a new mailbox on the target Microsoft Exchange server. • Opens the “New Mailbox (Exchange Item-Level)” dialog box.

Select the computer

This dialog box appears when you are required to select a network, computer, or server. Browse the tree to make your selection for a backup set or a VM replication set.

The title of this dialog box will differ depending on your task and your previous selections.

Path	**Backup** • DS-Client - Shows the network path of the item selected in the tree. • SharePoint (Granular Restore) - Enter the computer Name or IP address of the target Microsoft SQL server (containing the restored SharePoint database) into this box. • Backup from the Cloud (Google G Suite) - You are required to enter your G Suite domain name if using the “Service account login”. • Backup from the Cloud (Microsoft Office 365) - By default, office.microsoft.com is specified. • Microsoft Exchange Server (using EWS) - Type the IP address of the source Microsoft Exchange server. **VM replication** • VMware vSphere snapshot replication - Type the IP address of the source vCenter Server. • Microsoft Hyper-V checkpoint replication - Type the IP address of the source Microsoft Hyper-V Server.

Ask for Network Credentials	**Backup** Prompts you to type a valid user name and password for the selected computer. Note: You must connect to the computer with an Administrator (or equivalent) account. **VM replication** Ensure that this check box is selected so that you will be prompted to provide the credentials necessary for DS-Client to access the source server.
Ask for NAS API credentials (NAS only)	Prompts you to enter valid connection information for the selected NAS. • Opens the Enter NAS API Parameters (Windows DS-Client) dialog box.
Ask for Database Credentials (Databases only)	Prompts you to type a valid user name and password for the database server. For more information on the requirements for backing up Oracle database servers, see the Knowledge Base article Backup / restore of Oracle database servers.
Use DS-Client Account (Windows DS-Client only)	Allows you to use the DS-Client service's account credentials to connect to the local (DS-Client) computer. • You must be logged on through DS-User using an Administrator account (or equivalent). • This option is only available when you select "My Computer" (i.e. the local DS-Client computer).
Client ID for native application (G Suite only)	Select this option to provide a client ID for native application. DS-Client will use this client ID to access the Google account for which the client ID was generated. This option allows DS-Client to access only one Google account. For details on prerequisites, see the Knowledge Base article in Section 15.23, "Backup from the Cloud (Google G Suite)", on page 595.
Service account logon (G Suite only)	Select this option to provide the credentials of a service account. DS-Client will use the service account credentials to access one or multiple accounts on your G Suite domain. For details on prerequisites, see the Knowledge Base article in Section 15.23, "Backup from the Cloud (Google G Suite)", on page 595.
www	Type the name of the G Suite cloud service domain for which you want to back up data. Ensure the name is typed correctly; otherwise, DS-Client will be unable to log on to the domain for you to select items for backup. This box appears only when you select **Service account logon**.

Select the computer (Linux DS-Client)

This dialog box appears when you are required to select a network or computer. Use the tree to browse and make your selection.

Path / IP Address	Shows the network path of the item selected in the tree. You can also type a path directly in this box in the same form as the following examples: • Local File System\My Computer • NAS\10.20.33.123 • NFS\10.10.70.88
Ask for local machine credentials (Local File System, NAS, or NFS)	Prompts you to type a valid user name and password for the selected source. • For NFS backup sets, these credentials are for the source or database server that initiates the connection (not the remote computer NFS is trying to connect to).
Ask for remote machine credentials (UNIX-SSH)	Prompts you to type a valid user name and password for the selected source.
Ask for Database Credentials (Databases only)	Prompts you to type a valid user name and password for the database server.
Database Dump Configuration (PostgreSQL & MySQL databases only)	Select if you want to instruct DS-Client to use a specific database dump app. If you do not make a specification, DS-Client will choose on its own. • If selected, the "Database Dump Configuration" dialog box opens after the DS-Client successfully connects to the database server.
Ask for NAS API credentials (NAS only)	Prompts you to enter valid connection information for the selected NAS. • Opens the "Specify Credentials (Linux DS-Client)" dialog box.
"sudo" as an alternate user (UNIX-SSH only)	Shows the credentials that Linux DS-Client will use to access data on the network resource. • After successful login to the remote source, "sudo" (switch user) will be performed for Linux DS-Client to use these credentials.
Advanced connection options (UNIX-SSH only)	By default (if this is not selected), UNIX-SSH will run a PERL script on the target machine to perform backups. • Click [...] to edit the settings. See Advanced Connection Options (Linux DS-Client) for more information.

Select the path for the database dump file (Linux DS-Client)

This dialog box appears when you are required to select a path for the database dump. Use the tree to browse and make your selection.

Select the protocol for dumping database file (Linux DS-Client)

To back up an active Oracle or DB2 database, a copy or "dump" of the database must be made. Use this dialog box to select the method to handle the database dump file.

Local File System (for Oracle or DB2 servers on the DS-Client computer).	The DS-Client will dump the database into the specified path on the local file system (on the DS-Client computer). The DS-Client transmits the files to DS-System.
NFS (for remote Oracle or DB2 Server)	DS-Client will read the database dump files from the database server through the NFS transmission protocol, then sends them to DS-System.
UNIX-SSH (for remote Oracle or DB2 Server)	DS-Client will read the database dump files from the database server through the UNIX-SSH transmission protocol, then send them to DS-System.
DS-PIPE (Oracle only)	DS-PIPE is an alternative to the database dump for Oracle database server backups. This option does not consume any additional disk space. During backups, the DS-Client reads from the pipe on the source database. This method is useful if your database is too big to be dumped to a file on either the database server or the DS-Client buffer.

Select the Restore Method

This dialog box appears when you select a backup set that offers different ways to restore the backed up data. You must select the restore method you want to use.

VSS Restore (VSS-aware sets)	Performs an online restore of the selected backup session to the original backup source (or alternate location) using the destination computer's Microsoft VSS tools.
Database Restore (Microsoft SQL Server (VSS-aware) sets)	Performs an online restore of the selected backup session to the original backup source (or alternate location).
File Restore (VSS-aware sets)	Allows you to selectively restore individual files from a backup session.
Table Restore (Salesforce.com)	Performs a restore of a backed up Salesforce.com database at table-level.
Granular Restore (Microsoft Exchange) (Microsoft SharePoint) (Salesforce.com)	This option is available for Microsoft Exchange Server (VSS-aware), Microsoft SharePoint Server (VSS-aware), and Backup from the Cloud (Salesforce.com) backup sets. • Step 1 Database Restore: Restores the backed up database to a local dump file. • Step 2 Items Restore: Restores individual items from the database restored in step 1. Note: If you are restoring from a BLM Restorable Image or Disc/Tape media, you can only perform Step 1 - the database restore from that media. Step 2 must always be performed from the database restored in Step 1.
File Level Restore (VSS-aware sets)	This option applies only to VSS-aware backup sets for standalone Microsoft Hyper-V or Microsoft Hyper-V cluster that have been backed up with the **Use FLR** option selected in the Set Properties - Options Tab. • Allows you to selectively restore individual files from what was on the hard disk(s) of the Hyper-V virtual machine.

Select the Source Host and Datastore for Failback

This dialog box allows you modify the source host and datastore to be used for the failback process on a replicated virtual machine. The text box at the bottom identifies the virtual machine to which the source host and datastore apply.

Source host and datastore	
Original host	Displays the original source host.
Failback to host	Allows you to select a target host to be used in the failback process.
Original datastore	Displays the original source datastore.
Failback to datastore	Allows you to select a target datastore to be used in the failback process.
Failback	Click this button to start the failback process. Any selections that you have made will be saved.
Cancel	To cancel, click this button. The failback process will not start.

Select the VSS-aware backup set type

This dialog box allows you to select the backup set type for VSS-aware backup sets. VSS only works with Windows DS-Clients, and the target Windows computer must have the Microsoft Volume Shadow Copy Service (VSS) components necessary to perform this type of backup.

Microsoft SQL Server	Performs online backup of a SQL server using the target computer's Microsoft VSS components.
Microsoft Exchange Server	Performs online backup of an Exchange server using the target computer's Microsoft VSS components.
Microsoft Hyper-V	Performs online backup of a Hyper-V virtual machine using the target computer's Microsoft VSS components.
Microsoft Cluster Hyper-V	Performs online backup of a Hyper-V cluster using the target virtual node's Microsoft VSS components. • Refer to the Knowledge Base article in Section 15.19, "Backup / restore of Microsoft Hyper-V Server (VSS-aware) backup sets", on page 574 for specific instructions before proceeding.
Microsoft SharePoint Server	Performs online backup of a Microsoft SharePoint Server using the target computer's Microsoft VSS components.

Select Virtual Ethernet Switch

This screen allows you to select a virtual switch that is configured on the target Hyper-V server.

Select VM Replication Type

Use this dialog box to select the type of servers on which you want to perform VM replication.

VMware vSphere snapshot replication	Replicates virtual machines on VMware vCenter Servers.
Hyper-V checkpoint replication	Replicates virtual machines on Microsoft Hyper-V Servers.

Select VMR Generation

This dialog box lists all successfully replicated generations of the source virtual machine. Select the generation that you want to use.

Select VSS Writers or Components

This dialog box shows the VSS Writers and components available on the target backup Windows computer. Any item you select will be specifically excluded when the VSS-aware backup is run.

This option is useful if you want to prevent specific VSS Writers or components from performing snapshots when a backup of this set is performed.

Selection

This dialog box displays the selection that you have made so far. This is useful if you have selected several items from different directories, and you want to review your selection.

Icon Column	This column displays different icons, depending on the item type.
File/Directory Name	This column shows the corresponding file name or directory path.

Send Unprotected LAN Resource Discovery E-Mail

UNPROTECTED LAN RESOURCE DISCOVERY TOOL

The Discovery Wizard helps you to identify all the unprotected resource (shares) on your LAN. This dialog box allows you to email the results of the last scan.

E-Mail	Enter the email address of the recipient(s). • Separate multiple addresses with a semi-colon (;) or a comma (,).
Format	Choose the email format: • HTML • Plain Text

Set Backup Set(s) Priority for Schedule '...'

This dialog box allows you to set the priority for backup sets using this schedule. You can also limit the number of simultaneous backups that this schedule will perform.

Backup Set List	Shows a list of the backup sets using this schedule.
#	Shows the priority of the corresponding backup set within this schedule.
Name	Shows the node\name (owner) of the backup set.
Backup set priority	Use this number box to increase or decrease a selected backup set's backup priority within the schedule. Higher priority items (i.e. lower numbers) will be run first.
Schedule ... backup sets at the time	This counter allows you to limit the number of backup sets that will be run simultaneously by this schedule. (This is useful if some data must be backed up through a slower connection, and there is no benefit to running simultaneous backups. It also allows you to increase the concurrent backup sessions, if the DS-Client hardware has the required processing power.) Note: The DS-Client database has a parameter for Maximum Concurrent Activities that affects the number of backups that can be scheduled at one time. This is set from Setup Menu > DS-Client Configuration: Advanced Tab • For Windows DS-Clients, the parameter name is "MaxSessions" (in the "Performance" category). For Grid DS-Clients, the limit will be the **sum** of all the "MaxSessions" parameters from all running nodes. • For UNIX DS-Clients, the parameter name is "MaxSession Number".

Set Budget Password

New Password	Type your new password in the New Password box. **Note:** Windows Passwords are cAsE SensiTiVE
Verify new Password	Type your new password again in the Verify new Password box.

Set Credentials

LAN STORAGE DISCOVERY TOOL / UNPROTECTED LAN RESOURCE DISCOVERY TOOL

Use this dialog box to set the credentials used to scan LAN shares

Connect as	Type the User Name in this box.
Password	Type the corresponding password in this box.

From	[If applicable] Select the machine where the DS-Client will verify your User Name and password. Normally this will be the same as the server that you are connecting to. However if the computer running DS-Client is a domain member, you can select from the available list of domains.
Priority (Share Discovery Wizard)	Enter the priority number - the lower the number, the higher the priority. The DS-Client will connect to the share(s) with the supplied credentials in this order.

Set Follow Option

LAN STORAGE DISCOVERY TOOL

NTFS shares only.

Follow	Will follow Reparse Points encountered in a scanned share. A Reparse Point is a link to a different location (directory or device). This will result in a larger amount scanned.
Don't Follow	Will not follow Reparse Points encountered in a scanned share.
Reverse follow setting	Inverts the highlighted share(s) setting.

Set Initial Backup Path

You must have at least one path configured to perform an Initial Backup.

Path List	Shows a list of all paths that you can assign for Initial backup set data. • Icon: Shows the path's encryption configuration (plain icon = no encryption, green key icon = encrypted with DS-Client private key, red key icon = encrypted with user-defined key) • Path: Location where the initial backup data will be written. • Total Space: Size of the volume where the path is located. • Available Space: Free space remaining on the volume where the path is located.
Add	Click to add a new path.
Credentials (Windows DS-Client only)	Allows you to specify different credentials to the highlighted path. • Opens the Specify Credentials (Windows DS-Client) dialog box.

Set Properties - Advanced Options tab (Windows DS-Client)

This screen can appear in a wizard or a properties dialog box. It applies to Windows File system and Microsoft Exchange Server backup sets.

Windows 2000 & up options (only if supported by the Windows operating system version) • Note: The defaults are OFF for all of these options. If you select any of these options, the backup data will increase.

Backup data in Remote Storage	Backup all data on remote media. Some Windows operating systems have the functionality to migrate infrequently accessed data from the local hard drive to directly attached tape libraries. The local disk usage is reduced by replacing the file with a link (shortcut). If disabled, only the link (shortcut file) will be backed up.
Backup Single Instance Store / Data Deduplication file data	Backup each instance of a file separately. Some Windows operating systems have an optional service 'Single Instance Store' to handle multiple copies of the same file on the computer. Local disk usage is reduced by placing one copy of the file in the Single Instance Store, with links (shortcuts) in all associated directories. If disabled, only the link will be backed up. If you have activated the Single Instance Store Service, check this option.
Follow junction point	Junction points are links to other directories. If this option is enabled, all data in the directory referenced by the junction point will be backed up. If disabled, only links to the directory will be backed up (not the data within the directory). • Notes: Junction points that are mounted FAT or FAT32 volumes are not supported.
Volume Shadow Copy • Windows computers only (if supported by the operating system version)	
Backup through volume shadow copies	DS-Client will initiate a VSS (Volume Shadow Copy Service) snapshot for the specified computer (for any local volumes included in the backup) and perform the backup from the VSS snapshot. • If the VSS snapshot fails, DS-Client tries to backup like a File system backup set. • For more information about VSS, refer to the corresponding Windows Help.
Do not involve writers	By default, the DS-Client will make each writer commit its data before doing the VSS snapshot (e.g. Registry, SQL Server and other applications are VSS Aware and can freeze their own I/O while the snapshot is performed). • If you check “Do not involve writers”, it means that the DS-Client will not notify the VSS Aware applications that a backup is performed and the resulting backup will be only crash-consistent (i.e. it will contain whatever was on the hard disk during the backup). • For more information about VSS, refer to the corresponding Windows Help.
Do not process components	By default, VSS backups are performed with the ‘process components’ option. Processing components means verifying if their files or their dependent component files are all included in the volumes selected for snapshot. • By default, this option is off. If selected, the VSS snapshot will be performed without processing components. • This option is useful if you have selected only a portion of a component for backup and do not want to encounter errors (because the VSS verification would otherwise detect missing files or dependencies).

Exclude some writers / components	If you select this option, you can manually select specific VSS writers or components on the target source that will not be used. This has the same effect as choosing 'Do not involve writers', but only for those writers or components you specifically choose. • Click [>>] to open the Select VSS Writers or Components dialog box.
Pure file data backup options • This section only applies to Windows File system backup sets.	
Non-filtered share data backup	The default is OFF. This option controls the automatic file filtering performed by the DS-Client during Windows file system backups. By default, the Windows DS-Client will exclude some files automatically out of the share-based backup of files, even if such files would be readable (e.g. when using VSS). The excluded files can include: • temporary files (e.g. pagefile.sys) • files that are being backed up as part of "System State" backups (e.g. operating system DLLs, executable) • Registry hive files • Other files that can interfere with a successful Agentless BMR This option should usually remain cleared, unless there are specific reasons why all such excluded data would need to be included in the share-based backup. Selecting this option will interfere with the ability to perform Agentless BMR without manual file filtering, however it can be used in conjunction with the VSS option to allow bootable-disk BMR (this requires 3rd-party BMR provisioning integration). It is recommended that unless BMR provisioning is supported by your installed DS-Client, you should leave this option cleared.
Backup strategy for backed up files • This covers how DS-Client handles files that are already backed up.	
Force backup even if the modified time and size did not change	If selected, DS-Client will force a re-backup of a file, even if its "last modified" time and size have not changed since the last backup.

Set Properties - API Access

This dialog box shows the logon mode and credentials that are used by DS-Client during backup activities for the Cloud (Google G Suite) backup set (Windows). The logon mode was set when the backup set was created, and it cannot be changed.

- When the backup set is set to the **Service account logon** mode, you can click **[>>]** to provide a different set of credentials as necessary.
- When the backup set is set to the **Client ID for native application** logon mode, credentials cannot be changed.

Set Properties - Backup from the Cloud (Salesforce.com) Parameters

This screen can appear in a wizard or a properties dialog box. It allows you to view or change information about the selected backup set.

Parameters	
Keep DB dump for differential backup	[Local Storage Path must be configured (from the DS-Client Configuration Parameters Tab).] • **OFF**: The database will be dumped to the DS-Client Buffer and removed after the backup process finishes. • **ON**: The database will be dumped to the Local Storage Path and kept. Subsequent backups can use the previous DB dump for differential comparison, which can speed up the backup.
Include referenced tables automatically	• **OFF**: Backup only the selected tables. • **ON**: If a selected table references other table(s), the backup will automatically include those table(s).
Timeout	This parameter specifies how long DS-Client will wait for a response from the Cloud Server before timing out (and failing the corresponding activity). • Range 1-1000, default is 100 (seconds)
Buffer Size	The maximum size DS-Client will buffer for each query requested from / to the Cloud Server. If the buffer reaches this limit (before the “Query Batch Size” or “Destination Batch Size” is reached), the data will be immediately transferred to clear the buffer. • Range 1-128, default is 20 (MB)
Query Batch Size	Each time DS-Client needs to read from the Cloud Server, it queries the database to return batches of this number of rows at a time (until the query is finished). • Range 1-1000, default is 200 (rows)
Destination Batch Size	Each time DS-Client needs to write to the Cloud Server, it updates the database in batches of this number of rows at a time (until all data is written). • Range 1-1000, default is 100 (rows)

Set Properties - Connection Options tab (Linux DS-Client)

This screen can appear in a wizard or a properties dialog box. It allows you to view or change information about the selected backup set.

Connection Options	
Ask for credentials	Prompts you to type a valid user name and password for the selected source or database server. • Click [...] to edit the credentials. See Specify Credentials (Linux DS-Client) for more information.
‘sudo’ as an alternate user (UNIX-SSH only)	Shows the credentials that Linux DS-Client will use to access data on the network resource. • After successful login to the remote source, "sudo" (switch user) will be performed for Linux DS-Client to use these credentials.

Advanced Connection Option (UNIX-SSH only)	The default (if no selection is made) is for DS-Client to run a PERL script. • Click [...] to edit the settings. See Advanced Connection Options (Linux DS-Client) for more information.
Ask for Database Credentials (Databases only)	Prompts you to type a valid user name and password for the database server.
Database Dump Configuration (PostgreSQL & MySQL databases only)	Select if you want to instruct DS-Client to use a specific database dump app. If you do not make a specification, DS-Client will choose one on its own. • If selected, the "Database Dump Configuration" dialog box opens after the DS-Client successfully connects to the database server.
Ask for NAS API credentials (NAS only)	Prompts you to enter valid connection information for the selected NAS. • Opens the "Specify Credentials (Linux DS-Client)" dialog box.
Dump Options (Oracle / DB2)	
Dump to	Shows the location where the database will be dumped. • **Oracle**: Cannot be changed (protocol is set when backup set is created). • **DB2**: Click [...] to edit the dump location.
Media management library name (Oracle Only)	This is the full path on the Oracle Server where the file `libobk` has been copied. • You must specify this path for Oracle running on the AIX platform.
Archive log path (DB2 only)	This box only appears if the backup set was created with the DB2 "Online Backup" option selected (Set Properties - Options tab). • This is the path where the DB2 Archive Log files are written by the 'User Exit' program. • Click [...] to specify the path. This opens the Select Directory dialog box.
Restore log path (DB2 only)	This box only appears if the backup set was created with the DB2 "Online Backup" option selected (Set Properties - Options tab). • This path will appear by default in the "ArchiveLog Path" box of the Restore Wizard for this backup set. • This is the path where the DB2 Archive Log files will be retrieved by the 'User Exit' program. • Click [...] to specify the path. This opens the Select Directory dialog box.
Ask for network credentials	Prompts you to type a valid user name and password for the dump location. • Click [...] to edit the credentials. See Specify Credentials (Linux DS-Client) for more information.
'sudo' as an alternate user (DB2 only using UNIX-SSH protocol)	Shows the credentials that Linux DS-Client will use to access data on the network resource. • After successful login to the remote source, "sudo" (switch user) will be performed for Linux DS-Client to use these credentials.

Advanced Connection Option (DB2 only using UNIX-SSH protocol)	The default (if no selection is made) is for DS-Client to run a PERL script. • Click [...] to edit the settings. See Advanced Connection Options (Linux DS-Client) for more information.

Set Properties - Connection tab

This screen can appear in a wizard or a properties dialog box. It allows you to view or change information about the selected backup set.

Exchange Server backup sets	
Connect as (to Database Server)	Enter Connect As information in this box. • Click >> to open the Modify Network Credentials dialog box. • See Specify Credentials (Windows DS-Client) for more information.
Dump to	This box shows the method and location for the database dump. DS-Client Buffer: dump to the DS-Client computer's disk storage. DS-Client Pipe: opens a named pipe to send the backup directly through the DS-Client to the DS-System without a database dump. • Click >> to open the Select share & path for the database / data dump

Set Properties - Connections tab (Email message backup sets)

This screen allows you to view or change connection information about the selected Email message backup set (Microsoft Outlook).

Connection info	
Connect as (to DS-MLR computer)	Enter Connect As information in this box. • Click >> to open the Modify Network Credentials dialog box. • See Specify Credentials (Windows DS-Client) for more information.

Set Properties - DAG options tab

This tab appears in the backup set properties for Microsoft Exchange (VSS-aware) backup set configured to back up a Microsoft Exchange Database Availability Group (DAG).

Exchange DAG Information	
DAG name	If the Microsoft Exchange Server is in a DAG configuration, the DAG name appears in this read-only box.
DAG IP address	If the Microsoft Exchange Server is in a DAG configuration, the DAG IP address appears in this read-only box if it exists.
Domain name	If the Microsoft Exchange Server is in a DAG configuration, the domain name appears in this read-only box if the DAG is a member of a domain.

Back up active databases	Select this option to back up the active databases in the DAG.
Back up passive databases	Select this option to back up the passive databases in the DAG.
Please select the priority of mail server nodes If you are backing up the passive databases, this section activates to allow you to prioritize the order in which the mail server nodes are backed up. Select a mail server node, and then click **Move Up** or **Move Down** to set the backup order.	

Set Properties - Database tab

This screen can appear in a wizard or a properties dialog box. It allows you to view information about the selected database backup set.

Database Info	
Character Set	Shows the character set used by the Database.
Sort Order	Shows the sort order used by the Database.
Connect as (to Database)	Enter Connect As information in this box. Click >> to open the Modify Network Credentials dialog box. See Specify Credentials (Windows DS-Client) for more information.
Access Integrated with Share	Uses the share credentials for access to the database. When checked, this disables selection of the Connect as (to Database). • Note: This option will not work if your network is using Windows Integrated Security.
Dump Info	
Dump to	This box shows the method and location for the database dump. • **Path**: dump to the local database computer's disk storage. • **DS-Client Buffer**: dump to the DS-Client computer's disk storage. • **DS-Client Pipe**: opens a named pipe to send the backup directly through the DS-Client to the DS-System without a database dump. Click >> to open the Select share & path for the database / data dump
Connect as (to share)	Displays the user access credentials to the shared resource. Click >> to open the Modify Network Credentials dialog box.

Set Properties - Destination tab

This dialog box appears in the New Replication Set Wizard or the Set Properties dialog box. It allows you to view and change the destination settings in a VM replication set.

Destination DS-Client Info • **The source DS-Client will send VM replication data to this destination DS-Client.**	
Destination DS-Client	The IP addresses in this dropdown list are configured by your service provider on the DS-System. • Select the DS-Client from the list. • This is the IP address of the destination DS-Client that will be responsible for connecting to the target vCenter Server and sending the VM replication data.
Destination Port	This list allows you to specify the port used by the destination DS-Client. Ensure that the appropriate port is selected.
Destination Hypervisor info This is the destination server to which DS-Client will sent VM replication data. • VMware vSphere: The destination server is the destination vCenter Server. • Microsoft Hyper-V: The destination server is the destination Hyper-V Server.	
Hypervisor IP	Enter the IP address of the destination server.
Username	Enter the credentials that are necessary for DS-Client to access the destination server (or click the Browse **...** button to open a key file that contains the required user name and password). The user must have sufficient rights to write data to the destination server. • If logging on as a domain user, type the domain and user name. (For example: `dchv\user126`) • If logging on as a local user, type only the user name. (For example: `user126`)
Password	Enter the credentials that are necessary for DS-Client to access the destination server.
Destination DataCenter (VMware only)	This drop-down list shows all available DataCenters on the destination vCenter Server. The list is automatically updated after DS-Client has successful connected to the destination vCenter Server. The replication target virtual machine will be located in the DataCenter that is selected in this list.

Set Properties - Items tab

This dialog box can appear in the New Backup Set Wizard, New Replication Set Wizard, or the Set Properties dialog box. It allows you to view and modify options selected for backup set items and replication set items. These settings are applied each time backup is performed for a backup set or each time replication is performed for a VM replication set.

Item & options for backup	
Items	**Backup** Shows a list with the item(s) specified for backup. **Replication** Shows the virtual machine(s) selected for replication.

Max Gen	**Backup** Click in this box to change the maximum generations settings of the highlighted backup item (that will be stored online). **Replication** This value refers to the maximum number of snapshots of the replication target virtual machine that will be available for both failover and failback. For Microsoft Hyper-V, the allowed range is 4-47. For VMware, the allowed range is 1-30.
Options	Letters that appear in this column correspond to the following options: • P = Backup permissions • S = Backup streams • E = Extended Attributes • D = Run DBCC before backup • S = Stop on DBCC errors • T = Truncate Transaction Log / Truncate Archived Logs / Backup Transaction Log • B = Backup Only Current Archived Logs • L = Logical Corruption Check To add or remove a backup item option, highlight the item's row in the list and check or clear the option that appears beneath this list. See below for details about individual options.
Backup permissions (Windows, NetWare)	Backs up the file permissions. (ex: ACL on NTFS volumes, or Trustees on NetWare volumes.)
Backup streams (Windows)	NTFS volumes support multiple streams of data associated with a particular file. Select this option if you have files that contain alternate data streams.
Backup EAttributes (NetWare)	These are the Extended File Attributes (ex: Transactional and Compressed)
Run DBCC before backup (Microsoft SQL)	The Database Consistency Check (DBCC) verifies database integrity to ensure backup of a valid database dump.
Truncate transaction log (Microsoft Exchange Server)	Truncates the transaction log. • **Microsoft Exchange Server**: Transaction Logs are truncated after the backup.
Backup Transaction Log (Microsoft SQL Server)	The database must be configured with FULL or BULK_LOGGED recovery mode, otherwise this option will have no effect. • If selected, the DS-Client will dump the Transaction Log and send it to the DS-System in addition to the database(s). If selected, the Transaction Logs will also be truncated. The timing of the truncation depends on the Database Backup Policy (see Set Properties - Options tab). • Full - Transaction Logs are truncated before the database dump. • Differential - Transaction Logs are truncated before the database dump. • Incremental - Transaction Logs are first backed up, and then truncated.

Stop on DBCC errors (Microsoft SQL)	If DBCC errors are detected, this option will skip backing up the dump file(s).
Backup active database (VSS-aware backup set; Microsoft Exchange)	If you have selected **Microsoft Information Store** (that is, the entire Mailbox server) as the backup set item, DS-Client backs up both active and passive mailbox database copies by default. Select this option to back up copies of the active mailbox databases only. Do not select this option if you have selected one or multiple folders or individual mailbox databases as backup set items. This option applies only to an Exchange Mailbox server in a database availability group (DAG).
Backup passive database (VSS-aware backup set; Microsoft Exchange)	If you have selected **Microsoft Information Store** (that is, the entire Mailbox server) as the backup set item, DS-Client backs up both active and passive mailbox database copies by default. Select this option to back up copies of the passive mailbox databases only. Do not select this option if you have selected one or multiple folders or individual mailbox databases as backup set items. This option applies only to an Exchange Mailbox server in a database availability group (DAG).
Logical Corruption Check (Oracle Server)	Verifies the database for corruptions.
Backup Only Current Archived Logs (Oracle Server)	Select to backup only those logs that are necessary for the Oracle database. This saves backup space, by avoiding backup of any older logs. Leave this box cleared if you want to backup all log files.
Truncate archived logs (Oracle Server)	Clear the Oracle Database logs associated with this item after backup.
Filter (Email message backup sets)	Click to add a filter to the email backup item. Opens the Select Filter dialog box.
Edit	Click to add more backup items. Opens the Select items for backup set dialog box.

Set Properties - Items tab (Linux DS-Client)

This screen can appear in a wizard or a properties dialog box. It allows you to view and change the option settings for backup set items. These settings are applied each time the set is backed up.

Item & options for backup	
Items	Shows a list with the item(s) specified for backup.
Max Gen	Click in this box to change the maximum generations settings of the highlighted backup item (that will be stored online).

Options	Letters that appear in this column correspond to the following options: • P = Permissions (ACL) • R = Resource Fork • A = Backup File Attributes • X = Backup POSIX ACL • S = Backup SElinux To add or remove a backup item option, highlight the item's row in the list and check or clear the option that appears beneath this list. See below for details about individual options.
Backup ACL	Backs up the Access Control List (file permissions)
Backup POSIX ACL (Linux DS-Client)	This only applies to backups of the Local File System. Select this box to backup the "Extended ACL" (if configured). • These are the permissions set using the 'setfacl' command (and viewed using the 'getfacl' command).
Backup SElinux (Linux DS-Client)	Backs up the Security Enhanced Linux attribute of files or folders. • Local File System and SSH backup sets only. • For SSH backup sets with Perl (default), the target Linux machine must have the "Linux-UserXAttr" package installed for this option to appear. • For SSH backup sets with Python, the target Linux machine must have the "pyxattr" package installed for this option to appear. Note: How to install xattr with python: • Download python xattr from their website (http://pypi.python.org/pypi/xattr). • After extracting the downloaded package, open a terminal and run the command: "python setup.py install" • After the installation finishes, you can use SSH to backup the selinux attribute with python.
Backup Resource (Macintosh DS-Client)	Backs up the Resource Fork of a file on the Mac platform.
Backup File Attributes (Macintosh DS-Client)	Backs up the File Attributes for files on the Mac platform.
Edit (Properties Dialog only)	Opens the Directories or Database Tree, allowing you to add or remove backup items.

Set Properties - Notification tab

This screen can appear in a wizard or a properties dialog box. It allows you to view and change the notification settings for individual backup sets. These settings are applied each time the set is backed up.

Notification List This list shows all of the specified recipients of notification messages for the backup set.	
Icon	This column displays different icons, depending on the notification type.
Completion	A notification will be sent if the backup meets the specified completion status.

Detailed	Indicates that this backup notification contains a detailed log (i.e. File IDs).
Recipient	Indicates the recipient of the corresponding notification message.
Add	Opens the Add Notification. This allows you to add more notification recipients.
Modify	Allows you to change the highlighted notification setting.
Delete	Allows you to delete the highlighted notification setting.
Send SNMP traps when Select all that apply. Traps are sent according to the configurations in Setup > Configuration > SNMP	
Successful	Monitors this set for successful backups (completed without errors or warnings).
Completed with warnings	Monitors this set for backups that are completed with warnings.
Completed with errors	Monitors this set for backups that are completed with errors.
Incomplete	Monitors this set for backup failures (where the backup was stopped, interrupted or could not otherwise finish normally).

Set Properties - Options tab

This dialog box can appear in the New Backup Set Wizard, New Replication Set Wizard, or the **Set Properties** dialog box.

For backup, you can view and change a number of options settings for individual backup sets. These settings are applied each time the set is backed up.

For VM replication, two options in this dialog box are applicable to each VM replication set: Initial replication and Stop on errors.

Additional Backup Set Options	**The options in this section are specific to the type of backup set:** • MySQL backup sets. • Email message backup set for Microsoft Exchange Server using MAPI • Local DS-VDR & VMware VADP backup sets. • Physical to Virtual backup sets.
Backup set options	
Use buffer	If checked, files will be copied to the DS-Client Buffer (i.e. as fast as possible for the given server and LAN speed). This will free up the backup source as fast as possible. Then the DS-Client will send the files from the DS-Client buffer to the DS-System. **Note**: This option cannot be used if Continuous Data Protection (CDP) is selected. This option is not applicable for VMware VADP backup sets.
Detailed log	Records all files that are backed up (you can view them in the Activity Log).

Stop on errors	DS-Client will stop a backup process or a VM replication process when the number of errors encountered reaches this specified value. • range 0-9999; the value 0 means that the number of errors encountered will not cause DS-Client to stop a backup process or VM replication process. • **Note:** The global default that appears in the New Backup Set Wizard or New Replication Set Wizard can be configured using the Windows DS-Client "MaxErrors" Advanced Parameter.
Continuous Data Protection	Select this box to enable continuous data protection (CDP) in this backup set. To modify CDP settings for the backup set, click **>>**. **Note:** This option is unavailable when the **Use buffer** option is selected.
Initial Backup	When creating a new backup set, select this check box to use the Initial Backup feature for the first backup. Click **>>** to select the Initial Backup Path.
Initial replication	When creating a new VM replication set, select this check box to perform offline VM replication. Click **>>** to select a local disk location to which DS-Client should save the VM replication data.
Disable Common Files	This box appears if the feature is activated by your service provider. If checked, the backup set's files will be excluded from Common File storage reduction. This means duplicate files will be encrypted and backed up individually, thereby potentially increasing the stored size. • You can only set this feature in the New Backup Set Wizard. It cannot be changed afterwards.
BLM (Infinite Generations) (Backup Lifecycle Management module must be enabled)	Backup sets are configured to save a specific number of generations. Once a backup item reaches this number of generations, the oldest will be overwritten with each new generation backed up. Select to configure this backup set for BLM. When applicable, the DS-Client will instruct DS-System to send a copy of the oldest generation (that is about to be overwritten) to the BLM Archiver.
Use Local Storage • These options appear if you have the Local Storage Tool Enabled from your service provider, and you have specified a Local Storage Path in the DS-Client Configuration Parameters Tab.	
Save	Select this box to indicate this backup set will also be saved to a Local Storage location (at the DS-Client site). • Backup data will be sent to the location specified in the Local Storage Path box.
Cache	Select this box to indicate this backup set will use the Local Storage as a cache, in case a backup session loses connection with DS-System. • Cached backup data will be sent to DS-System at the next connection opportunity (after synchronization). • Backup data will be sent to the location specified in the Local Storage Path box.

Local Storage Path	Click [>>] to choose a specific local storage path for this backup set. • Opens the Enter Local Storage Path. • If you do not make a selection, the path from the DS-Client Configuration Parameters Tab is used.
Instant Recovery	Indicates if this backup set is being saved to an instant recovery vault.
PreScan	If checked, the backup set is flagged to scan all files in the backup set prior to backup to display an estimated completion time for the backup.
Compression Type	You can select the compression type: • LZOP: A faster compression than ZLIB, that comes at the expense of less compression. • ZLIB: This compression method will normally produce better compression than LZOP, but will take more time to compress. Four different ZLIB strengths are available (Global, High, Medium, and Low). “ZLIB Global” is the default value set in the DS-Client Advanced Configurations ‘DefaultCompression’ parameter; “ZLIB High” corresponds to a value of 9; “ZLIB Medium” = 6; and “ZLIB Low” = 3. • None: Disables compression for this backup set. (This will only apply to backups performed after this section is made. Any backups currently online will retain the compression type used at the time of backup.)
Open Files (File system backup sets) • This information instructs the DS-Client about how to deal with Open (i.e. locked) files. (If the open file has been locked with Deny write by another process, the backup for this file will fail.)	
Try Deny Write	Attempt to open backup file in 'Deny Write' mode. If this fails (because the file is already open), place the backup file in 'Allow Write' mode.
Deny Write	This mode prevents any other process from writing to the backup file, while the DS-Client has it open. DS-Client will not back up the file, if another process has already opened it for write. (However, you can instruct the DS-Client to retry backing up the open file.)
Prevent Write	Attempt to open backup file in 'Deny Write' mode. If this fails (because the file is already open), then open in Allow Write mode and lock the file, thereby preventing any process from writing to the file. This ensures that the most recent version of the file is backed up.
Allow Write	Allow another process to read/write to the backup file (no restrictions). Since other applications can write to the file while it is being backed up, this can affect file consistency.
Retry times	Specifies the number of times you want the DS-Client to attempt to backup the file. (Max. 10 retries).
Retry intervals	Specifies the interval between retries. (Maximum of 999 seconds).
Pre/Post	Click **Pre/Post** to access the Pre & Post Execution dialog box. For more information, see Pre & Post Execution.

Exclude old files (File system backup sets)	Click to access the Exclude Old Files dialog box. For more information, see Exclude Old Files. • **Note:** This option is not available if the Windows "System State" or "Services Database" is selected for backup.

Additional Backup Set Options	**MySQL backup sets.**
Add locks around insert statements	Lock tables before inserting data on restore. (See the MySQL manual page for 'mysqldump' for more information.)
Add MySQL specific table create options	Add MySQL specific extensions to the backed up database dump. (See the MySQL manual page for 'mysqldump' for more information.)
Insert statement type	Specify how table rows are inserted into the database dump (i.e. the style of the 'INSERT' statement). (See the MySQL manual page for 'mysqldump' for more information.) • Extended - Fast insert. Might not be useful for manual loading into non-MySQL databases. • Complete - Uses complete 'INSERT' statements that include column names when inserting rows. • Normal - Standard insert. Slower, but can be more portable to other databases.
Table dumping option	Specify how tables are dumped. (See the MySQL manual page for 'mysqldump' for more information.) • Lock all tables - Prevent changes to data while backup is in progress (sets the tables to read-only mode for duration of backup). [This option is like using the --lock-tables dump option from the command line.] • Single transaction - [only works with transactional tables] This dump approach also prevents changes to the backup data, but does not set tables to read-only mode. • Do not lock tables - If selected, the tables can be changed during the creation of the dump file. Note the consistency impact this can have on the backup. [This option is like using the --skip-lock-tables dump option from the command line.] • None - Dump will be performed using the 'mysqldump' function with no special conditions.
Additional Backup Set Options	**Email message backup set for Microsoft Exchange Server using MAPI**
E-Mail Scan Policy • This section appears only for Microsoft Exchange Server email message backup sets (DS-MLR) that use MAPI. Note: Functionality for discontinued backup sets might still work, even though they are no longer officially supported.	
Full scan: Always	[Default] This is the default behavior for Email message backup sets for Microsoft Exchange Server using MAPI. • Each backup of the target performs a full scan of all items in the target folder.

Full scan: Plus Incremental	Performs a full scan of the target folder on first backup, followed by incremental backups. • During incremental backups, DS-Client / DS-MLR will only retrieve the new or modified items from each folder. • Speed is the benefit of this option. However, since it does not detect items that have been removed from a folder, periodic full backups that perform a full scan should be performed.
E-Mail Scan Policy Schedule Over-ride Rules [OPTIONAL] • This entire section is optional. It provides more precise control over the full scan. • These over-ride rules are applied in addition to the regular backup schedule for this backup set. This means the backup set must be scheduled to run on the first day of the month, if the over-ride rule “Full every month on 1st day...” will apply.	
Do not start full scan on	Prevents a full scan from being performed during the time window on the selected day(s). • This skips performing a full scan of the backup set’s target folders, for up to the maximum number of consecutive times specified in the ‘MaxNonFullDumps’ parameter of the DS-Client Advanced Parameters (Setup Menu > Configuration > Advanced Tab).
Full every	Forces a backup with a full scan to be performed at the specified interval. • hour(s), day(s), week(s), month(s), or year(s)
Full every week on	Forces a full scan to be performed on a specific day of the week. • You must specify a time, after which the backup with a full scan can be performed.
Full every month on	Forces a full scan to be performed on a specific day of the month. • You must specify a time, after which the backup with a full scan can be performed.
Additional Backup Set Options	**Local DS-VDR & VMware VADP backup sets.**
Backup Virtual Machine’s snapshots (Local DS-VDR)	• ON: Backup will ‘export’ the actual running virtual machine and all its snapshots. • OFF: Backup will ‘export’ the actual running virtual machine only (no snapshots).
Export to host (Local DS-VDR)	This list contains the available ESXi hosts where you can export the selected virtual machines. You must assign one as the target. • Click [>>] to open the “Specify Credentials” dialog box.
Export to datastore (Local DS-VDR)	This is a list of available Datastores on the destination host where you can export the individual virtual machine disk. • You must assign one as the target.
Use FLR	Configures the VMware VADP backup set to be able to perform File Level Restore (FLR).

Snapshot all VMs in the backup set at the same time	If selected: • If there are multiple virtual machines in the same backup set, DS-Client will perform snapshots of all the virtual machines at the same time. If not selected: • If there are multiple virtual machines in the same backup set, DS-Client will perform sequential snapshots of each virtual machine, waiting until the previous snapshot completes before starting with the next snapshot.
Attempt to quiesce I/O before taking snapshot	Pause the applications to guarantee a consistent and usable backup. • This option requires that the VMware tools are properly installed and configured on the guest operating system of the virtual machine for application consistent backups.
Attempt to use CBT for backing up Virtual Machines	When this option is selected, DS-Client will attempt to reconfigure virtual machines to use Changed Block Tracking (CBT). CBT monitors whether the disks have been changed between backup sessions and, when a disk has not been changed, improves backup performance.
Use Local DS-VDR	Select this option to use the Local DS-VDR Tool. For more information and applicable requirements, see Section 6.18, “VMware VADP backup sets (Windows or Linux)”, on page 269. • **Note:** This option is only available in the New Backup Set Wizard and cannot be changed after the backup set has been created.
Backup Virtual Machine memory	• ON: Saves the virtual machine state (running programs loaded in memory). • OFF: Backs up the virtual machine as if it were not running.
Verify disks signature interval (generations) (Not applicable to Local DS-VDR)	If this option is selected, a VMware VADP backup set that has Changed Block Tracking (CBT) enabled will validate the disk signature of a protected virtual machine after a specified number of backups. The interval count starts from the first backup after the setting is enabled. If a disk signature mismatch is detected, a master generation is sent to the DS-System for the affected virtual disk (vmdk). Valid values are as follows: • 0 = Disables the disk signature validation process. • 1 = Validates the disk signature after every backup. • 2 to 100 = Validates the disk signature after the specified number of backups. The default is 10. Note: Running this verification process will consume more resources and result in the backup process taking longer to complete, especially if it fails the signature verification and a new master is enforced.
Additional Backup Set Options	**Physical to Virtual backup sets.** (whose destination is to a VMware VADP vCenter Server)
Export to vCenter Server	Enter the IP address of the vCenter Server where you want to ‘virtualize’ the selected physical computer. You must supply the credentials to the vCenter Server for a user with sufficient permissions to create a virtual machine. • Click [>>] to open the “Specify Credentials” dialog box. • Note: You cannot use Chinese characters for these credentials (username and password) because the VMware vCenter Converter does not support them.

Export to datacenter	Once DS-Client / Local DS-VDR Tool connects to the vCenter Server, this list displays the available datacenters. • You can select a different one (if more than one are available).
Export to host	Once you select the datacenter, you will be able to select a specific host's IP address where the 'virtualized' machine will be created. You must supply the credentials to this host. • Click [>>] to open the "Specify Credentials" dialog box.
Export to datastore	After selecting the destination host, you must select one of the defined vCenter Server datastores to which the new virtual machine will belong.
Physical machine's OS	You must specify the operating system of the target physical machine for DS-Client to handle the conversion properly. • Windows • Linux
Helper VM's IP	[This box appears for target physical machines running on Linux.] When you convert a powered-on Linux machine, VMware Converter Standalone creates a 'Helper Virtual Machine' on the destination. This 'Helper VM' needs network access to the source machine to clone the source files. • You must have your network administrator assign a dedicated IP address for this backup set. If you create another Physical-to-Virtual backup set, you must obtain another, unique, dedicated IP address.
Helper VM's Netmask	[This box appears for target physical machines running on Linux.] • Ask your network administrator what should be used. Typically, this is "255.255.255.0".
Helper VM's Gateway	[This box appears for target physical machines running on Linux.] • Ask your network administrator what address should be used. Typically, this will be some unique IP address on the same subnet as the "Helper VM's IP". • The gateway address is the IP address that the local host uses to forward IP datagrams to other IP networks. This is either the IP address of a local network adapter or the IP address of an IP router (such as a default gateway router).
Perform incremental conversions after the first session.	This option configures how a converted virtual machine is handled on the destination vCenter Server. • OFF: (Default) Each conversion creates a new virtual machine in the vCenter Server. (Note the space considerations, since you must perform manual deletes from the vCenter Server.) • ON: Each subsequent conversion goes to the same virtual machine.

Set Properties - Options tab (Linux DS-Client)

This screen can appear in a wizard or a properties dialog box. It allows you to view and change the option settings for individual backup sets. These settings are applied each time the set is backed up.

Backup set options	
Use buffer	If checked, files will be copied to the DS-Client Buffer (i.e. as fast as possible for the given server and LAN speed). This will free up the backup source as fast as possible. Then the DS-Client will send the files from the DS-Client buffer to the DS-System. **Note:** This option cannot be used if Continuous Data Protection (CDP) is selected. This option is not applicable for VMware VADP backup sets.
Detailed log	Records all files that are backed up (you can view them in the Activity Log).
Stop on errors	Specifies that a backup stops if this number of errors are encountered. The default is 0 (no limit). • range 0-9999
Initial Backup	If checked, the backup set is flagged for Initial Backup. Click the [>>] button to select the Initial Backup Path.
Continuous Data Protection	Select to access the Continuous Data Protection Settings dialog box. From there, you can instruct DS-Client how to monitor this backup set's source to immediately detect and back up changes. • Note: This option cannot be used if the "Use buffer" option is selected.
Disable Common Files	This box appears if the feature is activated by your service provider. If checked, the backup set's files will be excluded from Common File storage reduction. This means duplicate files will be encrypted and backed up individually, thereby potentially increasing the stored size. • You can only set this feature in the New Backup Set Wizard. It cannot be changed afterwards.
Use Local Storage • These options appear if you have the Local Storage Tool Enabled from your service provider, and you have specified a Local Storage Path in the DS-Client Configuration Parameters Tab.	
Save	Select this box to indicate this backup set will also be saved to a Local Storage location (at the DS-Client site). • Backup data will be sent to the location specified in the Local Storage Path box.
Cache	Select this box to indicate this backup set will use the Local Storage as a cache, in case a backup session loses connection with DS-System. • Cached backup data will be sent to DS-System at the next connection opportunity (after synchronization). • Backup data will be sent to the location specified in the Local Storage Path box.
Instant Recovery	Indicates if this backup set is being saved to an instant recovery vault.
Local Storage Path	Click [>>] to choose a specific local storage path for this backup set. • Opens the Enter Local Storage Path. • If you do not make a selection, the path from the DS-Client Configuration Parameters Tab is used.

PreScan	If checked, the backup set is flagged to scan all files in the backup set prior to backup to display an estimated completion time for the backup.
BLM (Infinite Generations) (Backup Lifecycle Management module must be enabled)	Backup sets are configured to save a specific number of generations. Once a backup item reaches this limit, the oldest generation is overwritten as each new one is backed up. Select to configure this backup set for BLM. When applicable, the DS-Client will instruct DS-System to send a copy of the oldest generation (that is about to be overwritten) to the BLM Archiver.
Compression Type	You can select the compression type: • LZOP: A faster compression than ZLIB, that comes at the expense of less compression. • ZLIB: This compression method will normally produce better compression than LZOP, but will take more time to compress. Four different ZLIB strengths are available (Global, High, Medium, and Low). “ZLIB Global” is the default value set in the DS-Client Advanced Configurations ‘Compression Type’ parameter; “ZLIB High” corresponds to a value of 9; “ZLIB Medium” = 6; and “ZLIB Low” = 3. • None: Disables compression for this backup set. (This will only apply to backups performed after this section is made. Any backups currently online will retain the compression type used at the time of backup.)
Additional Backup Set Options The options that appear in this section are specific to the type of backup set: • NAS, UNIX-SSH, NFS, Local File System backup sets. • MySQL backup sets. • PgSQL backup sets. • Oracle backup sets. • DB2 Server backup sets. • VMware VADP backup sets. • Physical to Virtual backup sets.	
Pre/Post	Click **Pre/Post** to access the Pre & Post Execution dialog box. For more information, see Pre & Post Execution.
Exclude old files	Click to access the Exclude Old Files dialog box. For more information, see Exclude Old Files.

Additional Backup Set Options	**NAS, UNIX-SSH, NFS, Local File System backup sets.**
Do not follow the Mount Point (UNIX-SSH only)	Select to backup only the Mount Point itself (not the data under any Mount Point).
Force backup even if the modified time or size did not change	If selected, DS-Client will force a re-backup of a file, even if its “last modified” time and size have not changed since the last backup.
Continue backup on snapshot failure (NAS only)	NAS backup sets automatically try to backup using a snapshot of the NAS volume, using the NAS device’s native snapshot feature. This option determines the DS-Client’s behavior if the NAS snapshot fails (for any reason). • ON: (Default) DS-Client will continue the backup by trying to backup the selected volume’s data directly from the NAS storage. • OFF: DS-Client will stop the backup and report errors.

Use Snapdiff API (NAS only)	NetApp has a “Snapdiff API” feature that can compare the current snapshot with the previous snapshot of a NAS volume to generate the list of new and changed files. If enabled, this can generate significant backup process speed improvements on large volumes with many files. • If selected, DS-Client will attempt to use the Snapdiff API. A previous snapshot must also exist for comparison. • If Snapdiff fails for any reason, DS-Client will proceed to scan the full NAS volume.
Backup Hard Links	Hard Links are created in Unix-based file systems with the ‘ln’ function. • By default, this option is selected for any new backup sets. This means the backup will handle backup of the file and hard link information for the hard links to be restored. • If this option is not selected, this means any backed up hard link will be restored as a separate (individual) file. • Even with this option selected, you must create a backup set that includes all the hard linked files. Otherwise a warning will appear in the Event Log for the backup activity and if you restore from that backup, your existing hard links will be broken. The same applies if you perform a partial restore of hard linked files.
Additional Backup Set Options	**MySQL backup sets.**
Add locks around insert statements	Lock tables before inserting data on restore. (See the MySQL manual page for ‘mysqldump’ for more information.)
Add MySQL specific table create options	Add MySQL specific extensions to the backed up database dump. (See the MySQL manual page for ‘mysqldump’ for more information.)
Insert statement type	Specify how table rows are inserted into the database dump (i.e. the style of the ‘INSERT’ statement). (See the MySQL manual page for ‘mysqldump’ for more information.) • Extended - Fast insert. Might not be useful for manual loading into non-MySQL databases. • Complete - Uses complete ‘INSERT’ statements that include column names when inserting rows. • Normal - Standard insert. Slower, but can be more portable to other databases.

Table dumping option	Specify how tables are dumped. (See the MySQL manual page for 'mysqldump' for more information.) • Lock all tables - Prevent changes to data while backup is in progress (sets the tables to read-only mode for duration of backup). [This option is like using the --lock-tables dump option from the command line.] • Single transaction - [only works with transactional tables] This dump approach also prevents changes to the backup data, but does not set tables to read-only mode. • Do not lock tables - If selected, the tables can be changed during the creation of the dump file. Note the consistency impact this can have on the backup. [This option is like using the --skip-lock-tables dump option from the command line.] • None - Dump will be performed using the 'mysqldump' function with no special conditions.
Additional Backup Set Options	**PgSQL backup sets.**
Backup only the schema, not the data	Dump only the schema (data definitions).
Do not backup privileges (Grant / Revoke)	Will backup only the data, not including the privileges of the database.
Backup data as INSERT, rather than COPY	Dumps data as INSERT commands (instead of COPY). This will make restores very slow, but it will make those backups more portable to other SQL database packages.
Vacuum database before Backup	Optimizes the PostgreSQL database before performing the backup (analyzes the database and performs 'garbage collection').
Backup ownership of database objects	Select to backup ownership of any objects within the database (e.g. tables). • Note: By default, this option is off. However, the ownership of the entire database is always backed up by DS-Client (independent of this option).
Additional Backup Set Options	**Oracle backup sets.**
Logical Corruption Check	(Default is on) Will perform a corruption check on the database prior to backup.
Backup only current archived logs	Select to backup only those logs that are necessary for the Oracle database. This saves backup space, by avoiding backup of any older logs. Leave this box cleared if you want to backup all log files
Truncate archived logs	Clear the Oracle Database logs associated with this item after backup.

Use RMAN Compression	DS-Client will backup the Oracle database using the RMAN compression option “backup as compressed backupset”. This requires more CPU during backup, but results in a smaller output file (i.e. it can reduce the size and time of the DB dump). Using this compression will limit the Master / Deltas block-level incremental reduction, since the DS-Client will not find any repeated blocks in subsequent Delta generations. • None: No RMAN compression. • Archive Logs: RMAN compression applied only to Archive Logs. • Archive Logs and Tablespaces: RMAN compression applied to both Archive Logs and Tablespaces.
Force pipe library path	If you are using DS-PIPE, this box appears. • RMAN requires the Media Management Library “libobk.so” to backup / restore using a PIPE. • The exact library name will be slightly different, depending on the platform. For more information, refer to the “Oracle Server Requirements” section of the Knowledge Base article in Section 15.7, “Backup / restore of Oracle database servers”, on page 522. • You can specify the exact path (including filename) to the corresponding “libobk.so” for the Oracle server’s platform. These library files can be found in the DS-Client installation directory. • If you do not specify a path, the default path will be used: “$ORACLE_HOME/lib/libobk.so” • Make sure Oracle has full rights to read and execute in the library path. • Note: DS-Client does not validate this path. It simply forwards it to RMAN.
Max. backup channels	(Multi-channel backups are only used for Dump. It does not apply when backing up through DS-PIPE.) The maximum number of channels DS-Client will allocate when backing up the database. • DS-Client can support up to 32 channels. The actual number that will be used depends on the datafile count for a tablespace.
Additional Backup Set Options	**DB2 Server backup sets.**
Prune History / Logfile	Delete entries from the history file or log files from the active log path.
Online Backup	• If cleared, perform Offline DB2 backup. During an offline backup, applications cannot connect to the database. • If checked, perform Online DB2 backup. An online backup allows applications to connect to the database and read and write to tables during database backup. Log retain or userexit must be enabled for an online backup.
Additional Backup Set Options	**VMware VADP backup sets.**

Attempt to quiesce I/O before taking snapshot	Pause the applications to guarantee a consistent and usable backup. • This option requires that the VMware tools are properly installed and configured on the guest operating system of the virtual machine.
Attempt to use Change Block Tracking for backing up Virtual Machines	When this option is selected, DS-Client will attempt to reconfigure virtual machines to use Changed Block Tracking (CBT). CBT monitors whether the disks have been changed between backup sessions and, when a disk has not been changed, improves backup performance.
Snapshot all VMs in the backup set at the same time	If selected: • If there are multiple virtual machines in the same backup set, DS-Client will perform snapshots of all the virtual machines at the same time. If not selected: • If there are multiple virtual machines in the same backup set, DS-Client will perform sequential snapshots of each virtual machine, waiting until the previous snapshot completes before starting with the next snapshot.
Use Local DS-VDR	Select this option to use the Local DS-VDR Tool. For more information and applicable requirements, see Section 6.18, “VMware VADP backup sets (Windows or Linux)”, on page 269. • **Note:** This option is only available in the New Backup Set Wizard and cannot be changed after the backup set has been created.
Backup Virtual Machine memory	• ON: Saves the virtual machine state (running programs loaded in memory). • OFF: Backs up the virtual machine as if it were not running.
Use FLR (Not applicable to Local DS-VDR)	Configures the VMware VADP backup set to be able to perform File Level Restore (FLR).
Verify disks signature interval (generations) (Not applicable to Local DS-VDR)	If this option is selected, a VMware VADP backup set that has Changed Block Tracking (CBT) enabled will validate the disk signature of a protected virtual machine after a specified number of backups. The interval count starts from the first backup after the setting is enabled. If a disk signature mismatch is detected, a master generation is sent to the DS-System for the affected virtual disk (vmdk). Valid values are as follows: • 0 = Disables the disk signature validation process. • 1 = Validates the disk signature after every backup. • 2 to 100 = Validates the disk signature after the specified number of backups. The default is 10. Note: Running this verification process will consume more resources and result in the backup process taking longer to complete, especially if it fails the signature verification and a new master is enforced.
Backup Virtual Machine’s snapshots (Local DS-VDR backup set)	• ON: Backup will ‘export’ the actual running virtual machine and all its snapshots. • OFF: Backup will ‘export’ the actual running virtual machine only (no snapshots).

Export to host (Local DS-VDR backup set)	This list contains the available ESXi hosts where you can export the selected virtual machines. You must assign one as the target. • Click [>>] to open the “Specify Credentials” dialog box.
Export to datastore (Local DS-VDR backup set)	This is a list of available Datastores on the destination host where you can export the individual virtual machine disk. • You must assign one as the target.
Additional Backup Set Options	**Physical to Virtual backup sets.** (whose destination is to a VMware VADP vCenter Server)
Enter vCenter IP	Enter the IP address of the vCenter Server where you want to ‘virtualize’ the selected physical computer. You must supply the credentials to the vCenter Server for a user with sufficient permissions to create a virtual machine. • Click [>>] to open the “Specify Credentials” dialog box. • Note: You cannot use Chinese characters for these credentials (username and password) because the VMware vCenter Converter does not support them.
Export to datacenter	Once DS-Client / Local DS-VDR Tool connects to the vCenter Server, this dropdown list displays the available datacenters. • You can select a different one (if more than one are available).
Export to host	Once you select the datacenter, you will be able to select a specific host’s IP address where the ‘virtualized’ machine will be created. You must supply the credentials to this host. • Click [>>] to open the “Specify Credentials” dialog box.
Export to datastore	After selecting the destination host, you must select one of the defined vCenter Server datastores to which the new virtual machine will belong.
Physical machine’s OS	You must specify the operating system of the target physical machine for DS-Client to handle the conversion properly. • Windows • Linux
IP for conversion helper VM	[This box appears for target physical machines running on Linux.] When you convert a powered-on Linux machine, VMware Converter Standalone creates a ‘Helper Virtual Machine’ on the destination. This ‘Helper VM’ needs network access to the source machine to clone the source files. • You must have your network administrator assign a dedicated IP address for this backup set. If you create another Physical-to-Virtual backup set, you must obtain another, unique, dedicated IP address.
Netmask for conversion helper VM	[This box appears for target physical machines running on Linux.] • Ask your network administrator what should be used. Typically, this is “255.255.255.0”.

Gateway for conversion helper VM	[This box appears for target physical machines running on Linux.] • Ask your network administrator what address should be used. Typically, this will be some unique IP address on the same subnet as the “IP for conversion helper VM”. • The gateway address is the IP address that the local host uses to forward IP datagrams to other IP networks. This is either the IP address of a local network adapter or the IP address of an IP router (such as a default gateway router).
Use Local DS-VDR	This option is selected by default when creating the backup set. It cannot be changed.
Perform incremental conversions after the first session.	This option configures how a converted virtual machine is handled on the destination vCenter Server. • OFF: (Default) Each conversion creates a new virtual machine in the vCenter Server. (Note the space considerations, since you must perform manual deletes from the vCenter Server.) • ON: Each subsequent conversion goes to the same virtual machine.

Set Properties - Options tab (Windows database backup sets)

This screen can appear in a wizard or a properties dialog box. It allows you to view and change the option settings for individual backup sets. It appears for the following Windows database backup sets, if they support options for incremental and / or differential backup:

- Microsoft SQL Server
- Microsoft SQL Server (VSS-aware)
- Microsoft Exchange Server (VSS-aware)
- Microsoft SharePoint Server (VSS-aware)

These settings are applied each time the set is backed up.

Backup set options • Some options might not appear or might be unavailable, depending on your backup selection and DS-Client configuration.	
Use buffer	If checked, files will be copied to the DS-Client Buffer (i.e. as fast as possible for the given server and LAN speed). This will free up the backup source as fast as possible. Then the DS-Client will send the files from the DS-Client buffer to the DS-System. • Note: This option cannot be used if Continuous Data Protection (CDP) is selected.
Detailed log	Records all files that are backed up (you can view them in the Activity Log).

Stop on errors	Specifies that a backup stops if this number of errors are encountered. • range 0-9999, 0 = no limit • Note: The global default that appears in the New Backup Set Wizard can be configured using the Windows DS-Client “MaxErrors” Advanced Parameter.
Initial Backup	If checked, the backup set is flagged for Initial Backup. Click the [>>] button to select the Initial Backup Path.
Continuous Data Protection	Select to access the Continuous Data Protection Settings dialog box. From there, you can instruct DS-Client how to monitor this backup set’s source to immediately detect and back up changes. • Note: This option cannot be used if the “Use buffer” option is selected.
BLM (Infinite Generations) (Backup Lifecycle Management module must be enabled)	[Properties Tab only] Backup sets are configured to save a specific number of generations. Once a backup item reaches this number of generations, the oldest will be overwritten with each new generation backed up. Select to configure this backup set for BLM. When applicable, the DS-Client will instruct DS-System to send a copy of the oldest generation (that is about to be overwritten) to the BLM Archiver.
Always On Availability Group	Specifies if a Microsoft SQL Server (VSS-aware) Always On Availability Group (the backup source is the Availability Group Listener) is being backed up. This check box is read-only.
PreScan	If checked, the backup set is flagged to scan all files in the backup set prior to backup to display an estimated completion time for the backup.
Compression Type	You can select the compression type: • LZOP: A faster compression than ZLIB, that comes at the expense of less compression. • ZLIB: This compression method will normally produce better compression than LZOP, but will take more time to compress. Four different ZLIB strengths are available (Global, High, Medium, and Low). “ZLIB Global” is the default value set in the DS-Client Advanced Configurations ‘Compression Type’ parameter; “ZLIB High” corresponds to a value of 9; “ZLIB Medium” = 6; and “ZLIB Low” = 3. • None: Disables compression for this backup set. (This will only apply to backups performed after this section is made. Any backups currently online will retain the compression type used at the time of backup.)
Use Local Storage • [Properties Tab only] • These options appear if you have the Local Storage Tool enabled from your service provider, and you have specified a Local Storage Path in the DS-Client Configuration Parameters Tab.	
Save	[Properties Tab only] Select this box to indicate this backup set will also be saved to a Local Storage location (at the DS-Client site). • Backup data will be sent to the location specified in the Local Storage Path box.

Cache	[Properties Tab only] Select this box to indicate this backup set will use the Local Storage as a cache, in case a backup session loses connection with DS-System. • Cached backup data will be sent to DS-System at the next connection opportunity (after synchronization). • Backup data will be sent to the location specified in the Local Storage Path box.
Instant Recovery	Indicates if this backup set is being saved to an instant recovery vault.
Local Storage Path	[Properties Tab only] Click [>>] to choose a specific local storage path for this backup set. • Opens the Enter Local Storage Path. • If you do not make a selection, the path from the DS-Client Configuration Parameters Tab is used.
Additional Backup Set Options	
Use FLR	Configures the Microsoft Hyper-V Server (VSS-aware) backup set (standalone or cluster) to be able to perform a File Level Restore (FLR) of files from the target virtual machine. • Note: When performing a File Level Restore (FLR), the files are always restored from the DS-System online storage.
Nimble Storage Integration Settings	Select this check box to configure the Nimble Storage integration settings. This option is only displayed when you are creating a Microsoft SQL Server (VSS-aware) backup set.
Database backup policy / Hyper-V backup policy • Some options might not appear, depending on your backup selection and DS-Client configuration.	
Full dump: Always	[Default] This is the default behavior for all Windows database backups. • Each backup of the target Server performs a full dump of each database.
Full dump: Plus Differential	Performs a full dump of the database on first backup, followed by differential backups until another full backup is needed (*). • [Microsoft SQL Server backup sets] The database can be selected with or without the Backup Transaction Log option.
Full dump: Plus Incremental	Performs a full dump of the database on first backup, followed by incremental backups until another full dump is needed (*). • [Microsoft SQL Server backup sets] The database should be selected without the Backup Transaction Log option. (Even if selected, this option will be ignored if this backup policy is selected.) • [Microsoft SQL Server backup sets] The database's Recovery Model must be: 'full' or 'bulk_logged'.
Transaction Log Only	Performs backups of transaction logs for selected databases to be used in combination with full dumps taken by another VSS or Classic Microsoft SQL Server backup set that performs full database backups. This option is only displayed when you are creating a Microsoft SQL Server database backup set.

(*) A full dump is needed (other than first time) when: • a database has been backed up by another backup set (or manually from the SQL tools); • a database has been restored (either from another database or an earlier generation); • the database properties have been modified (recovery model switched to 'simple'); • local storage cache is used for the backup set (This can occur for 'Online' backup sets with the option 'Transmission cache on local storage', but only when a generation must actually 'pass through' the local storage cache. If the connection to DS-System is down, then a full dump occurs and is written to the local storage cache. After that dump, DS-Client continues with the selected database backup policy.) • the DS-Client requires a Master generation (configured in the "MasterGenerations" value of the DS-Client Advanced Parameters - Setup Menu > Configuration > Advanced Tab).	
Database Backup Policy Schedule Over-ride Rules [OPTIONAL] • This entire section is optional. It provides more precise control over the full dump for large Microsoft databases in high performance environments. • These over-ride rules are applied in addition to the regular backup schedule for this backup set. This means the backup set must be scheduled to run on the first day of the month, if the over-ride rule "Full every month on 1st day..." will apply.	
Do not start full dump on	Prevents a full dump from being performed during the time window on the selected day(s). • This skips performing a full dump of the database, for up to the maximum number of consecutive times specified in the 'MaxNonFullDumps' parameter of the DS-Client Advanced Parameters (Setup Menu > Configuration > Advanced Tab). • For database integrity reasons, a full dump should be performed before that amount is reached. DS-Client will automatically try to run one full dump (once a day) if this option is set.
Full every	Forces a full backup to be performed at the specified interval. • hour(s), day(s), week(s), month(s), or year(s)
Full every week on	Forces a full backup to be performed on a specific day of the week. • You must specify a time, after which the full backup can be performed.
Full every month on	Forces a full backup to be performed on a specific day of the month. • You must specify a time, after which the full backup can be performed.
E-Mail Scan Policy • This section appears only for Microsoft Exchange Server email message backup sets (DS-MLR) that use MAPI. Note: Functionality for discontinued backup sets might still work, even though they are no longer officially supported.	
Full scan: Always	[Default] This is the default behavior for Email message backups for Microsoft Exchange Server using MAPI. • Each backup of the target performs a full scan of all items in the target folder.

Full scan: Plus Incremental	Performs a full scan of the target folder on first backup, followed by incremental backups. • During incremental backups, DS-Client / DS-MLR will only retrieve the new or modified items from each folder. • Speed is the benefit of this option. However, since it does not detect items that have been removed from a folder, periodic full backups that perform a full scan should be performed.
E-Mail Scan Policy Schedule Over-ride Rules [OPTIONAL] • This section is disabled if Continuous data protection is selected. • This entire section is optional. It provides more precise control over the full scan. • These over-ride rules are applied in addition to the regular backup schedule for this backup set. This means the backup set must be scheduled to run on the first day of the month, if the over-ride rule “Full every month on 1st day...” will apply.	
Do not start full scan on	Prevents a full scan from being performed during the time window on the selected day(s). • This skips performing a full scan of the backup set’s target folders, for up to the maximum number of consecutive times specified in the ‘MaxNonFullDumps’ parameter of the DS-Client Advanced Parameters (Setup Menu > Configuration > Advanced Tab).
Full every	Forces a backup with a full scan to be performed at the specified interval. • hour(s), day(s), week(s), month(s), or year(s)
Full every week on	Forces a full scan to be performed on a specific day of the week. • You must specify a time, after which the backup with a full scan can be performed.
Full every month on	Forces a full scan to be performed on a specific day of the month. • You must specify a time, after which the backup with a full scan can be performed.
Pre/Post Click to access the Pre & Post Execution dialog box. • For more information, see Pre & Post Execution.	

Set Properties - Performance tab (Windows DS-Client)

This screen can appear in a wizard or a properties dialog box. It allows you to view and change the Performance settings for individual backup sets.

Maximum pending asynchronous I/O for a file This is the maximum I/O operations the DS-Client will queue for each file from this backup set.	
Use DS-Client’s settings	(Default) Uses the setting in the DS-Client Advanced Configurations > Category: Performance > Parameter: MaxPendingIOPerFile.

Use specific value	You can override the default and set a custom value that only applies for this backup set. • This option is intended for high performance backup environments. You must be able to test the different settings to determine the optimal value. • This is only useful if the target storage containing the backup data is fast and efficient enough to take advantage of the increased I/O. • WARNING: Slower storage can suffer performance drops if this value is increased too much.
Read buffer size for backup This option adjusts the internal buffer amount that the DS-Client allocates for reading individual files for backup.	
Use DS-Client's settings	(Default) Uses the setting in the DS-Client Advanced Configurations > Category: Performance > Parameter: FileReadBufferSize.
Use specific buffer size (KB)	You can override the default and set a custom value that only applies for this backup set. • You must be able to test the different settings to determine the optimal value. • WARNING: Slower storage can suffer performance drops if this value is not properly set.

Set Properties - Retention tab

This screen can appear in a wizard or a properties dialog box. It allows you to view and change the Retention settings for individual backup sets. Retention Rules are only enforced if an "Enforce Retention" task is scheduled or it is run on demand for this backup set.

Name	• No Retention Rule: • Use a specific Retention Rule: select from the list of the Retention Rules defined on the DS-Client. (Click [...] to edit or create a new Retention Rule.)
Description	Shows a description of the selected Retention Rule.

Set Properties - Set Info tab

This screen can appear in a wizard or a properties dialog box. It allows you to view information about the selected backup set.

Set Information	
Backup type	Shows the type of selected backup set.
Status	Shows the backup set status (Active, Suspended, or Synchronize).
Set name	Shows the name of the backup set. You can change this box, to change the name of the backup set.

Set type	Shows the type of backup set: • Online • Self-Contained • Local-Only • Instant Recovery • Statistical Note: In a VM replication set, when offline replication is in progress, before the destination DS-Client has successfully imported the initial VM replication data from a local disk location on the destination DS-Client machine, **Offline** is displayed.
Set ID	Shows unique backup set ID number assigned by the DS-Client.
Customer	If the Multi-Tenant feature is enabled and configured, you can select the customer to which you want to assign the backup set. If you are a regular user, only the customers that have been assigned to you are displayed.
Backup Information	
Last backup (Windows DS-Client)	Displays the last date and time that this backup set was changed in the DS-Client database. Activities that can update a backup set include: • Backup
Last backup set update time (Linux DS-Client)	Displays the last date and time that this backup set was changed in the DS-Client database. Activities that can update a backup set include: • Backup • Delete • Synchronization
Last successful	Displays the date and time of the last successful (i.e. without errors) scheduled backup.
Online amount	Displays the amount of online storage the selected backup set occupies (including all online generations). • Note: CDP backup sets that are currently running will have this box updated every 30 minutes.
Online files	Displays the number of files that make up the Online amount for the selected backup set. • Each generation is counted as a separate file. • Note: CDP backup sets that are currently running will have this box updated every 30 minutes.
Local Storage amount	Displays the amount of local storage the selected backup set occupies (if applicable). • The backup set must be configured to “Save on Local Storage” and data must be in the Local Storage Path.
Local Storage files	Displays the number of files that make up the Local Storage amount for the selected backup set (if applicable).

Set Properties - Share tab

This screen can appear in a wizard or a properties dialog box. It allows you to view information about the selected backup set shares.

Connect as	Shows the connection information. • Click [>>] to open the "Specify Credentials (Windows DS-Client)" dialog box.
Use DS-Client Account (Windows DS-Client only)	Allows you to use the DS-Client service's account credentials to connect to the local (DS-Client) computer. • You must be logged on through DS-User using an Administrator account (or equivalent). • This option is only available when you select "My Computer" (i.e. the local DS-Client computer).
Ask for NAS API credentials (Windows DS-Client only)	Prompts you to enter valid connection information for the selected NAS. • Opens the "Enter NAS API Parameters (Windows DS-Client)" dialog box.
Disk share	Shows the selected disk share on the provider\node, where the backup items are located. If there are more than one shares included in this backup set, then you can switch between them by selecting the share from the drop down list.
File system	Shows the file system name associated with the selected disk share.
Maximum filename length	Shows the maximum number of characters in any filenames originating from the share.
Case preserved	A check indicates the share's file system preserves the case of the filenames when it places a name on disk.
File compression	A check indicates the share's file system supports file-based compression.
Case sensitive	A check indicates the share's file system supports case-sensitive filenames.
Volume compressed	A check indicates the share's volume is a compressed volume.
Persistent ACL	A check indicates the file system preserves and enforces ACLs (Access Control List, file security).

Set Properties - Share tab (Linux DS-Client)

This screen can appear in a wizard or a properties dialog box. It allows you to view information about the selected backup set shares.

Connect as	Shows the credentials used to access the network resource.
Change to (UNIX-SSH only)	Shows the credentials that Linux DS-Client will use to access data on the network resource. • After successful login to the remote source, "sudo" (switch user) will be performed for Linux DS-Client to use these credentials.
Disk share	Shows the selected disk share on the provider\node, where the backup items are located. If there are more than one shares included in this backup set, then you can switch between them by selecting the share from the drop down list.
File system	Shows the file system name associated with the selected disk share.

Maximum filename length	Shows the maximum number of characters in any filenames originating from the share.

Set the scanning options

UNPROTECTED LAN RESOURCE DISCOVERY TOOL

The Discovery Wizard helps you to identify all the unprotected resource (shares) on your LAN. This dialog box allows you to select additional options that can apply once any unprotected network resource(s) have been discovered.

Create new backup sets for unprotected computers\shares • If selected, a new backup set will be created for each unprotected computer the scan identifies.	
Owner	Select the user that will become the owner of any backup set created by this process. This list comes from the Users & Groups on the DS-Client computer.
Schedule	Select the schedule (or None) to apply to any backup set created by this process.
Add System State	If a backup set is created for a new computer, this option includes the Windows System State backup item.
Add Services DB	If a backup set is created for a new computer, this option includes the Windows Services Database backup item.
Send notification • If selected, a notification email is sent on completion of the scan.	
E-Mail	Enter the email address of the recipient.
Format	Choose the email format: • HTML • Plain Text

Set the scanning parameters

UNPROTECTED LAN RESOURCE DISCOVERY TOOL

The Discovery Wizard helps you to identify all the unprotected resource (shares) on your LAN. This dialog box allows you to specify scanning parameters.

Attempt to reconnect	Select the number of times the scan process will try to reconnect and the interval between attempts.
Number of threads for scanning	Select the number of scan threads to be used by the process.
Start Scan Now	(Default is on.) Starts the scan immediately after finishing this wizard.

Share List

LAN STORAGE DISCOVERY TOOL

The Share List displays the shares on the LAN that were discovered by the Share Discovery process. Each new Share Discovery process will add any new shares to grow this list.

Share List	
Enabled/Disabled	Icon shows whether the share has been enabled or disabled from the Scan Process. By default, a share can be enabled or disabled from scanning depending on information in the Description section.
Date	Shows the date of the last scan.
Share Name	Shows the computer and share name.
Shared Path	Shows the path on the computer.
Follow (Windows DS-Client only)	Indicates if the scan will follow Reparse Points and scan their destination location (NTFS only).
File System (Windows DS-Client only)	Shows the type of file system for the share.
Connect As (Windows DS-Client only)	Shows the username of the credentials used to connect to that share.
Description	Shows additional information about the share (if any).
Scanned Size	Shows the size of the share (in bytes).
Options	
Enable	Allows the highlighted share(s) to be scanned.
Disable	Removes the highlighted share(s) from the scan process.
Set Credentials	The Share Discovery Process automatically disables shares that it detects to be redundant or inaccessible. Highlight individual shares, and then click Enable to add to, or Disable to remove from the scan. Opens the Set Credentials dialog box.
Remove	Removes the highlighted share from the list (along with all associated scan settings for that share).
Follow Reparse Point (Windows DS-Client only)	Opens the Set Follow Option dialog box (NTFS only) for the highlighted share(s): • **Follow** - Will follow Reparse Points encountered in a scanned share. A Reparse Point is a link to a different location (directory or device). This will result in a larger amount scanned. • **Don't Follow** - Will not follow Reparse Points encountered in a scanned share. • **Reverse follow setting** - Inverts the highlighted share(s) setting.

Share Usage Report

Owner	User name of the share owner.
Size	Total size of the files in the share.
Files	Total number of files in the share.

Share	Path of the share on the LAN.
Share (dropdown list)	Search <All> or individual shares.

Shutdown DS-Client Computer

It can become necessary for a system administrator to force a shutdown of the DS-Client computer. This can be accomplished from the System Activities Administration dialog box.

Shutdown in […] seconds	Specify the shutdown interval (30-900 seconds).
Reboot	Click to reboot the DS-Client computer after shutdown.
Send message	Enter a message to send to connected users.
Shutdown	Click to initiate the Shutdown.

SMTP settings

This dialog box allows you to configure the SMTP notification settings.

SMTP Server Settings	
SMTP Server	Type the DNS name or IP address of the SMTP server to use.
Port	Enter the port number to use. (The default is 25.)
Server requires authentication	Select to configure authentication settings (if required): • Account name: Username to connect to SMTP server. • Password: Enter password. • Confirm: Confirm password.
Server requires SSL	Select if the SMTP server you are using requires the SSL (Secure Sockets Layer) protocol for communication. Public email servers that support SSL include: • Gmail server • Yahoo server
Server requires TLS	Select if the SMTP server you are using requires the TLS (Transport Level Security) protocol for communication. Public email servers that support TLS include: • Gmail server • Yahoo server • Hotmail server

Snapshot Re-Activate - Enter re-activation parameter

This dialog box allows you to set the optional parameters for this Snapshot Transfer.

Bandwidth • **Unlimited**: (DEFAULT) No throttle is applied. • **Limited to [...] KB/Sec**: Throttle the snapshot transfer to this speed.

Description	If required, you can enter any extra descriptive text for this Snapshot Transfer configuration in this box.

Snapshot Re-Activate - Select Source Storage

This dialog box shows the list of Registered Storage Devices.

Drop-down list	Use this list to select the source Storage Device. You can only select Registered Storage Devices. • Click [...] to open the "Snapshot Transfer - Register Storage Management".
Description	Shows the IP address of the selected storage.

Snapshot Re-Activate - Select volume/qtree on Source Storage

This dialog box allows you to select from all the volumes / qtrees on the selected source Storage Device.

- When you re-activate the Snapshot Transfer, you must select either the same source that was originally used or a copy of the same source with at least one common snapshot (with the ones that already exist on the destination).

Snapshot Restore - Enter destination qtree

This dialog box allows you to specify the destination qtree on the selected Storage Device \ Volume.

Name	This drop-down list contains all the existing qtrees in the selected volume. • You can also type in this box to create a new qtree for the destination.
Bandwidth • **Unlimited**: (DEFAULT) No throttle is applied. • **Limited to [...] KB/Sec**: Throttle the snapshot transfer to this speed.	

Snapshot Restore - Select Destination Storage

This dialog box shows the list of Registered Storage Devices.

Drop-down list	Use this list to select the destination Storage Device. You can only select Registered Storage Devices. • Click [...] to open the "Snapshot Transfer - Register Storage Management".
Description	Shows the IP address of the selected storage.

Snapshot Restore - Select Snapshot

This dialog box allows you to select from all the snapshots that have been made for the selected Snapshot Transfer.

Snapshot Restore - Select Volume on Destination Storage

This dialog box shows the list of volumes on the selected target Storage Device.

Snapshot Transfer - New / Modify Snapshot Retention

This dialog box allows you to define different Retention Policies that DS-Client can instruct to use with different Snapshot Transfer configurations.

Name	Enter a descriptive name for this Retention Policy.
Number of snapshots to keep • Each box represents a different 'Retention Rule'. • Each rule defines "what snapshots to keep", and the combination of rules can overlap. • The sum of all the rules is the 'Retention Policy'. When enforced, all snapshots that do not fit into any of these rules are deleted.	
Latest	This number of the latest snapshots is kept.
Hourly	One snapshot per hour is kept, going back this number of hours. • Hour Start: The snapshot that is kept is the first one closest to the beginning of the hour. • Hour End: The snapshot that is kept is the last one, closest to the end of the hour.
Daily	One snapshot per day is kept, going back this number of daily copies. • Day Start / Day End: same as above, except the interval is in days.
Weekly	One snapshot per week is kept, going back this number of weekly copies. • Week Start / Week End: same as above, except the interval is in weeks. (Note that for this feature, the week starts at the beginning of Monday and finishes at the end of Sunday.)
Monthly	One snapshot per month is kept, going back this number of monthly copies. • Month Start / Month End: same as above, except the interval is in months.
Yearly	One snapshot per year is kept, going back this number of yearly copies. • Year Start / Year End: same as above, except the interval is in years.

Snapshot Transfer - New / Modify Snapshot Schedule

This dialog box allows you to define the different Snapshot Schedules that can be assigned to each Snapshot Transfer defined on the DS-Client.

Name	Enter a descriptive name for this Snapshot Schedule.
Weekdays tab • Select the days of the week when the schedule will run.	

AM tab • Select the AM hour(s) when you want this schedule to trigger the Snapshot Transfer to run.
PM tab • Select the PM hour(s) when you want this schedule to trigger the Snapshot Transfer to run.

Snapshot Transfer - New / Modify Storage

This dialog box contains the list of Registered Storage that the DS-Client can connect to for Snapshot Transfer related activities.

Vendor	Specifies the Storage Device type, vendor or specific model. Currently supported types: • NetApp
Name	Enter a descriptive name for this Storage Device.
Address	Enter the IP address of the Storage Device.
Port	Specifies the port number for accessing the API. • The specific port must be open on the Storage Device.
User Name	Specifies the User Name for a user on the Storage Device. • This user requires permissions to execute the API commands on the Storage Device and usually needs to be a member of the Administrators group.
Password	Specifies the corresponding password for the Storage Device user.
Use HTTPS Protocol	Specifies the HTTPS protocol for accessing the API. • The specific protocol must be enabled on the Storage Device. • If this is not selected, the HTTP protocol is used.

Snapshot Transfer - Register Storage Management

This dialog box contains the list of Storage Devices the DS-Client is configured to connect with for Snapshot Transfer purposes.

Storage Device List • Each line represents a different Storage Device that can be used for Snapshot Transfer.	
New	Add a new Storage Device to the list. • Opens the “Snapshot Transfer - New / Modify Storage”.
Edit	Edit the highlighted Storage Device from the list. • Opens the “Snapshot Transfer - New / Modify Storage”.
Remove	Remove the highlighted Storage Device from the list. (To be removed, the Storage Device must not be in use.)

Snapshot Transfer - Snapshot Retention Management

This dialog box contains the list of Retention Policies the DS-Client can apply to the snapshots taken by each Snapshot Transfer configuration.

Retention Policy List • Each line represents a different Retention Policy that can be applied to a Snapshot Transfer configuration. • Note that Retention Policies are applied at volume-level (all Snapshot Transfers on the same destination volume use the same Retention Policy).	
New	Add a new Retention Policy to the list. • Opens the "Snapshot Transfer - New / Modify Snapshot Retention".
Edit	Edit the highlighted Retention Policy from the list. • Opens the "Snapshot Transfer - New / Modify Snapshot Retention".
Remove	Remove the highlighted Retention Policy from the list. (To be removed, the Retention Policy must not be in use.)

Snapshot Transfer - Snapshot Schedule Management

This dialog box contains the list of Snapshot Schedules the DS-Client can apply to each Snapshot Transfer configuration.

Snapshot Schedule List • Each line represents a different Snapshot Schedule that can be applied to a Snapshot Transfer configuration. • Note that Schedules are applied at volume-level (all Snapshot Transfers on the same destination volume use the same Schedule).	
New	Add a new Snapshot Schedule to the list. • Opens the "Snapshot Transfer - New / Modify Snapshot Schedule".
Edit	Edit the highlighted Snapshot Schedule from the list. • Opens the "Snapshot Transfer - New / Modify Snapshot Schedule".
Remove	Remove the highlighted Snapshot Schedule from the list. (To be removed, the Schedule must not be in use.)

Snapshot Transfer - Snapshots - Storage:Volume

This dialog box shows a list of the snapshots in the target destination Storage:volume.

Snapshot Transfer Manager

The Snapshot Transfer Manager dialog box contains the list of defined Snapshot Transfer configurations managed by the DS-Client.

Snapshot Transfer tree This tree contains a list of all Snapshot Transfer configurations managed by the DS-Client. • Storage Device level • Volume level • qtree level	
Storage device level	No options are available at this level.

Volume level	This level contains settings for a specific volume on the destination Storage Device. Right-click options: • Start Transfer – Starts the incremental transfer for all qtrees (Snapshot Transfer configurations) contained in the volume. • List Snapshots – Displays all snapshots of the volume that currently exist. • Properties – Displays the properties of the volume.
qtree level	Each qtree is a unique container for a Snapshot Transfer source:destination mapping. Right-click options: • Start Transfer – Starts the incremental transfer for the specific qtree. • Deactivate – Stops further snapshot transfer by breaking off the relationship between source and destination. • Re-Activate – Restarts snapshots for the selected Snapshot Transfer. • Restore – Restores a specific snapshot from the selected Snapshot Transfer. • Delete Transfer Setup – Deletes this Snapshot Transfer (both the configuration and the data in the destination volume). • Properties – Displays the properties for the selected Snapshot Transfer.
Snapshot Transfer Setup	Create a new Snapshot Transfer configuration on the DS-Client. • Opens the Snapshot Transfer Wizard.

Snapshot Transfer Property (destination volume)

This dialog box shows the configured Retention Policy and Schedule that apply to a specific destination volume. All Snapshot Transfers on this destination volume will use these Retention and Schedule configurations.

Retention tab • Select one of the configured Retention Policies from the list. A description of the selected policy appears. • To configure a new Retention Policy, click [...].
Schedule tab • Select one of the configured NAS Schedules from the list. A description of the selected schedule appears. • To configure a new NAS Schedule, click [...].

Snapshot Transfer Property (source vault)

This dialog box shows properties for a specific Snapshot Transfer configuration.

Source	Source path where the data originates. • Storage Device name: volume [/ qtree]
Destination	Destination path where the data is copied. • Storage Device name: volume [/ qtree]

Bandwidth	(Optional) • Unlimited: Snapshot will be transferred from Source to Destination as fast as possible. • Limited to (KB/sec): Throttle the snapshot data transfer rate from Source to Destination to this speed.
Description	You can add additional descriptive text here.

Snapshot Transfer Setup Wizard - Select Snapshot Retention

This dialog box allows you to select or configure a Snapshot Retention Policy for this Snapshot Transfer.

- Note: Only one Retention Policy per destination volume is permitted (this panel is skipped if already defined for the same destination volume).
- Select one of the configured Retention Policies from the list. A description of the selected policy appears.
- To configure a new Retention Policy, click [...] to open the "Snapshot Transfer - Snapshot Retention Management".

Snapshot Transfer Setup Wizard - Select Snapshot Schedule

This dialog box allows you to select or configure a Snapshot Schedule for this Snapshot Transfer.

- Note: Only one Schedule per destination volume is permitted (this panel is skipped if already defined for the same destination volume).
- Select one of the configured Snapshot Schedules from the list. A description of the selected schedule appears.
- To configure a new Snapshot Schedule, click [...] to open the "Snapshot Transfer - Snapshot Schedule Management".

Snapshot Transfer Setup Wizard - Select Storage

This dialog box allows you to select one of the configured Storage Devices (from DS-User > Snapshot Manager > Register Storage).

Storage Device List Select the source or destination Storage Device to use for this Snapshot Transfer configuration. • [...] - Click to open the "Snapshot Transfer - Register Storage Management".
Description • Additional information about the selected Storage Device appears in this section.

Snapshot Transfer Setup Wizard - Select volume/qtree

This dialog box allows you to select a volume or volume/qtree on a Storage Device.

Depending on when this dialog box appears, it can be either to select the source or destination volume.

- Source: You can select a volume or volume/qtree.
- Destination: You can select a volume.

Only one selection can be made per Snapshot Transfer configuration.

Snapshot Transfer Setup Wizard - Specify Snapshot Transfer Setup Name

This dialog box allows you to set the Snapshot Transfer configuration name and some optional configurations.

Name	Give this Snapshot Transfer configuration a name (a default suggestion is provided).
Bandwidth	(Optional) • Unlimited: Data will be transferred from Source to Destination as fast as possible. • Limited to (KB/sec): Throttle the snapshot data transfer rate from Source to Destination to this speed.
Description	You can add additional descriptive text here.

Specify Credentials (Linux DS-Client)

Use this dialog box to provide or modify credentials to network resources, including database credentials.

You can click [...] beside any User Name box to browse for an encrypted key file (one that contains the user credentials). If the file is valid, you must enter the correct key to unlock the file. Opens the Enter unlock key dialog box.

Network Credentials: • Network Credential Information • 'sudo' as an Alternate User
Database Credentials: • MySQL / PgSQL • DB2 Server • Oracle Server
Ask for NAS API credentials: • NAS

Network Credential Information	
User Name	Enter a valid User Name.

Password / Passphrase	Enter the corresponding password (or passphrase). • Passphrase is for UNIX-SSH only, when you select or specify a Private Key File. The passphrase will be used for public key authentication.
Private Key File (UNIX-SSH only)	This feature allows you to backup/restore using SSH public-key authentication. 1. If no private key file is specified: • If a default private key file is found on the DS-Client machine, try public-key authentication first. If that fails, try password authentication. • If no default key file is found, try password authentication only. 2. If a private key file is specified for the backup set: • The SSH connection will use public-key authentication only.

'sudo' as an Alternate User (UNIX-SSH)	• These credentials will be used to access the data. • For security reasons, you might not want to use a super user for remote login to a source machine. • Linux DS-Client will login to the source machine as a regular user, and then use 'sudo' to execute a shell as an alternate user with higher access permissions. • Linux DS-Client will login to the source machine with the supplied network credentials (or DS-User login user if none are supplied). When accessing data, Linux DS-Client will use 'sudo' to execute a shell as this alternate user.
User Name	Enter the User Name of the alternate user on the source machine • This is the user that DS-Client will use to perform the command (e.g. 'root'). • For this to work, the user that connects to the source machine must be granted permission on that machine to perform 'sudo'.
Password	Enter the password of the user that connects to the source machine.

MySQL / PgSQL	**Database Credential Information**
User Name	Enter a valid database user name. For MySQL database backup sets, you can specify credentials by referring to a login path. For more information, see Specifying credentials using logon paths (Linux DS-Client).
Password	Enter the corresponding password
Port Number	Enter the port that will be used to connect to the database. • Use the default, unless you know for certain the database is configured to allow backup / restore on a different port.

DB2 Server	**Database Credential Information**
User Name	Enter a valid database User Name on the DB2 database server you want to back up.
Password	Enter the corresponding password

Node Name	Enter the local alias of the target DB2 server node. This is the name on the DS-Client computer that is used to identify that node. • This is only required for remote DB2 server backup and restore (i.e. if the DB2 is not on the same machine as the DS-Client).
Port Number	Enter the TCP/IP port number of the DB2 Server Database Manager instance.
DB2 Client Instance	Enter the local DB2 instance name installed on the DS-Client computer.

Oracle Server	**Database Credential Information**
User Name	Enter a valid database User Name. • This user must have the SYSDBA privilege, otherwise you will get an ora-1031 error.
Password	Enter the corresponding password.
Service Name	Enter the Service Name of the Oracle database you wish to backup. • The Service Name is the TNS alias that is specified in the “tnsnames.ora” file on your Oracle client. • The DS-Client computer must be running the Oracle client with Recovery Manager. For Oracle 12c databases: • If you enter the service name defined at CDB-level, you will be able to browse the entire container database (Root and all pluggable databases). • If you enter the service name defined at PDB-level, you will be able to browse that specific pluggable database only.

NAS	**NAS API Credential Information**
NAS Type	Specifies the NAS device type, vendor or specific model. Currently supported types: • NetApp • NetApp Cluster
API Protocol	Specifies the protocol for accessing the API. Commonly used protocols are HTTP or HTTPS. • The specific protocol must be enabled on the NAS device.
Port Number	Specifies the port number for accessing the API. • This port must be open on the NAS device.
User Name	Specifies the User Name for a user on the NAS device. • This user requires permissions to execute the API commands on the NAS device and usually needs to be a member of the Administrators group.
Password	Specifies the corresponding password for the NAS user.
Mount-point	Specifies the mount point that DS-Client will use to mount the NAS share during the backup/restore.

Specify Credentials (Windows DS-Client)

Use this dialog box to provide or modify credentials to network resources, including database credentials.

NOTE: The title of this dialog box might be different, depending on the kind of backup set selected and the action you are performing.

You can click [...] beside any User Name box to browse for an encrypted key file (one that contains the user credentials). If the file is valid, you must enter the correct key to unlock the file. Opens the Enter unlock key dialog box.

Network Credentials: • Network Credentials
Database Credentials: • Microsoft SQL • Oracle Server • MySQL • Backup from the Cloud (Salesforce.com) • Backup from the Cloud (Microsoft Office 365) and Microsoft Exchange Server (using EWS)

Network Credentials	
User Name	Enter a valid user name.
Password	Enter the corresponding password.
From	Select the server where the user is defined. This box appears if the sever you want to connect to can require additional information. You can type or select the server/domain where the specified user account is defined.

Microsoft SQL	**Database Credential Information**
User Name	Enter a valid database user name.
Password	Enter the corresponding password.

Oracle Server	**Database Credential Information**
User Name	Enter a valid database user name.
Password	Enter the corresponding password.
Service Name	Type the name of the Oracle service database you wish to backup. • The Service Name is the TNS alias that is specified in the `tnsnames.ora` file on your Oracle client. • The DS-Client computer must be running the Oracle client with Recovery Manager. For Oracle 12c: • If you enter the service name defined at CDB-level, you will be able to browse the entire container database (Root and all pluggable databases). • If you enter the service name defined at PDB-level, you will be able to browse that specific pluggable database only.

MySQL	Database Credential Information
User Name	Enter a valid database user name.
Password	Enter the corresponding password.

Backup from the Cloud (Salesforce.com) Database Credential Information	
Username	Enter the Salesforce.com username and password.
Password	Enter the corresponding password. • Note: If you ever need to change this password, you must also update your security token from Salesforce.com (by obtaining a new one from them).
Target	Select the target database for backup: • Production (default): This the live, functioning version of the Salesforce.com database. • Sandbox: This is the developer / testing version of the Salesforce.com database.
Token	The security token that was emailed to you by Salesforce.com.

Backup from the Cloud (Microsoft Office 365) and Microsoft Exchange Server (using EWS) Credential Information	
Connect as	Type a user name that has the required permission and license. The user must already exist. The value for this box should not contain the domain name. See the Knowledge Base article in Section 15.24, “Backup from the Cloud (Microsoft Office 365)”, on page 602 for details on the requirements for the backup and restore of these data types: SharePoint Online, Exchange Online, or Microsoft Exchange Server 2013 or later (using EWS).
Password	Type the corresponding password.
From	Type the domain name of the backup source. • This domain must already exist. • You must type the complete domain name as it is configured on your network. For example, if the emails at the backup source are addressed to `user@company.local`, type `company.local` in this box.

Specify network credentials for LAN Share Discovery

LAN STORAGE DISCOVERY TOOL

The Share Discovery Wizard helps you to identify all the available backup shares on your LAN. This dialog box allows you to specify which credentials to use when connecting to the shares on the LAN.

Additional credentials section Lists the credentials to use for the Share Discovery Scan Process. It is highly recommended that you supply network administrator-level credentials to successfully scan the selected shares. • **Connect As**: Shows the username. • **From**: Shows the domain or computer name of the user credential. • **Priority**: Shows the order of credentials that the DS-Client will use to attempt to scan each share. If the highest priority credentials fail, the DS-Client tries the next in line until it succeeds (or runs out of additional credentials).	
Add	Click to add a new credential entry. Opens the Set Credentials.
Modify	Click to modify the highlighted credential entry. Opens the Set Credentials.
Delete	Removes the highlighted credential from the list.
Overwrite existing share credentials	If you have already scanned the LAN, each scanned share has been assigned the best suited credentials for scanning. Click to overwrite these credentials (the DS-Client will retest from the list of credentials you provided in the Additional Credentials section.).

Stop DS-Client Node

[Grid DS-Client]

This dialog box allows you to stop the selected Grid Node. This stops the DS-Client service on that node.

• **Wait for all running activities to complete**: Stops the DS-Client on the selected node, after all the current activities have completed. No new activities will be allowed once you click OK. • **Stop when all activities complete or force stop after [...] minute(s)**: Stops the DS-Client on the selected node after all the current activities have completed, or forces a stop after the specified time has elapsed. No new activities will be allowed once you click OK.	
Stop Type: • Shut down the node • Reboot the node • Only stop the DS-Client service (keep the computer running)	
OK	Proceed with stopping the node. • **Warning**: Once you press this button, the action cannot be reversed.

Storage Summary

The Storage Summary can help administrators analyze the trends for Online amount, number of files and backup time. The default is a chart, but a list is available (and is easier to read if you are viewing more than 3 series).

Chart options	Chart Type selection (Line or Bar Chart)
Select by section	
From	Click to select the date where you wish to begin viewing storage summary information.

To	Click to select the last day for which you wish to view storage summary information. By default this is set to the current date.
Owner	Allows you to specify a particular user. • The default is blank, which searches for all users of the DS-Client. • You can type in this box or click [>>] to open the Select Backup Sets dialog box. If you select a backup set, the owner of the backup set is automatically selected for this box.
Node / Set	Allows you to specify a particular computer or backup set. • The default is blank, which searches for all backup sets of the DS-Client. • You can type in this box or click [>>] to open the Select Backup Sets dialog box.
Refresh	Click to update the display. You must refresh every time you change a parameter in the “Select by” section.
Chart options section	
Interval	Choose from one of the following radio buttons: Daily, Weekly (Default), Monthly
View	Choose either chart or list view for this dialog box.
Backup set type section	Select the backup set type(s) whose information you want to display: • Online • Statistical • Self Contained • Local Only • Local DS-VDR • Instant Recovery
Series	Click to change the information displayed in the storage summary. This brings up the Storage Summary Series.

Storage Summary Selection

This dialog box allows you to select a particular user, node, and/or set.

User	Specify a particular username.
Node/Set	Specify a particular server, computer, or backup set. Click the >> button to bring up the Select from Backup Sets dialog box. You can browse through and select the node, or node/set that you would like a summary. Leave this box blank to see a summary of all backup sets.

Storage Summary Series

This dialog box allows you to change the information that is displayed in the Storage Summary.

Time statistics (in minutes)	
Average Time	Average duration of all scheduled and on-demand backup sessions for the selected period.
Actual Time	Total duration of all scheduled and on-demand backup sessions for the selected period.

Files statistics	
Total Files	Total number of files stored Online (including the generations).
Inc Files	This is a derived figure, showing the increment to the Total files.
New Files	Total number of new backed up files (i.e.: not including files with previous generations).
Backup Files	Total number of files backed up for the selected period.
Inc Backup Files	This is a derived figure, showing the increment to the Backup Files.
Amount statistics (MB)	
Total Online	Total amount stored Online.
Inc Online	This is a derived figure, showing the increment to the Total Online.
New Online	Total amount for the new backed up files.
Transmitted	Amount of data transmitted to Online (including compression/ encryption, etc.).
Inc Transmitted	This is a derived figure, showing the increment to the Transmitted amount.
Online Backup	Total amount of data backed up for the selected period.
Inc Online Backup	This is a derived figure showing the increment to Online Backup.

System Activities Administration

The System Activities Administration dialog box allows an administrator or backup operator to perform different administrative tasks on the DS-Client.

DS-Client Activities	
Scheduled activities Enable/Disable	Toggle to activate or suspend operation of all scheduled activities on the DS-Client. (This will reset to Enabled if the DS-Client service is restarted).
Demand activities Enable/Disable	Toggle to allow or prevent users from performing demand activities. (This will reset to Enabled if the DS-Client service is restarted).
DS-Client Operations	
Shutdown DS-Client Computer	Click to initiate or abort the shutdown of the DS-Client.
Repair DS-Client database	Click to recover or repair the DS-Client database. • See Repair DS-Client.
Administrative Processes	
Statistics updated on	Click Update Now to run the Update Statistics process immediately.
Daily Admin.	Click Run Now to run the Daily Admin. process immediately.
Weekly Admin.	Click Run Now to run the Weekly Admin. process immediately. • Opens the Weekly Admin Options
System	Click to open the System Status dialog box. • See DS-Client System Status.

Tape Converter - Options

[Windows DS-Client]

This dialog box lets you specify the conversion options.

Before Conversion	
Tape Password	The current implementation does not require any input. If the tape is in MTF, DS-Client can convert the data without entering any password(s).
Backup Set Password	
After Conversion	
Target Path	For each conversion process, you must specify a the target path. DS-Client will automatically create a unique sub-folder in this path for the conversion. Once written, ship that folder to the BLM Archiver location for import. • Click [...] to select a path. This opens the Initial Backup Settings dialog box.
BLM Session	Each Archive Package is automatically time-stamped. To make searching Archive Packages easier, you can add your own BLM Session label (alphanumeric string)
Backup Set Name	By default, this is the same as the set name from the Tape.

Tape Converter - Select the backup set

[Windows DS-Client]

In this dialog box, you can select the tape you want to convert.

Identify Tape	Instruct DS-Client to try to identify the contents of the highlighted tape.
Refresh	Updates the dialog box with the latest information that DS-Client has from the Tape Library's memory.
Tape List	A list of the tapes that the DS-Client can recognize in the attached Tape Library. • **Unidentified Tapes**: Shows a list of recognized tapes (the Tape Label appears). This is fast, since it draws the information from the Tape Library's memory. • **Identified Tapes**: Shows a tree of the identified Computer > Backup Set Name > Tape(s). You only need to identify a tape once, unless you change the tapes or restart the DS-Client service.
Description	Depends on the item highlighted in the Tape List. • **Tape**: Shows the Tape Label, and corresponding description (from the tape itself). • **Backup Set**: Shows the Backup Set Name, Backup Time, and Size.

Tape Converter - Select the directories

[Windows DS-Client]

This dialog box shows a tree of the backup files. You can select items at the folder-level. By default, the entire backup set is selected for conversion.

Tape Converter - Summary

[Windows DS-Client]

This dialog box shows a summary of the tape data that is about to be converted.

Test DS-System Connection

This dialog box shows the test results for the selected DS-System connection.

Unprotected LAN Resource Node Summary

UNPROTECTED LAN RESOURCE DISCOVERY TOOL

The Discovery Wizard helps you to identify all the unprotected resource (shares) on your LAN. This dialog box displays the results of the last scan, sorted by computer (server).

Last Scan	The data and time the Unprotected LAN Resource Discovery process last scanned the LAN. The contents of this dialog box come from that process.
Node List • Server Name - Network name of the computer. • IP Address - Network IP address of the computer. • Version - Operating system version running on the computer. • Revision - Operating system service pack / update level. • New - Indicates if the computer is new (was not backed up prior to the last scan). • Note - Additional notes, if available.	
E-Mail	Email the results of the last Unprotected LAN Resource scan. • Opens the Send Unprotected LAN Resource Discovery E-Mail dialog box.
Exclude	Exclude the highlighted computers (nodes) from the next scan.
Shares	View a list of the unprotected resources, sorted by share. • Opens the Unprotected LAN Resource Share Summary dialog box.
Backup Set	View a list of the new backup sets automatically created by the last scan process. • Opens the New Backup Sets Summary dialog box.
Select By • Server Type - Display the list of unprotected computers that fit the selected category.	
Refresh	Update the list based on the Select by options.

Unprotected LAN Resource Share Summary

UNPROTECTED LAN RESOURCE DISCOVERY TOOL

The Discovery Wizard helps you to identify all the unprotected resources (shares) on your LAN. This dialog box displays the results of the last scan, sorted by share.

Last Scan	The data and time the Unprotected LAN Resource Discovery process last scanned the LAN. The contents of this dialog box come from that process.
Node List • Server Name - Network name of the computer. • Share Name - Share name on the computer. • Share Path - Share path on the computer. • Connect As - Credentials used to connect to the share. • File System - File system running on the corresponding share. • New - Indicates if the share is new (was not backed up prior to the last scan).	
E-Mail	Email the results of the last Unprotected LAN Resource scan. • Opens the Send Unprotected LAN Resource Discovery E-Mail dialog box.
Exclude	Exclude the highlighted computers (nodes) from the next scan.
Select By • Server Name - Allows you to filter for a specific computer. • Share Type - Allows you to filter for shares that are protected or unprotected.	
Refresh	Update the list based on the Select by options.

Users & Groups

This dialog box displays the users and groups using the DS-Client. The DS-Client records information about users. This information is used to enforce Maximum Online limits, Permissions, as well as to apply ownership to backup sets.

User / Group Icon	Shows whether the corresponding entry refers to a specific user or a group.
Name	Displays the user or group's name.
Full Name	Display a more descriptive name about the user or group, if available.
From	Displays the server/domain where the user or group is defined.
Max Online (MB)	Shows the maximum online storage amount allocated to the user or group (if any).
Effective (MB)	Shows the maximum online storage amount for a user based on Group limit (if any) - the lower of the Group or User limit will apply.
Used (MB)	Shows the storage amount used by the user or group (if any).
Show Users / Show Groups	Depending on whether you have highlighted a User or a Group, this button brings up another dialog box that shows the groups or users associated with highlighted user or group.
Delete	Click to remove the highlighted User or Group from the list of available accounts. You can not delete if the user has active backup sets. (Note: the user or group will return to the list if the user logs on to the DS-Client again).
Max Online	Allows you to apply or change an online limit to the highlighted user or group. This brings up the Max Online for '...' Dialog Box.

Users & Groups Information

This dialog box allows you to specify the customer grouping assignment for a user or a user group.

Name	Select the user or the user group to which you want to assign a customer.
Customer	Select the customer that you want to assign to the user or the user group.
Note	Type a comment as necessary.

Users / Groups for '...'

This dialog box will specify users if you have highlighted a group, or groups if you have highlighted a user in the Users/Groups dialog box.

Group/Name	Shows the Groups associated with the selected user, or the users associated with the selected group.
Description/Full Name	Shows the description of a group, or the full name of a user.
From	Shows the server/domain where the user or group is defined.

Validation Wizard - Set Validation Settings

Use this dialog box to enter the Encryption Key(s) for a demand validation.

Encryption Key	
Private Key	Enter the DS-Client Private Key.
Account Key	Enter the Customer Account Key (if this has been set).
Selections	
All online data	Select to validate all online data of the selected backup set.
Selective	Select to choose specific items to validate.

Verify Encryption Key

Use this dialog box to enter the Encryption Key(s) to configure this Backup Schedule to run a Validation Process.

Encryption Key	
Private Key	Enter the DS-Client Private Key.
Account Key	Enter the Customer Account Key (if this has been set).

Verify Prerequisites (Exchange Item-Level)

This dialog box is read-only. You must wait as DS-Client completes a compatibility check of the selected Microsoft Exchange Server target location. You can only proceed to the next dialog box when all checks have passed.

View Quotas

This dialog box shows if, and what the storage quota(s) are for your customer account and DS-Client account. This information is read-only. The configuration is done by your service provider from the DS-System side.

Customer Storage Quota	
Quota	Shows the amount (number in MB or GB). This is the total storage quota for all DS-Clients (including this one) of this customer account.
Calculation method	• Based on Protected Size (Size of the files as they were backed up. This counts the original file size of each generation of a file backed up.) • Based on Stored Size (Size on the DS-System) • Based on Native Size ('Restorable' Size of the backed up data, including files deleted from source. This only counts the original size of the latest generation of all backed up files.)
Stop Backup level	Storage amount at which the DS-System will stop all backups for this customer.
Send E-Mail when the following are reached	Email will be sent for each checked event, if it occurs. You must tell your service provider which email address in advance. • Warning Level 1 • Warning Level 2 • Warning Level 3 • Stop Backup level
Used Quota	Quota used (number and percentage)
DS-Client Storage Quota	
Quota	Shows if there is a quota, and the amount (number in MB or GB). This is the total storage quota for all backup sets on the DS-Client.
Calculation method	• Based on Protected Size (Size of the files as they were backed up. This counts the original file size of each generation of a file backed up.) • Based on Stored Size (Size on the DS-System) • Based on Native Size ('Restorable' Size of the backed up data, including files deleted from source. This only counts the original size of the latest generation of all backed up files.)
Stop Backup level	Storage amount at which the DS-System will stop all backups for the DS-Client.
Send E-Mail when the following are reached	• Warning Level 1 • Warning Level 2 • Warning Level 3 • Stop Backup level
Used Quota	Quota used (number and percentage)

DS-Client Local-Only Storage Quota	
Quota	Shows if there is a quota, and the amount (number in GB). This is the total storage quota for all “Local-Only” backup sets on the DS-Client.
Calculation method	• Based on Protected Size (Size of the files as they were backed up. This counts the original file size of each generation of a file backed up.) • Based on Stored Size (Size in the Local-Only storage) • Based on Native Size ('Restorable' Size of the backed up data, including files deleted from source. This only counts the original size of the latest generation of all backed up files.)
Used Quota	Quota used (number and percentage)
DS-Client Local DS-VDR License	
Local DS-VDR Count	Shows how many licenses have been allocated to the DS-Client. • If the used amount reaches or exceeds this number, you must ask your service provider to increase the amount for the DS-Client.
Used	Total number of virtual machines using Local DS-VDR. • This is a counter that increases each time a Local DS-VDR backup set is used to export a virtual machine. (Each virtual machine counts as one license, against the allocated pool for the DS-Client.)
VM Replication Storage Quota Displays the VM replication license that has been allocated to and used by the DS-Client. The VM replication license is based on either native capacity or the number of virtual machines. If both VM Replication Capacity and VM Replication Count have a value of 0, the DS-Client is not currently allocated any VM replication license.	
VM Replication Capacity	Displays the total native capacity allocated to the DS-Client for VM replication. If this value is 0 while VM Replication Count is greater than 0, you are allowed unlimited native capacity.
Used VM Replication Capacity	Displays the total native capacity of virtual machines that have been replicated by the DS-Client.
VM Replication Count	Displays the total virtual machine count allocated to the DS-Client for VM replication. If this value is 0 while VM Replication Capacity is greater than 0, you are allowed an unlimited VM replication count.
Used VM Replication Count	Displays the total number of virtual machines that have been replicated by the DS-Client.
DS-Tools	Click to view the DS-Tools enabled for the DS-Client account. • Opens the DS-Client DS-Tools screen.

Virtual Machines Access Report

This dialog box reformats the information retrieved from the selected virtual machines.

New Report	Click to create the report. This will sort the selected virtual machines based on their properties. • Opens the “Select Access Intervals”.

Chart (Left-side) This section sorts the information into a chart based on the selected radio button.
Table (Right-side) This section shows a table. Each line represents a time interval selected when creating the report.

Virtual Machines Summary

This dialog box displays information on the machine(s) in the Virtual Machines Properties list.

Virtual Machines This section shows the list of virtual machines that were discovered from the specified VMware vCenter Server or Microsoft Hyper-V host.	
VM Type	Select • VMware vSphere: Scans the virtual machines from a vCenter Server on your network. • Microsoft Hyper-V: (Windows DS-Client only) Scans the virtual machines from a Hyper-V host on your network.
vCenter	Enter the IP address of a vCenter Server on your network.
Host	Enter the IP address of a Hyper-V host on your network.
User Name	User credentials with sufficient rights to read information from the virtual machines on the vCenter Server or Hyper-V host.
Password	Enter the user password.
Select all	Click to select all the discovered virtual machines. • You can use CTRL+SHIFT+CLICK to selectively choose virtual machines.
Virtual Machines Properties This section shows more detailed information about the items selected in the discovered Virtual Machines List. • Since it can take quite some time to gather this additional information for long lists, you can choose which virtual machines you want to scan for additional properties information.	
Discover Machines	Click to scan the vCenter Server using the specified User Name and Password. • This can take a while, depending on the number of virtual machines.
Get Machine Properties	Click to perform an additional scan for more detailed properties from the selected items in the Virtual Machines List. • This can take a while, depending on the number of virtual machines selected. • The information retrieved is displayed in the Virtual Machines Properties List.
Virtual Access Report	Click to reformat the additional information on virtual machine properties into a graphic and table. • Opens the “Virtual Machines Access Report”.

VMR - Select Virtual Machine Generation

This dialog box shows all the generations of the corresponding VM replication set. By default, the latest replicated generation is selected.

VMR Offline Configuration

This dialog box shows all VM replication Initial VMR sets that are available for import to the destination vCenter Server.

Backup Set List Each line in this list corresponds to a different VM replication Initial VMR set in the specified folder. • Set ID • DS-Client IP • Time • Folder Name	
Backup Set Details This information corresponds with the highlighted item in the Backup Set List. • Source Path • Destination Path • Host • DataStore	
Import	Click to begin importing the available Initial backup sets to the destination vCenter Server.

VSS Component Details

This dialog box displays the files that are part of the highlighted VSS component. Details in this dialog box are read-only.

File Name	Name of the component.
File Path	Full path of the file on the source.
Backup Time	Date and time when this file was most recently backed up.
Last Modified	Date and time when this file was most recently changed.
File Size	Size of the component.
Snapshot ID	The ID of the hardware snapshot associated with the backup session when this file was backed up.

VSS Component Details

This read-only dialog box shows VSS-aware backup set components.

Details	Click to show the details for the selected component.

VSS Component Details for

This read-only dialog box shows the individual files that are backed up for a VSS-aware backup set component.

Weekly Admin Options

The Weekly Admin Options dialog box appears when you run Weekly Admin on demand.

Synchronize all sets	• If selected, this Weekly Admin will force a synchronization of all backup sets. This will increase the amount of time it takes to complete the Weekly Admin. • If not selected, this Weekly Admin will skip synchronizing backup sets, as long as no database inconsistencies are detected.
Number of simultaneous synchronizations	• A number between 1-8 (default is 1). This is the maximum number of simultaneous synchronizations that will run (if synchronizations are required). Note: This number is also limited by the maximum concurrent activities supported by DS-Client configured from the DS-Client Configuration Advanced Tab dialog box (Setup Menu > Configuration > Advanced). • For Windows DS-Clients, the parameter name is “MaxSessions”, and is found in the “Performance” category. • For UNIX DS-Clients, the parameter name is “MaxSession Number”.