Asigra Cloud Backup v14.1

DS-System User Guide

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Asigra.

Recovery is Everything™

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Contents

1 About this guide

This guide describes how to use the DS-System software.

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

1.1 Intended audience

This guide is intended for users of the DS-System application.

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.

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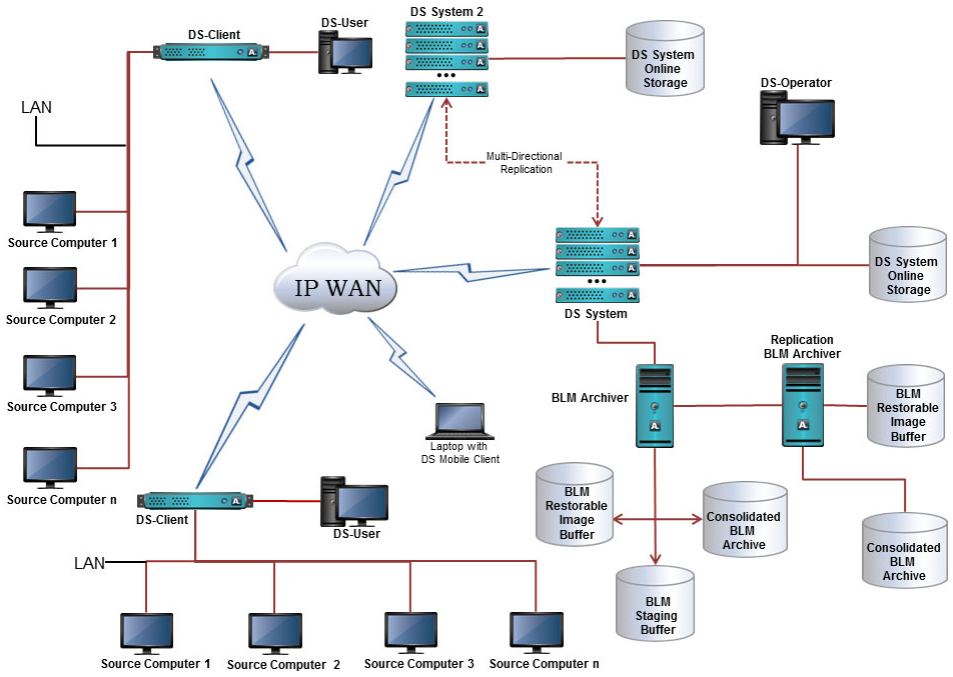
2 Getting started

The DS-System is the data vault that enables you, as an enterprise customer or Managed Service Provider (MSP), to provide data protection services. Data from customer servers is backed up through the agentless DS-Client, and sent offsite to your DS-System data vault.

The following diagram provides an overview of the major components that interact with the DS-System.



2.1 About DS-System

DS-System software enables you to offer a robust, scalable service to multiple customers. Several additional modules can be selectively added to your license to enhance the service you provide.

DS-Operator is the remote management software for the DS-System. Part of its function is to assist with maintenance of the customer accounts. DS-System can produce reports to track sales trends and system activities.

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

Customers can take advantage of automatic and unattended backups for data environments ranging from single-user standalone computers up to enterprise-wide LANs and WANs.

During backups, the DS-Client extracts changed data, compresses, and encrypts the items specified for backup. Only new or modified data is backed up, thereby accelerating the backup transmission time. The backup data is sent via the Internet, Intranet, or direct dial-up to the secure, off-site Data Center that hosts the DS-System Vault.

Restores are performed on demand, via the same DS-Client, once the DS-Client's security measures have been cleared.

File name	Application description
dsoper.jar	This is the DS-Operator user interface to the DS-System application.
dssystem_dc.exe (Windows)	This is the Windows service program.
dssstatus.exe (Windows)	The DS-System Service Manager program allows you to stop or start the DS-System service (without having to use the Windows Control Panel > Services Microsoft Management Console).
dssystem_dc (Linux)	This is the Linux daemon program.
service.jar (Linux)	The DS-System Service Manager program allows you to stop or start the DS-System daemon.
dssys (Linux)	This is the startup and shutdown script for the DS-System daemon.
dssystem database	The `dssystem` database resides on the database instance that was selected by the DS-System administrator at installation. This can be on the local computer, or on a remote computer.
dssystem DB scripts	In the DS-System installation directory, there are `*.sql` files, which are the database patches that were applied during installation or upgrade of the DS-System software.

Table 1 Major software components installed with the DS-System

2.2 Connecting to a DS-System

This section describes how to connect to a DS-System.

NOTE: The first time you login to a new DS-System must be with a “super user” account. This is an account with “root” privileges (UNIX) or a member of the “Administrators” group (Windows) on the DS-System computer (or a Windows Domain Administrator, if the DS-System is in a Domain). Once logged in, you can configure the roles for other user accounts. See Section 3.5, “Configuring roles”, on page 46.

To connect to a DS-System:

1. Start the **DS-Operator** application.
2. In the **DS-System(s)** list, select the check box beside the DS-System server you want to connect to.
   - If there is a local DS-System on the same computer as the DS-Operator GUI you are running, it appears in blue. DS-Systems that appear red are not running.
   - If the DS-System you want does not appear, you can add it to the initialization settings. See: Section 3.3, “Configuring the initialization settings”, on page 28.
   - To change the sort order of the list, right-click and select **Sort by name** or **Sort by IP**.
   - To rescan the network for available DS-Systems, click **Refresh**.
3. In the **Protocol** box, select one of the following:

   F1 Help: Connect to DS-System Service

   - **Encrypted –** All the data between the DS-Operator and the DS-System service will be encrypted with a random encryption key at every connection.
   - **Standard –** This option is only offered for backwards compatibility with old service or daemon versions that do not have this feature.
4. Under **Credentials**, type your user name and password, and in the **From** box, select the domain or computer where these credentials are defined.
5. If you want to save these credentials for the duration of the DS-Operator session, select the **Remember credentials** check box. Exiting the DS-Operator application clears these credentials.
6. Click **Connect** to send the information to the DS-System.

Once you have successfully connected, the DS-Operator main window activates.

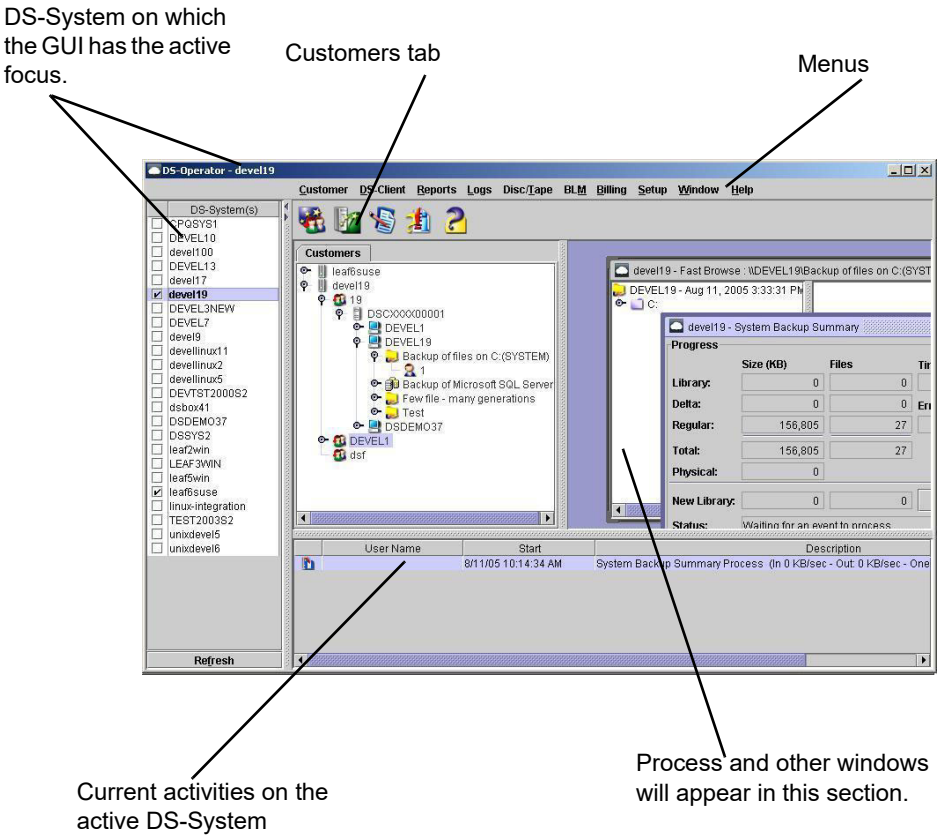
You may connect to more than one DS-System, if available. The active DS-System is selected in the **DS-System(s)** list, and indicated in the DS-Operator title bar.

NOTE: If the DS-Operator loses its connection to the DS-System, verify that the DS-System service is started and that there are no issues related to storage or the database.

2.3 Working in the DS-Operator main window

This section provides an overview of DS-Operator GUI. It also describes the basic steps involved with preparing your DS-System for service.

To access DS-System functions, you can select from the menu options found directly below the title bar in the DS-Operator window.



- **DS-System connection list –** Shows a list of the available DS-Systems you can connect with on the LAN. You can connect to more than one DS-System, however you may view only one at a time. Multiple DS-Systems are displayed concurrently in the Customers tab.
- **Title Bar –** Shows the name of the DS-System computer that you are using.
- **Menu Bar Items –** Items here allow you to perform the various tasks necessary to manage and administer the DS-System. Some items in the menu bar only appear if the corresponding tool is enabled, or depending on your operating system.
- **Monitor –** The bottom part of the DS-Operator window shows the active processes on the DS-System.

- **Customers Tab –** Manage customers, DS-Clients, and view backup sets. DS-Clients appear in the **Customers Tab** as follows:

DS-Client Icon	
	Generic DS-Client (No information is available until the DS-Client connects to DS-System.)
	Windows DS-Client
	Linux DS-Client
	Mac DS-Client
	Grid DS-Client (Windows)
	DS-Mobile Client (Windows)
	DS-Notebook Client (Mac)
DS-Client Color	
Black	The DS-Client is active
Blue	The DS-Client is unregistered
Orange	The DS-Client is locked
Red	The DS-Client is deactivated
Overlay Icon (superimposed on items in the tree)	
	A blue cross in the top-left corner of an icon indicates a DS-Client is shared for replication. • See: Section 10.8, “Replication”
	Item’s data is under a delete lock. • See: Section 4.10, “Activating or deactivating a customer account delete lock”

- **Customers Tab –** You can browse the tree and right-click for available menus.

- **Tool Bar Icons –** Icons allow quick access to the most commonly used features:

Icon	Function
	Create a new customer account.
	Create a new DS-Client. (Only activates when a customer is selected.)
	Opens the Activity Log
	Opens the Event Log
	Help

- **Customers tab icons –** The color-coding is as follows for the icons in the Customers tab.
  :

For Customers	
Black	The customer is Active.
Orange	The customer is locked. To unlock it, right-click on the customer > select Unlock Customer.

For DS-Clients	
Black	The DS-Client is Active.
Orange	The DS-Client is locked. To unlock it, right-click on the DS-Client > select Unlock DS-Client.
Blue	The DS-Client is unregistered (and is configured to require registration). For more information: See Section 5.9, “Configuring a DS-Client account for hardware registration”
Red	The DS-Client is deactivated. To activate it, right-click on the DS-Client > select Reactivate.

- **Browse windows icons –** When you browse the **Customers** tab down to the backup set level, you have the option to see more details for that set. For more information, see Section 6.1, “Viewing backup set information”, on page 131.

  The color-coding is as follows for the icons in the **Fast Browse** and **Browse** windows:
  :

Backup Set Folders	Sometimes items become duplicated. Their color changes, to indicate this problem.
Purple	The parent directory has a duplicated item inside.
Red	This item is duplicated.

Folders / Icons	Different types of backup sets have different icons in the Fast Browse or Browse window (depending on what was backed up).
File System backup set	• The drive icon • The folder icon
Microsoft SQL Server backup set	• The database Icon • The folder icon
Microsoft Exchange Server email backup set (DS-MLR)	• The store icon • The Microsoft Exchange Server mailbox icon
Microsoft Exchange Server database backup set	• The Microsoft Exchange Server database icon • The folder icon
Novell NetWare backup set	• The NDS icon • The volume icon • The folder icon

2.4 Starting or stopping the DS-System service or daemon

Occasionally, you may need to stop the DS-System (for example: for software upgrades). Use the corresponding DS-System service manager for best results.

NOTE: When you restart the DS-System service, the DS-System performs a full database dump 30 minutes after the service starts.

You can advise customers of DS-System down time with the maintenance notification feature (see: Section 6.8, “Sending DS-System maintenance notifications to DS-Clients”, on page 140).

Best practice for stopping the DS-System:

- First, stop all activities running on the DS-System;

- Then stop the DS-System (either for standalone or N+1).

NOTE: If DS-System is performing an activity that cannot be interrupted when it receives the stop request (for example: a master-delta reconstruction), the DS-System service will not stop until the activity finishes successfully. Sometimes a stop request may take a long time to complete, and you must be patient.

To start or stop a DS-System via the service manager:

1. On the **Start** menu (Windows) or **Applications** menu (Linux), click **DS-System Service Manager**.

   The **DS-System Service Manager** window appears, indicating whether the DS-System is running or if it is stopped.

2. Click **Start** or **Stop** to toggle the service on or off.

NOTE: If you are experiencing problems with a newly (re)configured setup, it may be advisable to shutdown and restart the DS-System computer.

To start a Linux DS-System via the command line:

- Type the following command:

```
/etc/init.d/dssys start
```

To stop a Linux DS-System via the command line:

- Type the following command:

```
/etc/init.d/dssys stop
```

2.5 Disconnecting from a DS-System

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

To disconnect from a DS-System:

- In the DS-Operator GUI, clear the check box beside the DS-System.

2.6 Exiting the DS-Operator application

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

To exit the DS-Operator GUI:

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

3 Configuring the DS-System

This section provides information on how to set up and configure DS-System.

3.1 Configuring the DS-License Server

The DS-System receives its capacity license allocation and tools from the DS-License Server and must validate its license with the DS-License Server. Validation is constant, meaning the DS-System must be able to connect to the DS-License Server at all times; otherwise its ability to serve DS-Clients might be interrupted. To avoid single-point-failures, you can configure an alternate Emergency License Server. The DS-System sends and displays notifications when the DS-System license is getting close to expiration or when most of the licensed storage capacity is used. If the DS-System is configured for email notifications or SNMP traps, then they are also sent in these scenarios.

NOTE: You can configure the number and frequency of notifications using the LicExpireNotif, LicStorageNotif, and LicNotifFreq advanced configuration parameters. For more information, see Section 3.4, “Configuring the advanced settings”, on page 31.

To configure the DS-License Server:

1. On the **Setup** menu, click **License Server**.
2. In the **DS-License Server** dialog box:

   F1 Help: DS-License Server

   a) In the Production License Server section, type the IP address or the DNS name of the DS-License Server.

   b) Do not change the TCP communication port unless you have a specific requirement.

   c) To configure a failover license server, in the Emergency License Server section, type the IP address or the DNS name of the DS-License Server.

   NOTE: You must use the DS-License Server to change the DS-System license capacity, tools, or other settings. For more information, see the *DS-License Server User Guide*.

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3. Click **Update** to save the settings. The DS-System will connect to the Production DS-License Server and obtain its license.

To view the DS-System's current license limits and tools:

1. On the **Help** menu, click **About DS-Operator**. The **About DS-Operator** dialog box appears.
2. Click **DS-System Info**. The **DS-System Version Info** dialog box appears.

   F1 Help: DS-System Version Info

3.2 Configuring the DS-System settings

Administrators may need to edit some default configurations and settings for DS-System. Most default configuration settings are defined during initial configuration.

3.2.1 Configuring the default settings

These settings are optional. If default values have been specified, they will appear in the corresponding fields when you create new customer accounts.

To configure the default settings for the DS-System:

1. On the **Setup** menu, click **Configuration**. The **DS-System Configuration** dialog box appears.

   F1 Help: DS-System Configuration - Defaults Tab

2. In the **DS-Client Bandwidth Throttle** section, configure the defaults (in Kilobytes per second):

   a) Under **New Customers**, configure the default bandwidth throttle that will appear when you create a new customer. You can configure separate settings for **To DS-System** and **From DS-System**.

      - Unlimited **–** No bandwidth restriction
      - Limited to **–** Maximum throughput to or from DS-System is restricted to the specified amount per second. The minimum value is 5 KB/sec and the maximum value is 999,999 KB/sec.
      - Scheduled **–** Variable throttle according to selected schedule. Section 4.7.1, "Scheduling the bandwidth throttle".

   b) Under **Existing Customers**, you can update DS-Client accounts that already exist on the DS-System.

      - Click **Manage DS-Clients Bandwidth** to adjust the bandwidth settings for all existing DS-Client accounts. This opens the **Bandwidth Throttle** dialog box (see: Section 4.7, "Configuring the bandwidth throttle settings").

- Select the **Apply defaults to existing customers** check box to update all existing customer accounts to use these default settings. Click **Apply**. Changes are made to all existing customer accounts (however no changes are made to any existing DS-Clients).

NOTE: These options are for convenience, especially if you are managing a DS-System with many customer accounts and DS-Client accounts, and do not want to right-click on each account to modify the properties.

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3. In the **Storage Quota for new Customers** section, click **[...]** to edit the default quotas for new customer accounts.

   F1 Help: Edit Default Customer Storage Quotas

   a) In the **Customer Storage Quota section**, set the defaults to be displayed when you use the **New Customer Wizard**.

   b) In the **Default DS-Client Storage Quota section**, set the defaults to be displayed when you use the **New Customer Wizard**.

   c) Click **OK**.

4. In the **Storage History Settings for new Customers** section, select a **History Interval**. This is how frequently the DS-System will save storage information in its logs.

5. Click **OK** or **Apply**.

3.2.2 Configuring the notification settings

These settings are optional.

To configure the notification settings for the DS-System:

1. On the **Setup** menu, click **Configuration**.

2. Click **Notification**.

   F1 Help: DS-System Configuration - Notification Tab

3. Select **Send E-Mail notification** to activate this option.

4. In the **SMTP Server** section:

   a) Click **[...]** to select the SMTP server. The **SMTP settings** dialog box appears.

      F1 Help: SMTP settings

   b) Type the required SMTP server information and then click **OK**.

5. In the **Send E-Mail From** box, type a valid email address to use as the sender for notifications.

6. In the **Administrator Notification Settings** section, type the email address of the recipient for DS-System administrator notifications.
   - To send an email notification to the recipient's address using the configured SMTP server, click **Test**. Verify the test by checking the recipient's email account.
7. To configure notifications, click **Notification Settings**.

   F1 Help: Administrator Notification Settings

   a) In the **Administrator Notification Settings** dialog box, select the notifications you wish to enable, and configure their frequency (if applicable).

   b) Click **OK**.

NOTE: The storage location levels are set in the DS-System Advanced Configurations and cannot be modified from this dialog box. For instructions, see Section 3.4, "Configuring the advanced settings", on page 31.

NOTE: Free space notifications will occur for physical space events that occur on individual storage locations. Physical space is indicated by the **Disk Space** column in the **Extensible Storage Locations** dialog box (Setup menu > Storage > Extensible Storage).

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8. In the Notification tab, click **Apply**.

NOTE: You can set the customer and DS-Client storage quota levels individually in the account's corresponding profile dialog box.

3.2.3 Configuring the SNMP settings

These settings are optional.

You can use the **SNMP** tab in DS-System Configuration to configure DS-System to work with SNMP for sending traps. Ensure that you have SNMP management software installed if you wish to receive and handle the trap information.

For more information on SNMP refer to the Windows Help.

The SNMP tab allows you configure DS-System 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).

DS-System can send traps as notifications in case the following events occur:

- DS-Client had errors during backup.

- DS-Client requested a disc/tape.
- DS-System is running on low memory (DS-System checks every 5 minutes).
- DS-System storage drive capacity low (DS-System checks every 5 minutes).
- DS-System found invalid file(s) on storage drive.
- Customer or DS-Client storage quota reached.
- License will expire in a certain amount of time (DS-System checks every 5 minutes).
- DS-System has reached a certain percentage of the license's storage capacity limit (DS-System checks every 5 minutes).
- (N+1 DS-System) Connection between DS-Director and Leaf was lost.
- (N+1 DS-System) N+1 formation process was successful.
- Storage has been locked for a snapshot.

For DS-System, a trap will be sent as soon as the event is detected. DS-System can keep sending traps at a user-defined frequency until the problem will be solved. (Two exceptions are **DS-Client had errors during backup** and **DS-System found invalid file(s) on storage drive**. They are only sent once.)

In addition, DS-System can be configured to send a special trap as a "heartbeat" signal (at a user-defined frequency). This signal can be used to determine if the monitored service is running normally.

NOTE: You will require the **asigra.mib** file (from the DS-System installation path). This file describes how the objects are organized. Load this file with your SNMP software to receive the traps sent by DS-System.

To configure the SNMP settings:

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

   F1 Help: DS-System Configuration - SNMP Tab
3. In the **Community** field, type a name and click **Add to list**.
4. Under the **Destination host list**, click **Add**. The **Add host name or IP address** dialog box appears.
5. Type a host name or IP address from your network and click **OK**.
6. Continue to add as many destination host names or IP addresses as you require for this community.
7. Click **Event Settings**.

F1 Help: SNMP Event Settings

8. In the **SNMP Event Settings** dialog box:

   a) Select the events to be monitored.

   b) Configure the notification frequency for monitored events.

   c) Select **Send traps as heartbeats every [...]**, to send traps as heartbeats. Configure the frequency of heartbeats from the drop down list.

   NOTE: For OID description, refer to the `asigra.mib` file.

   Trap contents are as follows:

Trap contents for heartbeat notifications		
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 all other notifications		
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.

   d) Click **OK**.

9. In the SNMP tab, click **Apply**.

3.2.4 Viewing the DS-Tools

DS-Tools are modules enabled on a DS-System through its license, which is obtained from the configured DS-License Server. For more information, see Section 3.1, “Configuring the DS-License Server”, on page 19.

To view the DS-Tools enabled on the DS-System:

1. On the **Setup** menu, click **Configuration**. The **DS-System Configuration** dialog box appears.
2. Click the **DS-Tools** tab. The check boxes indicate which tools have been enabled.

   F1 Help: DS-System Configuration - DS-Tools Tab

3.2.5 Configuring the SOAP Integration settings

These settings are optional. They allow you to configure DS-System to verify a DS-Client connection with a third-party web service.

To configure the SOAP Integration settings:

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

   F1 Help: DS-System Configuration - SOAP Integration Tab
3. To activate this feature, click **Integration Enabled**. DS-System will validate each DS-Client connection with the configured third-party web service. The connection will proceed only if DS-System receives the correct acknowledgment from the web service.
   - DS-System passes the DS-Client number, account number, and (if available) a cookie to the third-party web service.
   - The web service handles the information it is passed independently.
   - DS-System waits for an acknowledgement from the web service (or until a timeout occurs). To proceed with the DS-Client connection, the acknowledgement must be an empty string.
4. Click **OK** or **Apply** to save the settings.
5. To verify the settings, click **Test**.

   a) The **Test SOAP Integration** dialog box appears.

      F1 Help: Test SOAP Integration

   b) Type the information you want to pass to the third-party web service and click **Test**.

      The message that confirms a correct acknowledgement from the web service is:

      `SOAP call succeeded, no error was returned by the server.`

3.2.6 Configuring the DS-Client admin settings

These settings are optional. They allow you to configure DS-System to limit the number of concurrent DS-Client Daily Admin or Weekly Admin processes.

By default, all DS-Client accounts are scheduled to run the Daily Admin and Weekly Admin activities between 20:00 and 06:00.

NOTE: For N+1 DS-Systems, the limits apply per node. (For example: a 10 node N+1 DS-System with a **Maximum concurrent Admin activities** setting of 20 would have a real limit of 200.)

To configure DS-Client admin settings:

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

   F1 Help: DS-System Configuration - DS-Client Setting Tab
3. To activate this feature, select **Limit DS-Client Admin activities**. Configure the following:
   - **Maximum concurrent Admin activities –** DS-System will allow the maximum number of concurrent Admin activities you specify. Any amount over this limit will be placed in a queue that checks if the Admin can start every 1-5 minutes.
   - **Maximum Admin waiting time –** Queued Admin processes will automatically start after this amount of time. The concurrent limit will no longer apply to processes that have waited this amount of time.
4. Click **OK** or **Apply** to save the settings.

3.2.7 Configuring the encryption keys settings

These settings are optional.

You can configure the DS-System policy regarding DS-Client encryption keys. This determines if an encrypted copy of the keys is stored in the DS-System database.

If you enable this option, the customer must also configure the option from the DS-Client side. (For more information, see the *DS-Client User Guide*.)

NOTE: Encryption keys are stored in the DS-System database in an encrypted format. The keys can be used for various tasks, such as creating DS-Client `.CRI` (Customer Registration Information) files or running system validation on backed up files. Customers should note the security implications.

To configure DS-Client encryption key management:

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

   F1 Help: DS-System Configuration - Encryption Keys Tab
3. To activate this feature, select **Enable DS-Client Encryption Key Management**. Configure the following:
   - **Mandatory Encryption Key Management —** DS-System forces all DS-Clients to enable this feature from the first connection. No activities will be allowed until it is enabled on the DS-Client side.
   - **Forward DS-Client Encryption Keys to BLM Archiver —** DS-System also forwards a copy of the keys to the BLM Archiver so they are available in the archive package for validation purposes, and can be exported if required. They will be stored or removed in parallel with the copy in the DS-System database. (This is mainly a double-redundancy feature.)
   - **Clear All Existing DS-Client Encryption Keys —** If you clear the **Enable DS-Client Encryption Key Management** box, you can choose to clear all existing DS-Client encryption keys from the DS-System database. This will take effect immediately when you click OK or Apply.
4. Click **OK** or **Apply** to save the settings.

3.2.8 Configuring the DS-NOC settings

These settings are optional.

To configure the default settings for new DS-Client accounts created via DS-NOC:

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

   F1 Help: DS-System Configuration - DS-NOC Tab
3. The settings in this tab only apply to DS-Client accounts created via the DS-NOC:
   - **Bandwidth Throttle for new DS-Clients –** see: Section 3.2.1, “Configuring the default settings”, on page 20
   - **Storage Quota for new DS-Clients –** see: Section 3.2.1, “Configuring the default settings”, on page 20
   - **Storage Group for new Customers/DS-Clients –** In the **Storage Group** list, select the storage group that will be assigned to new customer accounts and DS-Client accounts created via the DS-NOC. (You can click

[...] to configure a storage group. For more information, see *Storage Groups* in: Section 3.6.2, “Configuring an extensible storage location”, on page 50.)

4. Click **OK** or **Apply** to save the settings.

3.3 Configuring the initialization settings

These optional settings can be configured from DS-Operator without logging in to a DS-System. Settings only apply to this DS-Operator GUI installation.

3.3.1 Configuring the connection settings

(Optional **–** this dialog box can be left empty. If empty, the GUI will scan the local computer and the local computer’s subnet.)

Use these settings to indicate a specific address, where DS-Operator will look for a DS-System service. This can speed up your login in larger network environments. You can also configure the GUI to scan entire subnets.

To add new connection settings for DS-Operator GUI:

1. On the **Setup** menu, click **Initialization**.

   F1 Help: DS-Operator Initialization - Connection

   - To add an entry in this dialog box, click **Add**.
   - To edit an entry in this dialog box, select it and click **Modify**.

2. To add a specific DS-System, click **Add** in the **Additional DS-Systems** section. The **Add / Modify a DS-System** dialog box appears.

   F1 Help: Add / Modify a DS-System Connection

   - **DS-System Type –** Select **Single DS-System** or **N+1 DS-System**. The dialog box will change based on this selection.
   - **Address –** Type the IP or DNS address of the DS-System entry. DS-Operator will scan each address in the list for a DS-System service.
   - **Port –** Do not change this setting unless you have a specific requirement to do so.
   - **Use UDP protocol to discover DS-System –** The UDP protocol will display a list of DS-Systems faster, though with less certainty that a DS-System is capable of accepting a connection.

   a) Type the DS-System address.

   b) Click **OK**. The entry appears in the **Additional DS-Systems** section.

3. To add an entire subnet, in the **Additional Subnets** section click **Add**. The **Add / Modify Subnet** dialog box appears.

   F1 Help: Add / Modify Subnet

   - Specify the subnet and click **OK**. The entry appears in the **Additional Subnets** section.

4. Continue with steps 2-3 as required.
5. Click **OK** to save any changes.

NOTE: DS-Operator GUI will scan the LAN for all active DS-Systems, whether or not any entries are in the Additional DS-Systems list. DS-Systems specified in the Additional DS-Systems list which are not detected, will appear in red. A DS-System on the local computer appears in blue.

3.3.2 Configuring the regional settings

This dialog box controls the GUI language settings and other regional formatting.

1. On the **Setup** menu, click **Initialization**.
2. Click **Regional**.

   F1 Help: DS-Operator Initialization - Regional

3. Click **OK** to save any changes.

3.3.3 Configuring the plug-in settings

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

1. On the **Setup** menu, click **Initialization**.
2. Click **Plugins**.

   F1 Help: DS-Operator Initialization - Plugins

3. Select a plugin and configure any options.
4. Click **OK** to save any changes.

3.3.4 Configuring the keep alive settings

These settings limit the amount of idle time on DS-Operator, after which the connection with DS-System will be terminated.

To configure the keep alive settings for this GUI installation:

1. On the **Setup** menu, click **Initialization**.
2. Click **Keep Alive**.

   F1 Help: DS-Operator Initialization - Keep Alive
3. Specify the keep alive settings.
4. Click **OK** to save any changes.

3.3.5 Configuring the units of measurement

(Optional **–** this dialog box can be left empty)

DS-Operator's default units affect what is displayed in the monitor windows, in the logs, and in the reports. You can override the default settings for this DS-Operator GUI installation by configuring this dialog box.

To configure the units of measurement for this GUI installation:

1. On the **Setup** menu, click **Initialization**.
2. Click **Units**.

   F1 Help: DS-Operator Initialization - Units
3. Select or clear the **Keep default settings** box.

   When cleared, you can configure the units that will be displayed in monitor windows, logs, and reports (for this DS-Operator GUI only).
4. Click **OK** to save any changes.

3.4 Configuring the advanced settings

IMPORTANT: Changing the advanced settings can significantly affect DS-System behavior and performance.

The advanced configuration settings contain a list of parameters that determine how the DS-System behaves. The default settings are sufficient to run a typical DS-System. However advanced users with specific requirements can change these settings.

NOTE: Some of these parameters are used to apply a consistent setting across all nodes in an N+1 configuration because individual nodes might have different configurations in their `dssys.cfg` file. For more information see: Section 3.18, "Updating the DS-System configuration file parameters", on page 88.

To configure the advanced settings:

1. On the **Setup** menu, click **Advanced Configuration**.
2. In the list, select the parameter you want to configure and click **Edit**.
3. In the **Value** box, enter the value for the parameter.
4. Click **OK**.

The list of parameters and their settings are as follows:

Parameter	Description / Values
AllowStorageLock *	Allows locking of the online storage for third-party snapshots. • 0 (Off) = (default) • 1 (On) = DS-System will display a **Lock online storage for snapshot** option in the System Activities Administration dialog box.
AllowUnencryptedConnections	Allows unencrypted connections from the DS-Operator. • 0 (Off) = DS-System does not allow unencrypted connections. They are disconnected immediately. • 1 (On) = DS-System allows unencrypted connections.
AutoUpgrade	Specifies how DS-Client upgrades are handled. • -1 = Enables rolling upgrades. • 0 = Disables automatic upgrades. • 1 = Enables automatic upgrades.
CleanActivityLog	Specifies how old (in months) activity logs must be before they are automatically cleaned by the delete logs process. • Default: 12 • Range: 0-360 (0 = disabled)

Parameter	Description / Values
CleanAudit	Specifies how old (in months) audit trail logs must be before they are automatically cleaned by the delete logs process. • Default: 0 • Range: 0-360 (0 = disabled)
CleanClientEvent	Specifies how old (in months) client event logs must be before they are automatically cleaned by the delete logs process. • Default: 6 • Range: 0-360 (0 = disabled)
CleanClusterEvent	Specifies how old (in months) N+1 event logs must be before they are automatically cleaned by the delete logs process. • Default: 12 • Range: 0-360 (0 = disabled)
CleanDeleteLogs	Specifies how old (in months) GDPR delete logs must be before they are automatically cleaned by the delete logs process. • Default: 1 • Range: 0-360 (0 = disabled)
CleanEventLog	Specifies how old (in months) event logs must be before they are automatically cleaned by the delete logs process. • Default: 12 • Range: 0-360 (0 = disabled)
CleanHealingHistory	Specifies how old (in months) healing history logs must be before they are automatically cleaned by the delete logs process. • Default: 12 • Range: 0-360 (0 = disabled)
CleanLibLink	Specifies if the DS-System cleans orphaned library links. • 0 = Off (default) • 1 = On, DS-System will remove records that do not have corresponding online files from the database.
CleanLoadSummary	Specifies how old (in months) load summary logs must be before they are automatically cleaned by the delete logs process. • Default: 12 • Range: 0-360 (0 = disabled)
CleanStorageHistory	Specifies how old (in months) storage history logs must be before they are automatically cleaned by the delete logs process. • Default: 12 • Range: 0-360 (0 = disabled)
CleanStorageSummary	Specifies how old (in months) storage summary logs must be before they are automatically cleaned by the delete logs process. • Default: 12 • Range: 0-360 (0 = disabled)

Parameter	Description / Values
ClientDBDumpDays	Specifies how many days the DS-System will retain DS-Client database dumps. By default, each DS-Client saves a database dump to the DS-System during its Daily Admin process. • Default: 2 • Range: 1-10
ClientDeleteThread	Specifies how many processing threads should be started for the delete DS-Client process. This parameter applies if a DS-Client is being moved to the trash directory. • Default: 2 • Range: 1-100
DBDumpDays	Specifies how many days of database dumps to retain in the primary storage dump sub-folder. Note the storage implications. • Default: 2 • Range: 1-10,000
DBDumpEnd	Specifies the end hour for the database backup window. If this value is less than the DBDumpStart value, the end hour occurs the next day. Windows: • Default: 23 • Range: 0-23 Linux • Default: 17 • Range: 0-23
DBDumpMethod	Specifies the type of DS-System database backup. The DS-System performs a database backup (dump) during the dump window specified by the DBDumpStart and DBDumpEnd parameters. Windows: • 0 = differential, DS-System performs a full database dump (by default at midnight - 00:00) every day and a differential backup of its database every hour. The differential database backup is appended to the full dump file. If a differential backup fails for any reason, then a full database dump will be performed immediately following that failure. • 1 = full, DS-System performs a full database dump once a day (by default at midnight - 00:00) and it does not perform any other differential backups for that day. Linux: • 0 = custom, DS-System dumps the database in TAR format, compressed. • 1 = tar, DS-System dumps the database in TAR format, uncompressed. • 2 = plain text, DS-System dumps the database in plain text format.
DBDumpPath	Specifies the location where the DS-System database dump will be written. This can be any path accessible by the DS-System. The SQL service account must have read/write permission for the dump location. Note the potential space requirements for the dump location.

Parameter	Description / Values
DBDumpStart	Specifies the start hour for the database backup window. For differential backups, the start time is also when the full database dump occurs (in any 24-hour period). Windows: • Default: 0 • Range: 0-23 Linux: • Default: 8 • Range: 0-23
DefaultHardwareResetTimer	Specifies the amount of time (in minutes) that is permitted for the DS-Client to connect and perform a hardware registration activity. • Default: 5 • Range: 1-10,080
DefaultTrashDays	Specifies the minimum number of days that a file must stay in an extensible storage location's trash folder before it qualifies for removal by the empty trash process. • Default: 7 • Range: 0-99 Note: If you specify a value of 0, the data will not be permanently deleted until midnight the following day.
DeltaCheckOption	Specifies whether to perform validation of delta reconstruction indexes during the Autonomic Healing process. • Default: 0 • Range: 0-2 – 0 = validate delta index only – 1 = skip validation of delta indexes – 2 = validate delta index and check delta block checksum (this will significantly increase processing time because every data block is checked)
DirectorMode (N+1 specific)	Specifies how the DS-Directory operates in an N+1 DS-System. • 0 = Dedicated DS-Director, will not accept DS-Client connections • 1 = DS-Director works as a normal DS-System to accept DS-Client connections Note: if the number of nodes is > 10, the default is 0. Otherwise the default is 1.
DirScanLimit [1]	Specifies how many directories can be opened at the same time by a DS-Client synchronization process to limit DS-System I/O. • Default: 5 • Range: 1-1000

Parameter	Description / Values
DirStoreSafeMode	Determines how the DS-System saves directory metadata. If this parameter is enabled, the DS-System saves the directory descriptor information in two locations: • Individual _dirdesc files in the corresponding directories where the backed up data appears. • Consolidated _dir_store file from all directories in a backup set. When the information is required, DS-System searches the _dir_store file first and then the specific _dirdesc files. If this parameter is disabled, DS-System saves the directory descriptor information only in the consolidated _dir_store file from all directories in a backup set. DS-System no longer updates individual _dirdesc files in each backup set directory. The "_dirdesc" files are created by the DS-System in the online storage and hold metadata for the backed up data in the corresponding folder where they appear. There are three levels of _dirdesc files for the DS-System: • Backup set level — These _dirdesc files contain information about the backup set. • Share level — These _dirdesc files contain information about the share. • Directory level — These _dirdesc files contain information about the directory. All activities running on the DS-System access the backup set level _dirdesc files. The restore and validation restore activities do not access the _dirdesc files at the directory level. All other activities require all the _dirdesc files (at all levels) to complete. DS-System verifies the validity of a _dirdesc file every time it is accessed. Each _dirdesc file contains a file signature. When the file is opened, the DS-System calculates the file signature and compares it to the one that it is stored inside the file. If a _dirdesc file is found to be corrupted or missing entirely, the following actions are taken by the DS-System: • When autonomic healing and System Admin detect a _dirdesc file corruption, an error is reported in the DS-System Event Log for that activity and that directory is skipped by the autonomic healing or System Admin process. • When backup activities are running, the _dirdesc file is automatically overwritten without checking its validity.

Parameter	Description / Values
DirStoreSafeMode (continued)	• When synchronization activities are running, the corrupted or missing _dirdesc file is replaced with information received from the DS-Client. If DS-Client cannot provide this information, the DS-System will create a _dirdesc file with alternate file information in the form: `RECOVER_DIR_<dir_id>` Where <dir_id> is the directory ID number, to ensure a unique name. • 0 = Off • 1 = On (default)
DirStoreVacuum	Specifies the threshold percentage that must be reached before the DS-System cleans up empty space in the _dir_store file for backup sets. Each _dir_store file for each backup set is assessed separately. • Default: 5 (e.g. 5%) • Range: 0-100
DisasterRecoveryMode [1]	Specifies if DS-System should run in normal or disaster recovery mode. In the event of a hardware failure on a DS-System configured with multiple storage locations, only the affected storage location(s) need to be restored. However, because of the interdependencies and the links between storage locations, DS-System must be configured to run in Disaster Recovery mode to rebuild the storage links for every backup set. When DS-System is started in Disaster Recovery mode, no activities are allowed until scanning and recovery of all backup set directories from all storage locations is finished. If the storage location is the primary one - holding the online storage root - you must configure the new storage location with the same absolute path as the original one. Preserving the exact absolute path is recommended even when recovering a secondary location, although it is not compulsory. If the replacement storage location has a different path than the original one, all links from the other storage locations (pointing to the replaced one) must be recreated. **Important**: This parameter should only be used in case of an actual failure in the DS-System's extensible storage. • 0 = Off, Run DS-System in normal mode (default) • 1 = On, Run DS-System in disaster recovery mode
DSSysGroup [1]	Allows configuration of DS-System groups for replication. • 0 = Off • 1 = On

Parameter	Description / Values
EmerPMFreq	SSpecifies the frequency (in hours) that emergency messages will be written to the Event Log.pecifies the emergency message frequency (in hours). • Default: 1 • Range: 1-24
ExcludeRecycleDelta [1]	Specifies if recycled delta generations are included or excluded from calculations of stored size. • 0 (Off) = DS-System includes recycled delta generations. • 1 (On) = DS-System excludes recycled delta generations.
FailBackupOnBLMError	Specifies what happens if the movement of data to the BLM Archiver fails for backup sets configured with the BLM (Infinite Generations) option. • 0 (Off) = The backup ignores the BLM error. • 1 (On) = The backup of that specific generation will fail.
FileStoreCache	Specifies the number of consolidated FileStores that can be open at the same time. By caching FileStores, DS-System reduces the I/O overhead if the process needs to access the same FileStore multiple times. This applies to the backup, disc/tape write-to-buffer, autonomic healing, BLM Archiver, and replication processes. • Default: 2 • Range: 0-100 Note: 0 means only the current FileStore is allowed to be open. Higher values require more system resources.
FileStoreVacuum	Specifies the percentage of the total number of deleted files in the FileStore that must be reached before System Admin triggers a Vacuum FileStore process. Each FileStore (in each directory) is assessed separately. Over time, some small files in a FileStore will become obsolete from generation overwriting and delete processes. Due to the FileStore structure, files deleted from the DS-System Online Storage are only marked for deletion; they are not automatically removed from the storage. These files are only removed when the FileStore is vacuumed and the whole FileStore is rewritten to the DS-System online storage. Files marked for deletion in a FileStore are not counted towards billing or other statistics. • Default: 5 (i.e. 5%) • Range: 0-100
FileWriteTrunkSize	Specifies how much data is cached for write operations to online storage. This parameter allows you to optimize write performance. • Default: 32 (KB)

Parameter	Description / Values
FixDeltaChain	Specifies to fix a long delta chain during the optimization process. This applies if the number of deltas for a file is longer than the value for the **Default delta chain length** parameter. This applies only to 'on-demand' master / delta optimizations triggered from DS-Operator. Automatic optimizations will always fix the delta chain. • 0 = Off • 1 = On
GrpEncrypt	Specifies if encrypted communication should be used for a DS-System group. All DS-Systems in the group must have the same setting: • 0 = Off • 1 = On
GrpPort [1]	Specifies the DS-System group communication port. All DS-Systems in the group must have the same setting: • Default: 4409
GrpSerialCode	Specifies the DS-System group communication port. All DS-Systems in the group must have the same setting: • Default: 0 • Range: 0-2,147,483,647
HealingProcess	Specifies how many autonomic healing processes start at once. • Default: 3 • Range: 1-256
LibCreateCount [1]	Specifies the number of copies of the same content that must be backed up before a library file is created. • Default: 3 • Range: 2-10
LicExpireNotif	Specifies the number of days prior to the DS-System license expiration when DS-System sends a notification. • Default: 7 • Range: 1-100
LicNotifFreq	Specifies the notification frequency (in hours) for the license expiration (LicExpireNotif) and license capacity (LicStorageNotif) parameters. • Default: 1 • Range: 1-24
LicStorageNotif	Specifies the license storage capacity warning level percentage. The value is divided by 100 to give a percentage (accurate to two decimal places). When available capacity falls below this amount, DS-System sends a notification. For DS-Systems licensed from a DS-License Server RLM, the license capacity notification also applies when available Local Only Storage and VM replication fall below this level. To view the limits, on the Help menu, click About DS-Operator, and then click DS-System Info. • Default: 1000 (e.g. 10% left / 90% used) • Range: 1-10000, default is 1000

Parameter	Description / Values
MaxBlockSize	Specifies the maximum block size (in bytes) when sending messages. • Default: 0 • Range: 0-65,536 (0 = no maximum)
MaxCommunicationManagersPerProcessingThread	Specifies the maximum communication managers per processing thread. • Default: 10 • Range: 1-10
MaxCommunicationManagersPerThread	Specifies the maximum communication managers per thread. • Default: 10 • Range: 1-10
MaxPrivateDays	Specifies the maximum number of days to keep potential libraries in the DS-System database. • Default: 365 • Range: 60-10,000
MaxPrivateItems	Specifies the maximum number of potential libraries to keep in the DS-System database. • Default: 1,000,000 • Range: 10,000-1,000,000,000
MaxReceivingQueueSize [1]	Specifies the maximum number of pending requests in the receiving queue. Increasing this number can improve data transfer speeds. • Default: 20 • Range: 20-1024
MaxSendingQueueSize [1]	Specifies the maximum number of pending requests in the sending queue. Increasing this number may improve data transfer speeds. • Default: 20 • Range: 20-1024
MemEmerLevel	If the free memory falls to a level equal or below this level, an emergency notification is sent. The value divided by 100 is the percentage (e.g. 500/100=5%). • Default: 0 (no check performed) • Range: 0-10,000
MemWarnLevel	If the free memory falls to a level equal or below this level, a warning notification is sent. The value divided by 100 is the percentage (e.g. 500/100=5%). • Default: 0 (no check performed) • Range: 0-10,000
MinLibFileSize	Specifies the minimum size (in KB) for library files on the DS-System. Potential library files smaller than this value will be ignored by the common file elimination process. • Default: 32 • Range: 32-102,400

Parameter	Description / Values
MLRCache	Specifies the number of consolidated FileStores that can be open at the same time. By caching FileStores, DS-System reduces the I/O overhead if the process needs to access the same FileStore multiple times. This only applies to backup processes for email level backup sets and will have the most impact on Continuous Data Protection (CDP) email backup sets. • Default: 10 • Range: 0-100 Note: This works best if the value is at least equivalent to the number of folders in the email backup set. This will allow the backup process to keep an open cache for all folders that might receive new CDP emails.
MultiStorage	Specifies if multiple storage locations can be configured on the same volume. • 0 (Off) = (Default) Do not allow multiple storage locations on the same volume. • 1 (On) = Allow multiple storage locations on the same volume.

NativeSize	Specifies if the DS-System will save the native size information in its “dsset_size” table, which can only be viewed if the database is queried directly.
	• Native size — size of the latest generation of all data detected on the backup set source as of the last completed backup.
	• Deleted size — size of the latest generation of all data deleted from the source that is still in the online storage.
	• Max generations — Largest number of generations configured for a backup set item.
	• Min generations — Smallest number of generations configured for a backup set item.
	• Current generations — the largest number of generations stored online for the backup set.
	
	• Default: 0
	• Range: 0-2
	  – 0 — Disabled. DS-Client will not send native size data to DS-System.
	  – 1 — Enabled. DS-Client will send native size. The native size does not include files that are already pushed to BLM Archiver by retention rules. For each backup set, DS-Client calculates and sends the information to DS-System.
	  – 2 — Enabled. DS-Client will send native size. The native size includes files that have already been pushed to BLM Archiver by retention rules.

Parameter	Description / Values
OLEmerLevel	Specifies the emergency notification level for the available space in the online storage based on the following space events configured for extensible storage locations: • Physical space is represented by the Disk Space column. If any location reaches a notification level, a notification is sent. • Logical space is represented by the Used Size column. If all storage locations reach a notification level, a notification is sent. When reached, DS-System denies all new backup activities, but allows existing backup activities to continue. The percentage is calculated by dividing the value by 100 (e.g. 500/100=5%). • Default: 200 (2%) • Range: 1-10,000
OLStopLevel	Specifies the stop notification level for the available space in the online storage based on the following space events configured for extensible storage locations: • Physical space is represented by the Disk Space column. If any location reaches a notification level, a notification is sent. • Logical space is represented by the Used Size column. If all storage locations reach a notification level, a notification is sent. When reached, DS-System denies all new backup activities and stops all existing backup activities. The DS-System service will continue to run. The percentage is calculated by dividing the value by 100 (e.g. 500/100=5%). • Default: 50 (0.5%) • Range: 1-10,000
OLWarnLevel	Specifies the warning notification level for the available space in the online storage based on the following space events configured for extensible storage locations: • Physical space is represented by the Disk Space column. If any location reaches a notification level, a notification is sent. • Logical space is represented by the Used Size column. If all storage locations reach a notification level, a notification is sent. The percentage is calculated by dividing the value by 100 (e.g. 500/100=5%). • Default: 500 (5%) • Range: 1-10,000

Parameter	Description / Values
PubLibSwitch	Configures the global public library switch. • 0 (Off) = No public libraries. However, customer and DS-Client libraries can exist. • 1 (On) = Allows public libraries (default).
ReadOnly [1]	Configures a read-only DS-System. • 0 (Off) = Normal DS-System (default) • 1 (On) = DS-System will run with read-only storage. It does not allow or perform any activities that alter the storage.
RecoveryLibThreads	Specifies the number of threads used to recover libraries during DS-System disaster recovery if the DisasterRecoveryMode parameter is set to 1. • Default: 4 • Range: 1-16
RecoveryProcess	Specifies the number of disaster recovery processes that can start on each DS-System node at the same time. When the disaster recovery process finishes processing a backup set, the DS-Client must perform a DS-System based synchronization. Weekly Admin or scheduled backups initiate this synchronization automatically. • Default: 4 • Range: 1-100
RecoveryValidateFile	Enables disaster recovery to perform file level validations. Enabling this option will significantly affect the performance. It is recommended that you perform autonomic healing instead because it has more advanced file level validations. • 0 = Off • 1 = On
RecycleSwitch	Specifies if delta recycling is enabled. Delta recycling only affects the frequency of master file reconstructions. If On, backups are faster at the expense of storage. If Off, backups are slower due to the greater number of reconstructions. • 0 = Off, disable delta recycling • 1 = On, enable recycle delta (default)
RemoteVDRMaxSched	Specifies the maximum number of scheduled Remote DS-VDR activities that are allowed to run concurrently. If more are scheduled at the same time, they will be postponed until some that are running complete. • Default: 10 • Range: 0-99
RemoteVDRPowerOnPrioDelay Def	Specifies the default delay time (in seconds) for the Power On option if multiple virtual machines are configured for Remote DS-VDR. • Default: 60 • Range: 0-3600
RemoteVDRRetry	Specifies the number of times DS-System will attempt to connect to the Remote DS-VDR Tool. • Default: 5 • Range: 0-99

Parameter	Description / Values
RemoteVDRWait	Specifies the amount of time (in minutes) that the DS-System will wait before retrying to connect to the Remote DS-VDR Tool. • Default: 5 • Range: 0-99
RepairFromReplication	Specifies how the DS-System will handle corrupted generations discovered by the autonomic healing, System Admin, validation, or system validation processes. • 0 = Off - If a corrupted generation is found, the process will delete the file without trying to recover it from the replication DS-System. • 1 = On (default)
ReplicationCheck	Specifies the interval (in hours) at which a replication check is performed for shared DS-Clients. • Default: 6 • Range: 0-360 (0 = disabled)
ReplicationDelThreads	Specifies the number of delete threads that should be started for replication. • Default: 2 • Range: 1-100
ReplicationProcess	Specifies the maximum number of concurrent replication processes on each node. There must be at least two DS-Systems in a replication group. The most common configuration for a replication group consists of one production DS-System (e.g. a standalone DS-System) and one replication DS-System (e.g. an N+1 DS-System). Only a production DS-System receives data from DS-Clients. Replication DS-Systems normally only receive data from a production DS-System in the replication group. A replication DS-System will only send data to other DS-Systems in the group in case of data loss on a DS-System. This parameter is configurable at DS-System level for each DS-System in the replication group. If a DS-System is configured to start *n* replication activities, that DS-System will only start *n* replication activities. However, replication activities (either send or receive) can be triggered from other DS-Systems in the replication group. This means you might see more replication activities running than the configured value for a DS-System. • Default: 4 • Range: 0-100
ReplicationRecvThreads	How many receive threads should be started for replication: • Default: 4 • Range: 1-100
ReplicationSendThreads	Specifies the number of send threads that should be started for replication. • Default: 2 • Range: 1-100

Parameter	Description / Values
SkipDBDump	Specifies if the DS-System will skip the database backup (dump). • 0 (Off) = (default) The DS-System database is backed up (dumped) based on the DBDumpMethod, DBDumpStart, and DBDumpEnd. • 1 (On) = Skips the database backup (dump).
SmallFileCount	Specifies the threshold to consolidate small files (non-master/delta) in the same online storage directory into one large FileStore during System Admin. Consolidation is performed by both the backup process and the System Admin process: • Backup process — new small files are automatically saved to the FileStore. • System Admin process — existing small files are consolidated as their directories are processed by System Admin if they meet the **SmallFileCount** threshold. This can achieve significant improvements for processes involving backup sets with large quantities of small files in the same directory. The consolidated small files feature works at the directory level on the DS-System online storage. It works on regular files that are smaller than 64 KB (by default). Files larger than 64 KB are usually backed up as master/delta and are not consolidated. However, this depends on the minimum delta size settings on the DS-Client, which is configurable using the MinDeltaSize advanced parameter. For more information, see the *DS-Client User Guide*. • Default: 10 • Range: 0-10,000 Note: 0 means all small files in a directory will be consolidated to the FileStore.
SMTPDebug	Specifies if debug information for the SMTP send message process is logged. This debug information will be saved to the DS-System Event Log, which can help trace problems with the SMTP server used. • 0 = Off (default) • 1 = On
SyncDRScan	Specifies if a disaster recovery scan is performed during synchronization. This prevents DS-Client from deleting backup sets or files from its database during a synchronization process in the (unlikely) event that the DS-System online storage has extensible storage link issues. The scan verifies (and rebuilds if necessary) the storage links for a backup set. • 0 (Off) = (default) Disables the scan unless an entire backup set is missing on the DS-System. • 1 (On) = Forces a scan during any backup set synchronization from DS-Client. This is more secure, in case of corruptions to the storage links in the DS-System's extensible storage, but will result in a slower synchronization.

Parameter	Description / Values
SysAdminProcess	Specifies the number of System Admin processes that can start on each DS-System node at the same time. • Default: 1 • Range: 1-20
TcpBufferSize	Specifies the buffer size for communication (in bytes). • Default: 34,752 (Windows), 0 (Linux) • Range: 0-34,752,000 Note: A value of 0 uses the default settings from the operating system.
TcpNoDelay	Disables or enables the TCP option TCP_NODELAY. This can be useful in a high latency TCP environment where the round-trip time for messages is slow. • 0 = Off • 1 = On (default)
TrashSwitch	Configures the trash feature on the DS-System. • If enabled (default), all processes that delete data from the DS-System will move deleted files to the corresponding extensible storage location's trash folder. Data must wait in the trash folder for at least the DefaultTrashDays amount before an empty trash process can permanently remove the data. • If disabled, any data that is deleted from DS-System online storage is permanently removed. • 0 = Off • 1 = On (default)
UseClientSNAP	Uses a third party snapshot for DS-Client BLM point-in-time copy requests to unlock a backup set as quickly as possible. • 0 (Off) = DS-System locks a backup set for the duration of the BLM Archiving activity. • 1 (On) = DS-System integrates with third-party software to create a snapshot of the required directories. Once the snapshot is created, DS-System unlocks the backup set. The BLM Point-In-Time request will be performed from the snapshot data.
UseSnapshot	Uses a storage snapshot for DS-System snapshot-capable processes. A maximum of one snapshot per minute is taken. DS-System waits 60 seconds from the first process that requests a storage snapshot and queues all other snapshot-capable requests received in that period to use the same snapshot. • 0 = Off (default) • 1 = On

Parameter	Description / Values
VADPCfgDevIgnoreList	Specifies the VM configuration parameters to ignore, such as device keys, during an incremental virtual machine restore via Remote DS-VDR. This parameter applies only to VMware VADP backup sets. Device keys are listed in regular expressions. If the Remote DS-VDR Tool detects changes to VM configuration parameters since the previous restore point of a backup set, a full virtual machine restore is performed. If detected changes belong to device keys in the list, an incremental virtual machine restore is performed. A default list is provided. You can add, modify, or remove regular expressions for individual VM configuration parameters in the list as required.
VADPCfgIgnoreList	Specifies the VM configuration parameters to ignore, such as root keys, during an incremental virtual machine restore via Remote DS-VDR. This parameter applies only to VMware VADP backup sets. Root keys are listed in regular expressions. If the Remote DS-VDR Tool detects changes to VM configuration parameters since the previous restore point of a backup set, a full virtual machine restore is performed. If detected changes belong to root keys in the list, an incremental virtual machine restore is performed. A default list is provided. You can add, modify, or remove regular expressions for individual VM configuration parameters in the list as required.
WarnPMFreq	Specifies the warning message frequency (in hours). • Default: 4 • Range: 1-24

* Changes to these parameters require a DS-System restart.

3.5 Configuring roles

NOTE: Only DS-System administrators can modify the roles.

Initially, DS-Operator only permits logins from “super users” (that is `root` for Linux, or `Administrator` for Windows). To enhance security, these users cannot manage the DS-System. They only have the right to add or edit roles for other users or groups.

This feature allows you to restrict permissions based on the roles assigned to a user (or a user’s group). For example, you may not want a user that does daily maintenance to see or change the customer or DS-Client profile information.

The following roles have been defined in the DS-System:

Assign Roles Only – Specific role reserved for members of the 'Administrators' group (on Windows) or the 'root' super-user (on Linux).

Data Operator – Role with rights to manage data.

- Performs daily maintenance work.
- Views reports.
- Performs customer and DS-Client management work.
- Manages DR Drills (if available).

Account Manager – Role with rights to manage the account profiles.

- Creates, updates, or deletes customers or DS-Clients.

Export CRI – Role with rights to export a DS-Client .CRI file.

- For more information, see Exporting DS-Client registration information.

View Logs – Role with rights to view the logs stored on the DS-System.

- All other roles can view logs. This role is intended for users who should be limited to only viewing logs.

NOTE: You can only access this dialog box if you are logged in as a member of the 'Administrators' group (on Windows) or the 'root' super-user (on Linux).

To assign roles for users who login through DS-Operator:

1. On the **Setup** menu, click **Roles**.

   F1 Help: Assign Roles

2. To add, click **Add**.

   To edit, select a user or group and click **Edit**.

   F1 Help: Add / Edit Role

3. Configure the roles for the user or group.

View Logs	Role with rights to view the logs stored on the DS-System. • All other roles can view logs. This role is intended for users who should be limited to only viewing logs.
Data Operator	User has permissions to: • Perform daily maintenance work. • View reports • Perform customer and DS-Client management • Manage DR Drills (if available)
Account Manager	User has permissions to: • Create, update, or delete customers or DS-Clients.

Export CRI	User has permissions to: • Export DS-Client .CRI (Customer Registration Information) file. • For more information on this feature, see Exporting DS-Client registration information.

4. Click **OK**.

NOTE: You cannot assign roles to users from the ‘Administrators’ group (on Windows) or the ‘root’ super-user (on Linux). Even if you do, DS-Operator will ignore all additional permissions and only allow that user to edit roles for other users.

3.6 Configuring extensible storage locations

IMPORTANT: The DS-System should have exclusive access to the storage locations at all times when it is running.

When you create an extensible storage location, you must assign it to a storage group to help you organize data on the DS-System. If you do not define any storage groups, the newly created storage locations will automatically belong to the <DEFAULT> storage group. The <DEFAULT> storage group cannot be removed from DS-System. Backed up data from the DS-Client will be directed to the selected storage group's extensible storage location(s).

Data backed up to a storage group will be balanced among the group's extensible storage locations. DS-System will automatically balance its data across the available space for each storage location in the same storage group. However, DS-System will not balance data between different storage groups.

NOTE: If you change the extensible storage locations associated with a storage group, only new backup data will be affected. Data that is already in a storage location is not affected.

DS-System can also integrate with NAS storage volumes to use their native snapshot capability when performing the following (read-only) tasks:

- Replication Send
- BLM Archiving
- Disc/Tape – Write to Buffer
- Restore

When a snapshot is used, the DS-System is able to free the backup set lock on the corresponding backup set almost immediately. This can significantly improve performance in high availability environments, since the backup set can continue to receive new backup data and the activity using the snapshot can be configured to process that data on a separate network. You must have a functioning NAS with defined storage volumes and it must be visible to your DS-System on the network.

NOTE: Storage volume snapshot integration is enabled by the DS-System's **UseSnapshot** parameter. For more information, see Section 3.4, “Configuring the advanced settings”, on page 31.

3.6.1 About extensible storage locations

Extensible storage locations allow a DS-System to use multiple storage paths at the same time when storing data. Extensible storage locations can be configured as local drives or UNC paths. You can expand the DS-System capacity when required by adding a new storage location without the need to shut down the DS-System service. DS-System will automatically create the new directory structure.

IMPORTANT: After DS-System service/daemon starts, the primary storage location (**BackupRoot** parameter from `dssys.cfg`) should not be changed. The primary storage location is the starting point for all the extensible storage locations. It will contain the `/dump` and other essential files and folders.

If a storage location approaches full capacity, you can add a new extensible storage location that the DS-System can use immediately. When you configure an extensible storage location, you define the maximum amount of data that can be stored at the location (file size and file count). The DS-System automatically tracks how much data is in each storage location. Based on this information, it balances the new data that is backed up across the different storage locations.

You only need to define the fill levels, which the DS-System uses to balance the data load across the different available storage locations. If a storage location becomes full (its fill level is higher than another storage location), all new data will be stored in the storage locations that have more space. If all the storage locations become full (or almost full), more storage locations can be created and simply added to the list of available storage locations. The DS-System will take care of the rest. For example, if you have a DS-System that is using four storage locations that have passed an 80% fill level, you can add two new storage locations. Most new data will go to those locations, until the storage in all six locations passes the same fill level (i.e. 80% full).

NOTE: When the available storage space becomes low, the DS-System can be configured to send email and/or SNMP notifications.

3.6.2 Configuring an extensible storage location

By default DS-System includes one extensible storage location, which is the backup root that was configured during the installation of the DS-System. This is also known as the primary storage location. However, you can configure as many extensible storage locations as required for storing backed up data.

When configuring an extensible storage location, consider the following:

- If the DS-System license is less than 2 TB, then one extensible storage location for the DS-System should be sufficient.

- If the DS-System license is over 2 TB, then all DS-System storage locations should be approximately the same size, and they should not be less than 2 TB.

Extensible storage works at the file-level, so each file must be saved entirely in the free space existing on that same storage location. This requirement applies for each generation backed up and applies during the reconstruction process as well. DS-System must always have sufficient free space available on a storage location to reconstruct the largest stored file on that location.

NOTE: By default, Windows DS-System does not allow adding multiple storage locations on the same file system. However, you can configure this option in the **DS-System Advanced Configuration** dialog box with the **MultiStorage** parameter. For more information, see Section 3.4, "Configuring the advanced settings".

To configure a storage location:

1. On the **Setup** menu, click **Storage**, and then click **Extensible Storage**.

   F1 Help: Extensible Storage Locations

2. Do one of the following:

   - To add a new storage location, click **Add**.
   - To edit a storage location, select it from the list and click **Edit**.

   The **New / Edit Storage Location** dialog box appears.

   F1 Help: New / Edit Storage Location

3. Beside the **Path** box, click **[...]** and select a valid path visible to the DS-System computer.

4. In the **Total Size** box, select the total size (in MB, GB, or TB) available at the corresponding path.

5. In the **Guard Size** box, select a reserve amount (in MB, GB, or TB) to keep as a free space buffer for the corresponding path (for allocation tables). The guard size for a new extensible storage location should be about 10% of the total size.

   NOTE: The amount in the **Maximum Size** box is calculated automatically based on the total size minus the guard size. Once DS-System reaches 100% of the maximum size for any of the DS-System's storage locations, DS-System will enter a read-only state and will reject all backup activities until some additional storage space is added to that storage location or some space is freed up on that storage location.

   ---

6. In the **Maximum Files** box, select the maximum number of individual files that should normally be stored on that location. This number should be based on the recommendations for the storage location's file system. This number is used to balance the data between different extensible storage locations (of the same storage group).

NOTE: Even if this number is reached, the DS-System will continue to save data on that specific storage location.

---

7. In the **Storage Group** box, you must associate the storage location with a storage group. For new storage locations, the **<DEFAULT>** storage group is selected by default.

NOTE: You can associate one storage group with multiple extensible storage locations. DS-System only balances the data across storage locations belonging to the same storage group.

---

8. To configure the list of storage groups, beside the **Storage Group** box, click **[...]**. The **Storage Groups** dialog box appears.

   a) Do one of the following:

      - To add a storage group, click **Add**.
      - To edit a storage group, select it from the list, and then click **Edit**.

   b) In the **New / Edit Storage Group** dialog box, type the required information in the **Name** and **Description** boxes, and click **OK**.

   c) Click **Close**.

NOTE: Each storage group has its own internal ID number. If you change the name of a storage group that is already assigned to a storage location, it will update automatically (the internal ID does not change).

---

9. To integrate the extensible storage location with a specific NAS storage volume (separate purchase and configuration required), beside the **Storage Volume** box, click the **[...]** button. The **Storage Volumes** dialog box appears.

NOTE: This is where you map each NAS storage volume to a path (mount point or UNC path) so the DS-System can read, write, and delete data on that storage volume.

F1 Help: Storage Volumes

a) Do one of the following:

- To add a storage volume, click **Add**.
- To edit a storage volume, select it from the list, and then click **Edit**.

The **New / Edit Storage Volume** dialog box appears.

F1 Help: New / Edit Storage Volume

b) In the **Storage** box, select a NAS storage from the list or click **[...]** to define one. The **Storages** dialog box appears.

F1 Help: Storages

c) Click **Add** or **Edit** to define or change a NAS storage. You must supply the proper credentials and settings to access that NAS Storage and click **OK**.

F1 Help: New / Edit Storage

d) In the **Volume Name** box, map the specific NAS storage volume name (defined on the NAS) that you want to use with the selected DS-System extensible storage location or click **[...]** to define one. The **Select Volume** dialog box appears. Select the volume name you want and click **Select**.

F1 Help: Select Volume

e) In the **Volume Path** box, select the path that the DS-System will use to the selected volume. This must be a valid mount point or UNC path visible to the DS-System.

f) In the **Snapshot Path** box, select the path of the snapshot for this volume. This must be a valid mount point or UNC path visible to the DS-System. DS-System will use the snapshot from this path.

NOTE: The **Snapshot Path** box does not appear for EMC VNX storage volumes because it is handled internally through the vendor API.

---

g) To save the mapping for this storage volume, click **OK**.

h) Once you have finished defining all the NAS storage volumes you require, click **Close**.

10. To set the fill levels for all storage locations, click the **[...]** button beside the **Fill Levels** box located at the bottom of the dialog box. The **Update Storage Fill Levels** dialog box appears.

F1 Help: Update Storage Fill Levels

NOTE: These are the levels at which DS-System automatically starts sending data to other storage locations within the same storage group until all locations have an equal fill level. DS-System sends backup data to the storage location that has the lowest fill level in its storage group.

---

11. Click **OK**.

3.6.3 Scanning extensible storage locations

The scan storage location feature allows you to manually update the statistical information for that storage location.

Statistics about extensible storage locations are maintained automatically by the DS-System. The values related to the **Used** size as well as the **Used** entries for extensible storage locations are accessible from the extensible storage locations dialog box.

In case the values displayed by DS-System are not accurate, DS-System administrators may trigger a scan process for an extensible storage location. The scan process will go through all the files from the DS-System online storage structure, to retrieve and update the statistics (note the amount of time this might take).

To scan a storage location:

1. On the **Setup** menu, click **Storage**, and then click **Extensible Storage**.
2. Select the extensible storage location you want to update and click **Scan**.
3. The **Scan Storage** dialog box appears. Configure the scan options:

   F1 Help: Scan Storage

   - **Additional scan threads –** [For multi-threading] Choose the number of additional threads to use for the scan process.
   - **Require Storage Lock –** Choose only if you require a 100% accurate scan result. The storage scan will only start if no other activity is using the storage, and it will only complete successfully if the scan is uninterrupted (because the storage scan process is the lowest priority activity on the DS-System).

   NOTE: A scan process that is started without the storage lock option might provide a result that is not 100% accurate, since other activities might modify that same storage location. However, it will be able to complete (especially if the scan takes a long time) and provide a more accurate update of the statistics.

4. Click **Start** to begin the storage location scan process.

3.6.4 Emptying the trash from an extensible storage location

NOTE: By default, the **Trash** feature is enabled on a DS-System. You can configure this option with the **TrashSwitch** advanced configuration parameter. (See: Section 3.4, “Configuring the advanced settings”, on page 31.)

If the trash feature is enabled, files deleted from an extensible storage location are always moved to that location’s trash folder. From the end user (backup customer) perspective, the data has been deleted. However, from a service provider perspective, this provides an additional period of time before that “deleted” data is completely removed from the DS-System.

Because of this behavior, it is necessary for the DS-System administrator to regularly clean the trash folders, according to the service provider’s **Empty Trash** policy.

NOTE: Empty Trash can also be scheduled. For instructions, see Section 3.14.7, “Scheduling empty trash”, on page 85.

To empty the trash from a storage location on demand:

1. On the **Setup** menu, click **Storage**, and then click **Extensible Storage**.
2. Select an extensible storage location and click **Empty Trash**.

   F1 Help: Empty Trash

   - Select how old the deleted data must be to qualify for delete.
   - You can change the number of additional threads used by the empty trash process, if required.
3. Click **Empty Trash** to proceed.

3.6.5 Retiring an extensible storage location

The retire storage location feature allows you to gracefully interrupt the use of the hardware in a storage location by not writing any new data to that storage location, and it allows backup sets to be moved to other storage locations (in the same storage group).

To be able to retire a storage location, you must have at least two extensible storage locations in the same storage group.

NOTE: If you plan to retire the primary storage location, there are additional considerations and steps to perform. For instructions, see Section 3.6.7, “Retiring the primary storage location”, on page 58.

To retire a storage location:

1. On the **Setup** menu, click **Storage**, and then click **Extensible Storage**.
2. Select the storage location you want and click **Retire**. A confirmation popup appears. Click **Yes** to proceed.
   - The **Group** column changes to display **<RETIRED>**.
   - The DS-System will be locked while it scans all the backup sets in the **<RETIRED>** storage location. This should not take more than a few minutes.
   - No new backup data will be sent to this **<RETIRED>** storage location.
   - New backup data is redirected to the other location(s) in this storage group or to other storage groups (if applicable).
3. Open the Retire Storage Monitor to start the retire process. For instructions, see Section 3.6.6, “Retiring a storage location monitor”, on page 57.

When a storage location is marked as <RETIRED>, it will no longer receive new data from the DS-System. However, since the storage location is still required to provide data for restores or for generation processing, DS-System will continue to monitor the availability of the storage location.

3.6.6 Retiring a storage location monitor

To move the data from a retired storage location to other storage locations, you must trigger the Retire Storage process.

- Data at backup set level, as well as client libraries are moved to the Storage Group configured for that DS-Client.
- Data in account libraries will be moved to the Storage Group configured for that account.
- The public libraries are moved to the <DEFAULT> Storage Group.
- The Retire Storage process balances the amount of data moved across all the storage locations (belonging to the same Storage Group).

NOTE: The Retire Storage Monitor can be configured to check continuously for retired locations to trigger the data move automatically. To monitor for <RETIRED> storage locations continuously, open the Retire Storage Monitor window, and then click the **Start** button.

To monitor storage locations:

1. On the **Setup** menu, click **Storage**, and then click **Retire Storage Monitor**.

   F1 Help: Retire Storage Monitor

2. If DS-System was not configured to continuously monitor for **<RETIRED>** storage locations, you must click the **Start** button. The **Retire Storage** dialog box appears.

   F1 Help: Retire Storage

   - Select how many simultaneous retirement processes to start and click **OK**.
   - On N+1 DS-Systems, each node will start the selected number of processes.

3. The **Retire Storage Monitor** displays the progress of the data move.

   - The DS-System processes each backup set by moving it from the retired storage location to any of the other storage locations.
   - As backup sets are moved, they will disappear from this list until it is completely empty, meaning the retire storage location activity has finished.
   - The distribution of the data will be balanced among the other storage locations using the **Storage Fill** levels, based on the DS-Client account's storage group configuration.

     NOTE: Backup sets are always moved to storage locations within the same storage group (currently configured for the DS-Client account).

- If a process is interrupted, a time interval will appear in the **Status** column. DS-System will retry the move process after 5 minutes. To retry processing the item(s) immediately, click **Stop** and then click **Start**. The move process can be interrupted if an activity lock exists on any backup set that needs to be moved.

4. Once a storage location has been retired, you can delete it from the **Extensible Storage Locations** list. For instructions, see Section 3.6.10, “Deleting an extensible storage location”, on page 62.

NOTE: A **<RETIRED>** storage location may be reactivated from the **Edit Storage Location** dialog box. Select any other valid storage group (other than **<RETIRED>**) for that storage location.

3.6.7 Retiring the primary storage location

This section describes the process that must be followed to retire the DS-System primary storage location. This is the location specified by the **Backup Root** parameter in the DS-System configuration file (`dssys.cfg`).

IMPORTANT: Normally you should never change the primary storage location. However, in the event of hardware failure on the primary storage location, you must configure a replacement file system with the same absolute path (name/IP address, share, and folder) as the original one. Then you must restart the DS-System in DR mode by setting the value of the **DisasterRecoveryMode** advanced configuration parameter to 1. This configures DS-System to rebuild the storage links for every backup set in the replacement location.

All extensible storage locations contain the following:

- **data** — Folder containing the customer data.
- **Storage_Label.txt** — Text file containing the extensible storage location ID and its path.
- **tmp/temp** — Folder containing temporary files (one is used for normal operations and the other is used by some of the modules).
- **trash** — Folder containing all deleted files.

The primary storage location also contains the following folders:

- **cd** — Folder containing the disc/tape contents.
- **cluster** — Folder containing the N+1 configuration file (filename: `config`). Required only for N+1 DS-Systems.
- **dump** — Folder containing the DS-System database dumps.

- **logs** — Folder containing the archived log files with entries that were removed from the DS-System database by the Clear DS-System Logs feature and Delete Logs processes.
- **Upgrade** — Folder containing all the upgrade packages for client-side software installations.

To retire the primary storage location:

IMPORTANT: This process requires manual changes to the DS-System database and a restart of the DS-System so must be performed carefully.

---

1. On the **Setup** menu, click **System Activities**, and then click **Disable**.
2. On the **Setup** menu, click **Storage**, and then click **Extensible Storage**.
3. In the **Extensible Storage Locations** dialog box, configure the **<Default>** storage group so that it contains only two storage locations:
   - The existing primary storage location that is to be retired.
   - The replacement storage location.

   The replacement storage location must have the next (sequential) lowest ID number. For example, if you have four locations (IDs 1, 2, 3, 4), and ID 1 is the current primary, you must make ID 2 the new primary storage location.

   IMPORTANT: Only use the **<Default>** storage group with these two storage locations. If necessary, temporarily change the storage group of any other storage location that shares this group to ensure that there is only one other location where the DS-System can re-assign the primary storage location.

   ---

4. Select the current primary storage location and click **Retire**. For more information, see Section 3.6.5, “Retiring an extensible storage location”.
5. Wait until the **Retire Storage Monitor** appears. At this point, the DS-System automatically re-assigns the primary storage links to the other storage location in the **<Default>** storage group.

   NOTE: If you have temporarily changed the storage group of any other storage locations, change them back now. In this case, you will have to close the popup **Retire Storage Monitor** window, edit the storage location(s), then re-open it (On the **Setup** menu, click **Storage**, and then click **Retire Storage Monitor**).

   ---

6. In the **Retire Storage Monitor** dialog box, click **Start** This starts the data movement from the primary storage location to the other location.

NOTE: If there is a **Stop** button instead of a **Start** button, the DS-System is already monitoring and will begin retiring the storage automatically.

---

7. In the **Retire Storage** dialog box, select how many threads to use and click **OK**.

   F1 Help: Retire Storage

8. After the retiring primary storage location process is finished, stop the DS-System service.

9. Copy the **cd**, **cluster**, **dump**, and **logs** folders to the new primary storage location.

10. Open the DS-System configuration file (`dssys.cfg`) and change the following values to the path of the new primary storage location:

    - Backup Root
    - Del Root
    - Temp Root
    - Upgrade Path

11. Manually edit the DS-System (`dssystem`) database (Microsoft SQL or PostgreSQL) with the following SQL statement:

    ```
    DELETE FROM Storage_Locations WHERE ID=<primary_storage_id>
    ```

    where <primary_storage_id> is the lowest corresponding ID from the **Extensible Storage Locations** dialog box list (normally it will be “1”).

    This command removes the existing primary storage location. The next lowest ID number becomes the new primary storage location. (For example: if you delete ID 1 and there is an ID 2, then it becomes the new primary storage location.)

    The new primary storage location must be the same one where the links were re-assigned in step 5.

IMPORTANT: Do not make any other changes to this table or the database.

---

12. Start the DS-System service / daemon. Verify there are no errors.

For more background information, see Section 3.18, “Updating the DS-System configuration file parameters”, on page 88 and Section 3.6.10, “Deleting an extensible storage location”, on page 62.

3.6.8 Optimizing storage space

You can configure the options that apply for every System Admin process that runs on the DS-System.

- To schedule the System Admin, see: Section 3.14.3, “Scheduling System Admin”.
- To run the System Admin on demand, see: Section 5.8, “Running System Admin on a DS-Client account or backup set”.

To configure optimization settings:

1. On the **Setup** menu, click **Storage**, and then click **Optimize Storage Space**. The **Optimize Storage Space Configuration** dialog box appears.

   F1 Help: Optimize Storage Space Configuration

   - **Optimize files with at least [...] recycled generations.** Check to enable at the specified number of generations. If this number is “0”, all recycled generations are cleaned.
   - **Optimize files with at least [...] KB recycled generations.** Check to enable at the specified size of generations. If this number is “0”, all recycled generations are cleaned.
   - **Optimize files if last generation older than [...] days.** Check to enable at the specified age of last generation. If this number is “0”, all recycled generations are cleaned.
   - **Optimize files with cumulative delta size at least [...]% of master size.** Check to have DS-System reconstruct delta files only if all the corresponding negative delta generation(s) plus the first positive one (the one that will become master) are bigger than the specified percentage of the negative master generation. (This reduces situations that require high disk I/O with relatively low space gains.)

2. Click **OK** to save the configuration.

   - These optimization settings will apply whenever System Admin processes a storage folder.

3.6.9 Monitoring extensible storage locations

Windows DS-Systems can automatically detect if any extensible storage location cannot be accessed.

Linux DS-Systems cannot automatically detect if a file system is mounted. Instead, you can configure the DS-System to monitor the mount points of the storage locations. Linux DS-System will perform the check every 5 minutes.

To configure mount point monitoring on a Linux DS-System:

1. On the **Setup** menu, click **Storage**, and then click **Mount-point Monitor**. The **Mount-Point Monitoring** dialog box appears.

   F1 Help: Mount-point Monitoring

2. Check beside each mount point you want to monitor.

   - You should monitor all mount points used as storage locations. The first mount point listed is the root folder of the DS-System computer.

For both Windows and Linux DS-Systems:

- When monitoring extensible storage locations, if DS-System detects a storage problem, it will stop all current activities and interrupt all connections to the DS-System storage.
- For the first inaccessible mount point detected, one notification email will be sent to the address configured in the **Administrator Notification** settings (see: Section 3.2.2, “Configuring the notification settings”, on page 21).
- DS-System will remain in this frozen state, and will check if the storage locations are accessible every 2 minutes.
- When all storage locations are accessible, DS-System will automatically revert to its normal state and will accept incoming connections.

3.6.10 Deleting an extensible storage location

Only retired and empty storage locations can be deleted.

NOTE: You cannot immediately delete the primary storage location because it contains the extensible storage links to the other storage locations. To delete it, you must retire it, move its data to other storage locations using the retire storage activity, then remove it as the primary storage location (by altering the **Backup Root** value of the `dssys.cfg` file and the **dssystem** database). After restarting DS-System you will be able to delete this storage location. For instructions, see Section 3.6.7, “Retiring the primary storage location”, on page 58.

Once all the data has been moved from a retired storage location, it's status becomes <DELETED>, and it will be removed from the list of extensible storage locations the next time the DS-System restarts. Until then, DS-System continues to verify accessibility of the storage location. Data is not sent to this storage location, but it must be accessible or else DS-System will suspend its operations.

To delete a storage location:

1. On the **Setup** menu, click **Storage**, and then click **Extensible Storage**.
2. Select the retired storage location and click **Delete**.
3. The **Group** value is changed to **<DELETED>** and this storage location will be removed from the extensible storage locations list next time the DS-System restarts.

NOTE: To reactivate this storage location, assign it to any other valid storage group other than **<DELETED>** in the **Edit Storage Location** dialog box.

3.7 Configuring the activity priority schedule

This is an advanced feature. Administrators should not adjust any of these settings unless they are very familiar with the DS-Client activity patterns on the DS-System. This feature adjusts the priority of individual activities on the DS-System. These changes can be applied to all DS-Client accounts, or to individual DS-Client accounts as required.

Since a backup set can only be processed by one activity at a time, each activity on the DS-System has a priority level which resolves conflicts when more than one activity tries to process the same backup set. This determines the order in which activities can access and lock a backup set for processing.

The default activity priorities are listed in the following table. You can use the activity priority schedule to adjust the level of any of these activities to a value in the corresponding valid range.

	Activity	lock_type *	Default Priority Level (Lower # is higher priority)	Valid Range
1	System Compression	lock_type=12	1	1-10
2	Disaster Recovery	lock_type=15	1	1-2
3	Replication Receive	lock_type=22	1	1-10
4	Replication Delete	lock_type=23	1	1-10
5	Backup	lock_type=1	2	2-10
6	Restore	lock_type=3	2	2-10
7	Delete	lock_type=4	2	2-10
8	Retention	lock_type=5	2	2-10

	Activity	lock_type *	Default Priority Level (Lower # is higher priority)	Valid Range
9	Synchronization	lock_type=6	2	2-10
10	Validation	lock_type=7	2	2-10
11	Migration	lock_type=8	2	2-10
12	BLM Archiving	lock_type=9	2	2-10
13	Replication Send	lock_type=21	3	2-10
14	Replication Send - Repair	lock_type=32	3	2-10
15	Retire Storage	lock_type=16	4	2-10
16	Storage Scan	lock_type=17	5	2-10
17	System Validation	lock_type=13	6	2-10
18	File optimization	lock_type=14	6	2-10
19	Group Admin	lock_type=19	7	2-10
20	Deactivate DS-Client	lock_type=28	9	1-20
21	System Admin	lock_type=10	10	2-12
22	System Autonomic Healing	lock_type=11	11	2-12
23	CDP backup	lock_type=2	12	2-12
24	System Backup	lock_type=25	13	10-20
25	Storage Statistics	lock_type=18	14	10-20
26	Clean Libraries	lock_type=26	15	2-20
27	Clean Logs	lock_type=30	16	2-20
28	Empty Trash	lock_type=31	17	10-20

* The **lock_type** number refers to the ID that is displayed in the **System Status - Backup Set Locks** tab (DS-Operator > Setup menu > System Activities: System).

To change activity priority, you use an Activity Priority Schedule. Each Activity Priority Schedule contains a list of Schedule Details, which are the day(s) and time window(s) when the activities have specific priority.

Initially, there is one <DEFAULT> Activity Priority Schedule and all DS-Client accounts are assigned to it. (New DS-Client accounts are automatically assigned to the <DEFAULT> schedule.)

The <DEFAULT> Activity Priority Schedule has two Schedule Details:

- The first Detail covers the entire week (7-days / 24-hours) and contains a list of all the activities, which are initially set to the “factory default settings”. This list is provided for your convenience to see the default activity priority values and any changes you make to them. If you delete this Detail (or any activities in the Activity Priority list), any new Details created will still work ‘against’ the factory default priority settings.
- The second Detail covers regular business hours (08:00-18:00 Monday to Friday) and contains (initially) one activity: CDP. Its priority is increased (with respect to its default setting) from “12” to “2”. The effect is that during business

hours, CDP backup sets that are protecting high value data changes will not be interrupted by activities like System Admin, autonomic healing, replication, etc.

NOTE: These default settings work well, and you should only consider altering them for very specific situations or requirements.

NOTE: To change the activity priorities for all DS-Client accounts at the same time, you can adjust the <DEFAULT> schedule.

For DS-Client accounts with special requirements, you can create a special "Activity Priority Schedule" and assign those DS-Clients to it.

- Each new Schedule you create contains the same Schedule Details as the <DEFAULT> schedule.
- You can alter, delete, or add to these Details as required.
- Once the Schedule is ready, you can assign the DS-Client accounts you want to it. This allows you to provide very specific activity priorities to individual DS-Client accounts, if required.

The following considerations should be made when assigning priority levels:

- Activity Priority is the internal DS-System level assigned to different activities that can run on the DS-System. (Activities occur at the backup set level.)
- When a higher priority activity locks a backup set, it prevents any lower priority activities from accessing it until that activity has finished. Similarly, a lower priority activity that is processing a backup set will be interrupted at a higher priority activity's request.
- Activities that are at the same priority level cannot interrupt one another, therefore the first activity to lock a backup set will maintain the lock until it has finished.
- Lower priority activities must always wait for higher priority activities to finish with a backup set. Similarly, they can be interrupted if a higher priority activity requests access to a backup set they are working on.

For example: The most common priority request is for CDP backups to increase from its default level of "12" during the working day (08:00-18:00 Monday to Friday) in order for protected backups to not be interrupted by System Admin, autonomic healing, replication, or other activities. This is addressed by the second detail in the <DEFAULT> schedule.

How the Schedule Details are applied:

- Only one detail can apply at any specific time.

- For each activity that is about to start, the DS-System checks which Activity Priority should apply at that day and time.
- If any details overlap (start at the same time on the same day), DS-System will select the one that ends sooner (closer to the current time on DS-System). If two details start and end at the same time on the same day, the latest (bottom / lowest) one in the Schedule Detail list will apply.

To configure activity priority:

1. On the **Setup** menu, click **Activity Priority Schedule**.

   F1 Help: Activity Priority Schedule

2. To add a new schedule, in the **Activity Priority Schedule** section, click **New**.

   To edit an existing schedule, in the **Activity Priority Schedule** section, select the schedule and click **Modify**.

   F1 Help: New / Modify Activity Priority Schedule

3. In the **Priority Schedule Name** box, type the name you want and click **OK**.

   Newly created schedules will have the same schedule details as the **<DEFAULT>** schedule.

4. In the **Schedule Details** section, configure the list of details to set the activity priorities at the various time periods during the week.

   - To create a new detail, click **New**.
   - To edit a detail, select it from the list and click **Modify**.

5. The **New / Modify Schedule Detail** dialog box appears. Select the days and the time window when the detail will apply, then click **OK**.

   F1 Help: New / Modify Schedule Detail

   Newly created details will have a blank Activity Priority list.

6. In the detail's **Activity Priority** section, configure the list of activities that will change priority.

   a) To add an activity, click **New**.

      To edit an activity, select it in the list and click **Edit**.

      F1 Help: New / Modify Activity Priority

   b) Select the activity (if applicable) and the priority level it will have, then click **OK**.

   c) Continue for as many activities as you require for this schedule detail.

7. The <DEFAULT> schedule is automatically assigned to all new DS-Client accounts. It will also initially contain all existing DS-Clients.

   To re-assign DS-Clients:

a) In the **DS-Clients assigned to this activity priority schedule** section, click **Assign to DS-Client**. The **Activity Priority Management** dialog box appears.

F1 Help: Activity Priority Management

b) Select the DS-Clients you want to assign to the this activity priority schedule, and click **Set**. Your changes take effect immediately.

You can also access the **Activity Priority Management** dialog box from the **Customer** menu (at DS-System level or customer level).

IMPORTANT: The <DEFAULT> schedule's initial settings are the recommended activity priorities for any DS-System. Any changes in this dialog box will alter the DS-System behavior. The **Restore Defaults** button allows you to reset the entire DS-System's activity priorities to the original factory default settings.

3.8 Configuring the delta chain settings

IMPORTANT: The master-delta chain settings should only be adjusted if you are familiar with the data activity patterns of the DS-Clients on your DS-System.

This feature allows the DS-System to be configured with specific master-delta chain reconstruction settings for each backup set type. These changes can be applied at the customer or DS-Client level. This task must be scheduled to run at regular intervals on the DS-System. For more information, see Section 3.14, "Configuring scheduled tasks".

The global default master-delta chain setting is 9 and applies in the absence of any other configuration. This value is used when the optimization task runs on schedule or on demand to correct the delta chain length for a file's generations. After initial backup, DS-Client normally sends only delta changes to keep the backup times as short as possible. This means the DS-System must regularly run an optimization task on the backup files to rebuild a master when any backup file's delta chain passes its configured limit.

NOTE: Replication DS-Systems only receive deltas, therefore at least one optimization task should be scheduled to periodically fix delta chains.

The ability to customize delta chain configurations is essentially unlimited. You can create new configurations for specific DS-Clients, for specific customers, or for the entire DS-System. The most specific delta chain setting is at DS-Client level and only one setting can apply per DS-Client. This overrides any customer-level configuration, which itself overrides the global default setting for the DS-System.

NOTE: It is important to remember the point of the delta chain length is to set a limit that balances the backup (space) efficiency of the deltas with the restore performance of having a full master and a shorter delta chain.

To configure the delta chain settings:

1. On the **Setup** menu, click **Delta Chain Configuration**.

   F1 Help: Delta Chain Configuration

   - There is a global default maximum delta chain length. By default, all backup sets will be assigned the global maximum delta chain length (this is the **Default delta chain length** setting at the bottom of the dialog box).
   - Next, the customer level configurations will apply to all the customer's DS-Clients. All applicable backup sets will have their maximum chain length overridden with customer's configuration (if applicable).
   - Finally, the DS-Client level configurations will override the maximum chain length for backup sets defined in the delta chain configuration.
   - You can create and maintain multiple configurations from this dialog box.
   - Configurations are applied per DS-Client account. They can be applied at the customer level, but if a customer's DS-Client is assigned to a different configuration, the DS-Client level assignment will override the customer level assignment.
   - Each configuration that is created can be used in any way required by DS-System administrators.
   - A configuration can be specific, for a specific backup set type (such as File System). A configuration can be more general, for a group of similar data types like databases (such as Microsoft Exchange Server and Microsoft SQL Server). A configuration can also cover every backup set type and be assigned to one or several customers (or DS-Clients).

2. To add or edit a configuration to the list, click **New** or **Modify** in the Configuration section. Type a name for this delta chain configuration setting and click **OK**. You can create as many configurations as required.

   F1 Help: New / Modify Delta Chain Configuration

3. Once a configuration is created, you can add details. Each detail will override the DS-System's default delta chain length for the specified backup set type.

4. To add or edit a configuration's detail, in the **Configuration Details** section, click **New** or **Modify**. Select the backup set type and assign a delta chain length, and then click **OK**.

   F1 Help: New / Modify Delta Chain Detail

5. Continue with Step 4 until the Configuration contains all the Details required. When you are finished, you can assign this Configuration to customers or DS-Clients.

6. To assign a customer to the configuration, in the **Customers assigned to this delta chain configuration** section, click **Assign**.

   F1 Help: Assign Customer to delta chain configuration [...]

   - In the **Assign Customers to delta chain configuration** dialog box, select the customer(s) and click **Apply**.

7. To assign a DS-Client to the configuration, click **Assign** in the **DS-Clients assigned to this delta chain configuration** section, click **Assign**.

   F1 Help: Assign DS-Client to delta chain configuration [...]

   - In the **Assign DS-Clients to delta chain configuration** dialog box, select the DS-Client(s) and click **Apply**.

Once you have created at least one delta chain configuration, you can schedule the DS-System to run the optimization task (see Section 3.14.8, "Scheduling delta chain optimization").

3.9 Configuring the printer settings

The DS-Operator GUI can interface with the existing printers configured on the computer where it is installed.

To configure the printer settings:

- On the **Setup** menu, click **Printer Setup**.

  This will call out to the operating system's printer setup. Consult the operating system help for more information.

3.10 Configuring the branding settings

These settings are either defined on the individual DS-System, or they are 'pushed' from the DS-Billing Server. If no branding is specified in this dialog box, none will appear in any of the DS-System reports.

To configure branding:

1. On the **Setup** menu, click **Branding**. The **Edit DS-System Branding** dialog box appears.

   F1 Help: Edit DS-System Branding

2. To add an entry, click **Add**.

   To edit an entry, select it and click **Modify**.

3. The **Add / Modify Branding** dialog box appears.

   F1 Help: Add / Modify Branding

4. Configure the branding as required, then click **OK**.

3.11 Configuring the service provider information

You are the service provider. You must type your company's information, as you wish it to appear on the DS-System reports. This information appears in the header of the reports generated by the DS-System.

To configure your service provider information:

1. In the **Customers** tab, select the DS-System name at the base of the tree.
2. Right-click and select **Service Provider Info**.

   F1 Help: Service Provider Info / ASIGRA Inc. Info

3. Type the required information.
4. Click **OK**. Changes will only appear on newer reports.

3.12 Configuring the appearance of the main window

To adjust the look and feel of the DS-Operator GUI:

1. On the **Setup** menu, click **Look & Feel**.
2. Select one of the available themes.

   For the **Metal** theme only, you can customize the look further:

   a) On the **Setup** menu, click **Initialization**.

   b) Click **Look & Feel**.

      F1 Help: DS-Operator Initialization - Look & Feel

   c) Select the **Metal Theme** and **Custom Colors**. Click **OK** to save any changes.

3.13 Managing system activities

DS-System provides tools to perform real-time troubleshooting. You can view, enable or disable system activities, clear the database logs, and clean orphaned libraries. You can also communicate with users connected to DS-System, disconnect other users from, view the database connections and threads, and shut down the DS-System computer.

3.13.1 Enabling or disabling system activities

You can set the system to refuse connections from all DS-Clients, if the need should arise. This function may be used, for example, if you need to perform some maintenance to the DS-System that may interfere with backup or restore processes.

To enable or disable system activities:

1. On the **Setup** menu, click **System Activities**.

   F1 Help: System Activities Administration

2. In the **System Activities Administration** dialog box, do one of the following:

   - To disable system activities, click **Disable**.
   - To enable system activities, click **Enable**.

The icon changes to reflect the current setting, and the text shows either **System Activities Enabled** or **System Activities Disabled**.

3.13.2 Deleting the DS-System logs

NOTE: You can also set DS-System to automatically clear these logs from the **DS-System Advanced Configuration** dialog box (see Section 3.4, “Configuring the advanced settings”, on page 31)

You can clear any DS-System log entries that are over one month old. Any logs you clear from the DS-System database are automatically archived by month to text files in a `logs` sub-folder in the DS-System **Backup Root** path.

The sub-folder structure is:

```
<Backup Root>\logs\yyyymm\table_name.txt
```

To clear the DS-System logs:

1. On the **Setup** menu, click **System Activities**.
2. In the **System Activities Administration** dialog box, beside **Clear DS-System logs**, click **Clear**.

3. In the **Delete logs** dialog box, select the check box beside each log whose entries you wish to clear, and type how old the logs must be.

   F1 Help: Delete Logs

4. Click **Delete**.

   You can see details about the logs that were archived in the event log.

3.13.3 Cleaning orphaned libraries

Removes orphaned library files (that were deleted by the customer from online storage). This can save some storage space on the DS-System. This feature only works on orphaned library files that have been deleted for at least 30 days.

This process performs the following tasks:

- It scans for, and marks any discovered orphaned library files with a timestamp.
- It deletes any orphaned library files that have been in that state for at least 30 days. This requires this process to be run regularly (e.g. once per week / month).
- If the **CleanLibLink** DS-System advanced parameter is set to 1 (ON), then this process also scans the DS-System database for orphaned library links and deletes those records from the database.

To clean orphaned library files immediately:

1. On the **Setup** menu, click **System Activities**.
2. In the **System Activities Administration** dialog box, beside **Clean Libraries**, click **Clean**.
3. A confirmation popup appears. Click **Yes** to proceed.

NOTE: The clean libraries function should be scheduled to run at regular intervals (like once per month) to identify orphaned libraries and clean any that have been in that state for at least 30 days. The current implementation of this process does not lock the DS-System, therefore it can run in parallel while the DS-System performs backup and restore activities. See: Section 3.14.6, “Scheduling clean libraries”, on page 85.

3.13.4 Viewing system activities

You can view DS-System status information when checking performance or troubleshooting. System status information includes current network connections, database connections, threads, and connection managers.

To view DS-System system status:

1. On the **Setup** menu, click **System Activities**.
2. In the **System Activities Administration** dialog box, click **System**.
3. In the **DS-System System Status** dialog box, do the following:
   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 threads, click the **Threads** tab.
   d) To view the backup set locks, click the **Backup Set Locks** tab.
   e) To view the connection managers, click the **Managers** tab.
   f) To view the replication requests, click the **Replication Requests** tab. (This tab only appears if the **DSSysGroup** advanced parameter is enabled.)

   F1 Help: System Status
4. To update the data, click the **Refresh**.
5. When you are finished, click **Close**.

3.13.5 Managing network connections

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

To manage network connections:

1. On the **Setup** menu, click **System Activities**.
2. In the **System Activities Administration** dialog box, click **System**.
3. In the **DS-System System Status** dialog box, click the **Network Connections** tab, and then do any of the following:
   a) To send a message to a user who is currently connected to the DS-System, select the user, and click **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-System, 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 the **Refresh**.

   F1 Help: System Status
4. When you are finished, click **Close**.

3.13.6 Running system validation

The validation process is a feature that allows you to check the restorability of data stored on the DS-System online storage. The process is performed at the backup set level and can be used to validate the latest generation or all generations of the backup set files. Validation can be triggered by the DS-Client or the DS-System.

Prerequisites

- If validation is triggered from the DS-Client, the customer must enter their account and DS-Client encryption keys.
- If validation is triggered from the DS-System, DS-Client encryption key forwarding must be enabled, and the keys must already be forwarded to DS-System. For more information, see Section 3.2.7, “Configuring the encryption keys settings”, on page 26.

When validation is triggered, the following occurs:

- For each file generation, DS-System will check the file header, delta and library linking.
- If everything is fine, it will try to validate the data by performing a procedure that is like a ‘virtual’ restore. The data will be decrypted and decompressed to generate the original signature.
- If it fails due to a decryption or decompression problem, the validation fails.
- Finally, it will compare the generated signature with the original one. If it does not match, the validation fails; otherwise the validation is successful.
- For any validation failure, the error will be reported on both DS-Client and DS-System. If the validation fails due to reading or network problems, it is unknown whether or not the file is valid. Validation will skip the file and report the corresponding errors on both DS-System and DS-Client event logs.

NOTE: This applies for validation initiated by DS-Client. Validation initiated by DS-System will only report errors on DS-System.

- For other failures where DS-System can confirm the file is corrupted, the file is moved to the trash directory. All files that depend on a corrupted file are also moved to the trash.
- If a file corruption is detected (including “`Digital Signature does not match`” errors), that file and all files that actually depend on it (occasionally, a delta may formally depend on a file, but does not actually depend on it) will be moved to the trash directory. The corresponding error will be reported on both DS-System and DS-Client sides.
- If the DS-System is part of a replication group, the Validation Process will try to retrieve the file from one of the other Replication DS-Systems. If the file is successfully recovered, then no action is required from the DS-Client.

- If the file cannot be successfully retrieved from a Replication DS-System, then the backup set is marked “out-of-sync” and DS-Client will have to synchronize it and resend the file (if it still exists on the source computer being backed up).
- If a file’s restorability status cannot be determined temporarily (networking problems, etc.), DS-System will skip the validation of the file. The corresponding error will be reported on both DS-System and DS-Client sides.
- If a file originally did not have a signature that is needed for Validation, a warning will be reported.
- If any bad files are removed, DS-System will mark the backup set as “out of sync” at the end of the Validation process.

NOTE: When scheduling validation, you should take into consideration that it is disk I/O intensive for the DS-System. It is almost the same as a regular restore, except instead of writing to a target location, the decrypted and decompressed data is discarded after generating the file signature.

Validation process vs. autonomic healing

Functionality	Description	Validation Process	Autonomic Healing
Triggering	Triggered from DS-Client or DS-System	DS-Client or DS-System	DS-System
	Who makes decision when and how to run	Customer	Service provider
	Automatic triggering method	Schedule	Configure
	Can continuously run	No	Yes
Running options	On-demand start/stop	Yes	Yes
	Speed adjustable based on DS-System Load	No	Yes
	Can automatically resume on file level	Yes	Yes
	Customized selection (on dir/file/generation level)	Yes	No

Table 1 Validation vs. autonomic healing

Functionality	Description	Validation Process	Autonomic Healing
Checking Capabilities	Check File Headers for damage/ inconsistencies	Yes	Yes
	Check Directory Stream Headers for damage/ inconsistencies	No	Yes
	Check library link for damage/inconsistencies	Yes	Yes
	Check Delta file for damage/inconsistencies	Yes	Yes
	Check file name for damage/inconsistencies across generations	No	Yes
	Check Directory ID/name for damage/ inconsistencies	No	Yes
	Check File ID/name for damage/ inconsistencies	No	Yes
	Check for orphaned recycled generations caused by data damage/corruption	No	Yes
	Check for session damage/inconsistencies across generations	No	Yes
	Check for corruptions causing decryption problems	Yes	No
	Check for corruptions causing decompression problems	Yes	No
	Check for corruptions causing digital signature does not match	Yes	No

Table 1 Validation vs. autonomic healing

Functionality	Description	Validation Process	Autonomic Healing
Fixing Capabilities	Delete corrupted files (move to trash folder)	Yes	Yes
	If DS-System is part of a replication group, attempt to retrieve the deleted files from a Replication DS-System. If all deleted files are successfully retrieved in this manner, skip step 3 (below).	Yes	Yes
	Mark backup set as out-of-sync after deletion or corrupted files are fixed	Yes	Yes
	Fix files/directories ID damage/ inconsistencies	No	Yes
	Fix directory location damage/inconsistencies	No	Yes
	Fix file name damage/inconsistencies within directories	No	Yes
	Fix file name damage/inconsistencies across generations	No	Yes
	Fix delta linking/reconstruction damage/ inconsistencies	Partially	Yes
	Fix library link damage/inconsistencies	No	Yes
	Remove orphaned recycled generations caused by data damage/inconsistencies	No	Yes
	Clean recycled generations to optimize storage space.	No	Yes
	Fix session damage/inconsistencies across generations	No	Yes
Reporting	Report damage/inconsistencies in event log	Yes	Yes
	Report damage/inconsistencies in DS-Client event log	Yes	No

Table 1 Validation vs. autonomic healing

Autonomic Healing is a tool that is recommended to run on DS-System all the time to find out and fix corruptions or inconsistencies as soon as possible. Some corruptions or inconsistencies may result in files not being restorable, and the backup set cannot be synchronized if the corruptions or inconsistencies are not fixed. Autonomic healing is the most powerful tool available to automatically fix such corruptions or inconsistencies.

The validation process is meant to verify there are no corruptions or inconsistencies that result in files not being restorable. It has some fixing capability, but it is not primarily designed to do fixing (which is what autonomic healing does). Whenever a customer wants to confirm the online storage is restorable, they can run the validation process. If it does not find a problem, there is certainty that the online storage is restorable. Running autonomic healing constantly can also maximize confidence in the online storage restorability.

To initiate a validation via DS-Operator:

1. In the **Customers** tab, browse and select the backup set you want.
2. Right-click and select **Run System Validation**. The **System Validation** dialog box appears.

   F1 Help: System Validation

   - Select the options for the validation.
3. Click **OK**.
   - You can verify the validation results in the activity log.

3.13.7 Running system compression

If a backup set has been configured in DS-Client with no compression type, you can run system compression on the backup set to compress any uncompressed data in the DS-System online storage. The DS-System uses ZLIB for the compression type and only compresses files larger than 32 KB.

NOTE: To run system compression on a backup set, DS-Client encryption key management must be enabled and the DS-Client encryption key(s) must be forwarded to the DS-System. For more information, see Section 3.2.7, “Configuring the encryption keys settings”, on page 26.

To run system compression:

1. In the **Customers** tab, browse and select the backup set on which you want to run system compression.
2. Right-click the backup set and select **Run System Compression**. The **System Compression** dialog box appears.

   F1 Help: System Compression

   Select the options for the compression.
3. Click **OK**.

   You can verify the system compression results in the activity log.

3.13.8 Shutting down the DS-System

[Standalone DS-Systems only] This feature allows you to shut down the DS-System computer.

To shut down the DS-System server:

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

   F1 Help: System Activities Administration

2. Beside **System Shutdown in Progress**, click **Initiate**. The **Initiate System Shutdown** dialog box appears.

   F1 Help: Initiate System Shutdown

3. Type the time (in seconds) that you wish to allow before shutting down.
4. Select the **Reboot System** check box if you want to restart the computer after shutdown.
5. Optionally, type a message that will appear in a popup to other DS-Operator users that are currently connected to the DS-System.
6. Click **Shutdown** to proceed.

   - You can click **Abort** to cancel any time before the DS-System computer's operating system has started shutting down.

3.14 Configuring scheduled tasks

You can schedule certain DS-System tasks to run at specific times. Since these processes can be a draw on the DS-System's resources, you can use the schedule to run these processes when customer use of DS-System is lower.

To schedule a task:

1. On the **Setup** menu, click **Schedule**. The **Schedules** dialog box appears.

   F1 Help: Schedules

   From this dialog box, you can add, edit, and delete scheduled tasks.

2. To add a scheduled task, click **Add**. The **New Schedule Wizard** appears.

   F1 Help: New Schedule Wizard - Select Schedule Type

   - In the **Select Schedule Type** tab, select the kind of task you want to schedule and click **Next**.

   To edit a scheduled task, select it and click **Edit**. The **Select Schedule Time** dialog box appears.

3. Specify when this task will run. Each task can only have one schedule detail, which means you must schedule separate tasks if you want to schedule the activity both daily and monthly.

   F1 Help: Schedule - Select Schedule Time

   a) In the **Detail Type** section, select the frequency.

   b) In the **Daily Frequency** section, select the when the schedule will start, and optionally, when to force the scheduled activity to end.

4. Click **Next** (in the New Schedule Wizard) or the **Options** tab (in the **Edit Schedule** dialog box). The tab that appears depends on the type of task you are scheduling:

   - Scheduling autonomic healing
   - Scheduling validation
   - Scheduling System Admin
   - Scheduling reports (email)
   - Scheduling reports (write to file)
   - Scheduling clean libraries
   - Scheduling empty trash
   - Scheduling delta chain optimization

5. Once you have configured the task, click **Finish** or **OK**.

3.14.1 Scheduling autonomic healing

You can schedule several autonomic healing tasks on the DS-System, however if you select **Start with DS-System** (in the **Schedule Time** tab), all other details will be erased, and autonomic healing will begin any time DS-System starts.

For more information, see: Section 10.1, “Autonomic healing”, on page 185.

To schedule autonomic healing:

1. The autonomic healing option tab allows you to configure the speed control. It appears in a wizard if you are adding, or a properties dialog if you are editing.

   F1 Help: Schedule - Speed Control (Autonomic Healing)

2. In the **Speed control** section, specify if this feature is enabled for this task.
   - You can vary the speed control at different times during the day (from 00:00 to 23:59) by adding time windows.
   - If no time window is set, the default speed is 50% from 00:00-23:59.
3. Once you have configured the task, click **Finish** or **OK**.

NOTE: The number of autonomic healing processes that launch when the schedule starts depends on the value of the **HealingProcess** parameter (Setup Menu > Advanced Configuration). If you do not set an **End at** time, the scheduled processes will continue until they are manually stopped (or DS-System service / daemon is stopped).

3.14.2 Scheduling validation

You can schedule several system validation tasks on the DS-System. Each system validation task can be performed on all backup sets, or on the backup sets of a specific DS-Client.

For more information, see: Section 3.13.6, “Running system validation”, on page 74.

To schedule validation:

1. The System Validation Options tab allows you to configure the validation feature. It appears in a wizard if you are adding, or a properties dialog if you are editing.

   F1 Help: Schedule - Options (System Validation)

2. In the **Options** section, select the following:

Generations to validate	• **Latest –** Validates only the latest generation of the backup set data. • **All –** Validates all generations of the backup set data.

Concurrent validation processes	The number of validation processes that can run at the same time. A separate validation process runs for each backup set. • You can select from 1 to 99 processes (the default is 3).
Additional validation threads	The number of additional threads you want to use to perform each validation process. Each validation process will be able to use this number of additional threads. • You can select from 0 to 99 threads (the default is 0). All threads execute parallel to shorten the validation time.

3. Click **Next** (in the New Schedule Wizard) or the **Selections** tab (in the **Edit Schedule** dialog box).

   F1 Help: Schedule - Selection (System Validation)

4. Configure the list of DS-Clients you want to validate.

   a) Click **Add**. The **Available DS-Client(s)** dialog box appears.

      F1 Help: Available DS-Client(s) (System Validation)

   b) Select the DS-Clients to include and click **Select**.

   c) By default, all of a DS-Client's backup sets are included in the validation. To limit the validation to specific backup sets, select a DS-Client and click **Edit**. The **Backup Set Selection** dialog box appears.

   d) Clear the **All Backup Sets** box and you will see a list of all backup sets from that DS-Client. Select the backup sets you want to validate and click **Select**.

      F1 Help: Backup Set Selection (System Validation)

5. Continue with Step 4 until the **Validation Selections** list is finished.

6. Once you have configured the task, click **Finish** or **OK**.

3.14.3 Scheduling System Admin

You can schedule several System Admin tasks on the DS-System. Each task will perform one pass through each backup set on the DS-System.

For more information about System Admin see Section 5.8, "Running System Admin on a DS-Client account or backup set".

The DS-System Admin process is like NTFS CheckDisk: it only checks physical consistency (valid file headers and links). No check of the logical validity of data is performed (such as invalid names, name duplication, ID duplication, reconstruction failure, or consistency). The DS-System Admin checks data once every 30 days (like CheckDisk). Sometimes checks are required more often, so that anomalies can be found and fixed faster (either manually or automatically).

If the DS-System Admin process detects corrupted files, the files cannot be restored. Once DS-System Admin determines a file is an invalid format file, the file and its dependents will be moved to a directory for invalid files. If the DS-System is part of a replication group, the DS-System Admin will try to recover the corrupted

file from one of the other replication DS-Systems. If the file is successfully recovered, then no action is required by the DS-Client. If the DS-System is not part of a replication group or the valid file is not found on a replication DS-System, then DS-System Admin deletes the invalid data. The backup set is marked as "out-of-sync" so that the DS-Client will synchronize it later and eventually, if the file still exists on the source computer, back it up again to the DS-System.

You can clean recycled generations to optimize storage space. This can be based on the number of generations, the total size of recycled generations, or the age of recycled generations (in days). For more information, see Section 3.6.8, "Optimizing storage space", on page 61.

The DS-System advanced configuration **RecycleSwitch** parameter determines if delta generation recycling is performed. Recycling increases the speed of backups, but it also increases DS-System storage size until master reconstruction or optimization is performed. For more information, see Section 3.4, "Configuring the advanced settings", on page 31.

To schedule System Admin:

1. The System Admin option tab allows you to select the type of scan to perform. It appears in a wizard if you are adding, or a properties dialog if you are editing.

   F1 Help: Schedule - Select Options (System Admin)

2. In the **Scan Options** section, select what type of scan the System Admin will perform on the backup sets.

   - **Perform Regular Scan to Update Statistical Info**:

Full	Force the System Admin to scan all directories and files (this may be slow).
Regular (faster process)	System Admin will skip directories checked by a previous System Admin, and scan only new or modified directories.

   - **Perform Full Scan to Update Stored Size Invoice Info**: checks only the stored size, no file consistency check performed.

3. Once you have configured the task, click **Finish** or **OK**.

3.14.4 Scheduling reports (email)

You can schedule as many Report Tasks as you require.

- For more information about reports see: Chapter 9, “Working with reports”.

NOTE: The DS-System must be configured to send notifications in the DS-System Configuration. For more information, see: Section 3.2.2, “Configuring the notification settings”. The email address configured in that tab will appear in the “From” field of the email containing the report.

To schedule email of a report:

1. The **Report Option** tab allows you to select the reports that will be generated, and the email address of each recipient. It appears in a wizard if you are adding, or a properties dialog if you are editing.

   F1 Help: Schedule - Report Settings (E-Mail Reports)

2. In the **Report Settings** section, specify the report(s) that will be generated and emailed.

3. Click **Add** or **Edit**. The **Add/Modify Scheduled Report** dialog box appears.

   F1 Help: Add / Modify Scheduled Report

   - Type a description of the report that will be sent.
   - Type the email address of the recipient.
   - Select the report format (HTML or CSV).
   - Select the type of report to send. The **Options** section will show the selections you can make. These are generally similar to the options when you choose to print the same report (from the Reports menu).
   - Click **OK**.

4. In the **Report Option** tab, continue adding or editing as many reports as you need for this task.

5. Once you have configured the task, click **Finish** or **OK**.

3.14.5 Scheduling reports (write to file)

You can schedule as many Report Tasks as you require.

Reports are written to disk files using the following naming convention:

```
<report_name>-YYYYMMDD-HHMMSS.csv|html
```

- For more information about Reports see: Chapter 9, “Working with reports”.

To schedule writing a report to file:

1. The Report Settings tab allows you to select the reports that will be generated, and the disk location where they will be written. It appears in a wizard if you are adding, or a properties dialog if you are editing.

   F1 Help: Schedule - Report Settings (Write-to-Disk Reports)

2. In the **Report Settings** section, specify the report(s) that will be generated to disk.

   - Click **Add** or **Edit**. The **Add/Modify Scheduled Report** dialog box appears.

   F1 Help: Add / Modify Scheduled Report (Disk Report)

   - Type a description of the report that will be sent.
   - Select the directory where the report will be written. The DS-System must be able to browse to this location before you can select it.
   - Select the **Report Format** (HTML or CSV).
   - Select the type of report to send. The Options section will show the selections you can make. These are generally similar to the options when you choose to print the same report (from the **Reports** menu).
   - Click **OK**. The **Report Option** tab returns

3. Continue adding or editing as many reports as you need for this Task.
4. Once you have configured the task, click **Finish** or **OK**.

3.14.6 Scheduling clean libraries

This feature schedules the **Clean Libraries** function that can be manually triggered from DS-Operator > Setup Menu > System Activities: Clean. For more information, see: Section 3.13.3, “Cleaning orphaned libraries”.

3.14.7 Scheduling empty trash

NOTE: By default, the trash feature is enabled on a DS-System. You can turn this option on or off using the **TrashSwitch** parameter in the **DS-System Advanced Configuration** dialog box. See Section 3.4, “Configuring the advanced settings”, on page 31.

You can schedule several **Empty Trash** tasks on the DS-System. Each task will perform one pass through each backup set on the DS-System.

For more information, see: Section 3.6.4, “Emptying the trash from an extensible storage location”.

To schedule empty trash:

1. The empty trash options tab allows you to select the type of scan to perform. It appears in a wizard if you are adding, or a properties dialog if you are editing.

   F1 Help: Schedule - Options (Empty Trash)

2. In the **Options** section:

   - **Remove files older than this number of days –** Select how old the deleted data must be to qualify for delete.
   - **Concurrent empty trash processes –** Each storage location requires one empty trash process. You can change the number of the processes that run concurrently.
   - **Additional empty trash threads –** You can change the number of additional threads used by each empty trash process, if required.

   NOTE: A scheduled empty trash task runs on all of the DS-System's extensible storage locations.

3. Once you have configured the task, click **Finish** or **OK**.

3.14.8 Scheduling delta chain optimization

Delta chain optimization is scheduled on the DS-System. Each task will perform one pass through the selected backup directories on the DS-System.

During optimization, DS-System enforces the master-delta chain length to the files in each directory. For more information, see: Section 3.8, "Configuring the delta chain settings".

To schedule delta chain optimization:

1. On the **Setup** menu, click **Schedule**.
2. Do one of the following:

   - To add an optimization task, click **Add**.
   - To edit an existing task, select it from the list and click **Edit**.

   The delta chain optimization option tab appears in a wizard page if you are adding, or a properties dialog if you are editing.

   F1 Help: Schedule - Options (Delta Chain Optimization)

3. In the **Optimization selection** box, select what will be optimized by this task:

Modified Directories	(Default) The delta chain optimization task will only process directories the DS-System has flagged as 'modified' since the last optimization task was run.

All Backup Sets	The optimization task will run on all backup sets on the DS-System.
Modified Backup Sets	The optimization task will only run on modified backup sets. For each backup set, optimization will process all directories.

4. In the **Concurrent optimization processes** box, specify the number of optimization processes that will run concurrently for this task, if required. Each process handles one backup set.
5. To save the configuration, click **Finish** or **OK**.

3.15 Changing your password

You may change the Windows or Unix password of the current logged on user (to the DS-System) through DS-Operator.

To change your password:

1. On the **Setup** menu, click **Change Password**.

   F1 Help: Change Password

2. Click **OK** to accept the new password.

   The next time you log into your computer, this new password will apply.

NOTE: This feature is not supported for N+1 DS-Systems.

3.16 Converting a physical path

You can convert a physical path on the DS-System to identify information.

To convert a physical path:

1. Do one of the following:
   - On the **Setup** menu, click **Storage Path Converter**.
   - On the **Logs** menu, click **Event Log**, and then click **Convert**.
2. The **Storage Path Converter** dialog box appears.

   F1 Help: Storage Path Converter

3. Type the physical path you want to convert.
   - If you open this dialog box from the event log, the physical path may be automatically filled if an appropriate event was selected.
4. Click **Resolve**. The information displayed reflects the physical path.

3.17 Viewing the memory allocation

Memory information applies to the current instance of the GUI (not the underlying service).

To view the memory allocation:

1. On the **Setup** menu, click **Show Memory**.
2. In the top right corner of the GUI, a memory usage bar appears. If you hover the cursor over the bar, the information appears in a ToolTip.
   - Maximum Memory **–** The maximum amount of memory this GUI can consume from this computer.
   - Total Memory **–** This amount has been consumed (allocated) from the computer to this GUI instance.
   - Free Memory **–** Amount of the allocated memory that is still free for use.
   - Used Memory **–** Amount of memory that is currently being used.

3.18 Updating the DS-System configuration file parameters

DS-System has a configuration file (dssys.cfg) that is created during the installation process. The configuration file is a text file that contains parameter and value pairs (assume the value is case sensitive), where the parameter is separated from the value by a colon (“:”). In general, these values should not be edited.

NOTE: If any changes are made to this file, the DS-System service / daemon must be restarted before they will take effect.

By default, the DS-System configuration file is located in the following folders:

- **Linux**

  `/etc/dssys.cfg`

- **Windows**

  %Program%Files\CloudBackup\DS-System\`dssys.cfg`

This file can contain the following parameters:

Parameter	Valid Values	Description
External IP Addr	external IP address	The external IP address is a public IP address made available for DS-Clients to connect to the DS-System. • By default, this parameter is not set. DS-Operator will export all available internal (private) IP address(es) for the DS-System when you create a .CRI file using DS-Operator > DS-Client menu > Export Registration Info... • If set, this value will be exported into any .CRI files you generate from DS-Operator. • For N+1 DS-Systems, type the External IP address of the local DS-System node (not for the other nodes).
ClusterID (N+1 DS-Systems only)	A number from “1 to n”, where n is the total number of nodes in the N+1 configuration	Identifies this DS-System node inside the N+1. • Each DS-System node in an N+1 configuration must have its own unique ID number.
Backup Root	DS-System main storage location.	The root directory for the online storage.
Del Root		The root directory where bad files or data from deleted clients are moved.
Temp Root	Any valid local path. If not set to a local path, the DS-System will default to the following local paths: • [Linux]: /tmp/DS-System • [Windows]: <system_drive>\Windows\Temp	The temporary directory. If is not explicitly set, DS-System will set it on the same drive as the “Backup Root”. This must be a local directory that the DS-System can use for various activities, like autonomic healing. • This location must have at least 20GB of free space to process files when required by DS-System. • Extremely large DS-Systems (e.g. >100TB) may need more space. • N+1 DS-Systems: On each node, this key must be configured to have a local path with enough space allocated for the temporary directory.
Upgrade Path	Any valid path containing the DS-Client automatic upgrade packages.	The path for the upgrade folder. • Default is <Backup_Root>\Upgrade
License File		This key is for historical purposes only (from previous versions that required a specific license file for a DS-System). If it exists, it will be ignored.
Database Type		The type of the database dssystem: • MSSQL or Postgresql

Parameter	Valid Values	Description
Database User		The username for the account used by the DS-System software to connect to the dssystem database. • [Windows] The “Administrator” account logged in when the installation created the DS-System database • [Linux]: “postgres” (default) or any database super-user
Database Password		The password for the account used by the DS-System software to connect to the dssystem database.
Database Instance		[Windows only] The database instance name.
Database Host		• [Windows] The hostname for the database instance. For a SQL Server on the local computer, the value is “(local)”. • [Linux] IP address or computer_name of the PostgreSQL instance
Database Home		[Linux only] The directory where the PostgreSQL client is installed. This is the directory where you can find: • bin/psql
Database Port		[Linux only] The service port on the database server available for DS-System connections.
DS-Client Port		The service port on the DS-System available for DS-Client connections. • Windows DS-System also listens on the port listed in the Windows services file. If both configurations are available and different, DS-System will listen on both the port listed in the services file and on the port listed in the dssys.cfg file.
DS-Operator Port		The service port on the DS-System available for DS-Operator connections. • Windows DS-System only considers this setting if the DS-Operator Port is missing from the Windows services file.
Installation Path	Valid path on the DS-System computer where the DS-System binaries are installed.	This path is selected during installation of the DS-System. • DS-System will load the default branding file for reports (“logo_ASIGRA.png”) from this path. • Linux DS-System also uses this path for upgrades to the DS-System software, therefore this key should not be changed.

3.18.1 Locking the online storage for snapshot

This is a feature that allows DS-System to lock its online storage to permit a third-party application to take a snapshot of the online storage. This option only appears if you have configured it in the **DS-System Advanced Configuration** dialog box (see Section 3.4, “Configuring the advanced settings”, on page 31).

To lock the DS-System online storage:

1. On the **Setup** menu, click **Advanced Configuration**.
   - Set the **AllowStorageLock** value to “1” (True).
2. On the **Setup** menu, click **System Activities**. The **System Activities Administration** dialog box appears.
3. Beside **Lock online storage for snapshot**, click **Lock**.
4. When the icon changes, the online storage is locked (this may take a few seconds on N+1 DS-Systems as each node is required to respond).
   - The online storage is locked (all attempts to change the online storage will be paused).
   - You can run the third-party snapshot application.
5. When the snapshot if finished, click **Unlock**.

3.18.2 Using an automated script to lock storage

This feature is designed to interact with a third-party application, allowing the snapshot to run unattended, on schedule.

Instead of manually clicking / unclicking the Lock buttons, the DS-System database (database name = “`dssystem`”) provides a table called “`storage_lock`” that will respond to third-party manipulation.

The “`storage_lock`” table has two columns:

column name	Description
lock_cmd	This value must be set by the third-party application. • 1 = lock (all attempts to change the online storage will be paused) • 2 = unlock (instructs DS-System to release the online storage for normal operation)
lock_status	The third-party application must wait until this value changes from “0” before performing the snapshot. This may take a few moments in an N+1 configuration (where multiple nodes must each lock their storage). • 0 = normal • non-zero = locked

- Make sure the third-party application performs the following (in order):

1. Set `lock_cmd` to “1”.
2. Wait until lock_status is not zero.
3. Run snapshot.
4. Set `lock_cmd` to “2”.

IMPORTANT: Do not alter any other table in the DS-System database.

---

4 Working with customer accounts

This section provides information on how to add, edit and remove customers from the DS-System.

IMPORTANT: If you are using DS-Billing as part of your solution, you should use the DS-Billing GUI to create and maintain customer accounts since you have access to billing-specific dialog boxes and settings that are not available in the DS-Operator GUI. For more information, see the *DS-Billing User Guide*.

4.1 About customer accounts

Customer accounts are created with a wizard, but can be modified later in the customer profile tabs:

Configuration tips for mixed platforms:

- The first DS-Client that registers an Account Encryption Key for a customer account sets that key, and afterwards it cannot be changed.
- Since encryption keys are input by the person installing the DS-Client, the best practice is to make a new DS-Client immediately after the customer account is created.
- During the installation (or configuration, depending on DS-Client type) make sure to select a common account encryption key. For example: select AES128, to support all types of DS-Clients.
- Instruct all other people who install a DS-Client belonging to this customer account to use the same account encryption key. (If any other key or key type is selected, the DS-Client will fail to connect to DS-System with the error "`Account key does not match.`")

4.2 Creating a customer account

For each new customer, you must create a new customer account. From the customer account, you can define as many DS-Client accounts as required.

To create a customer account:

1. On the **Customer** menu, click **New**. The New Customer Wizard appears.

   F1 Help: Enter Customer Profile Info

2. On the **Enter customer profile info** page, type the required information. The fields in this dialog box are the same as Section 4.3.1, "Configuring the profile information".

3. Click **Next**.

   F1 Help: Enter customer storage quota

4. On the **Enter customer storage quota** page, type the required information. The fields in this dialog box are the same as Section 4.3.2, “Configuring the storage quota”.

5. Click **Next**.

   F1 Help: Enter defaults for new DS-Clients

6. On the **Enter defaults for new DS-Clients** page, configure the default settings that will appear for new DS-Client accounts created for this customer. The fields in this dialog box are the same as Section 4.3.3, “Configuring the default settings”.

7. Click **Next**.

   F1 Help: Edit Customer Profile - LDAP Tab

8. This is optional. On the **Enter LDAP server settings** page, configure the LDAP settings that apply to all DS-Client accounts of this customer. The fields in this dialog box are the same as Section 4.3.4, “Configuring the LDAP server settings”.

9. Click **Finish** to create the customer account.

4.3 Configuring a customer account

When you configure a customer account, you use the **Edit Customer Profile** dialog box. Its tabs correspond to the similar **New Customer Wizard** panels you see when creating a new customer account.

4.3.1 Configuring the profile information

To configure the profile information:

1. On the **Customers** tab, select the customer you want to configure.

2. On the **Customer** menu, click **Edit**.

3. Click the **Profile** tab.

   F1 Help: Edit Customer Profile - Profile Tab

4. In the **Company** box, type the name of the company.

5. In the **Contact** box, type the name of the contact person at the customer's main location.

6. In the **Email** address box, type the email address where notifications for the customer will be sent.

7. In the **Storage Group** box, select the default storage group where data from the customer's new DS-Clients will be sent. To add a new storage group, click **[...]**, and then do the following:

   a) In the Storage Groups dialog box, click **Add**.

      F1 Help: Storage Groups

   b) In the New Storage Group dialog box, click **Add**.

      F1 Help: New / Edit Storage Group

   c) Type the storage group information in the **Name** and **Description** boxes.

   d) Click **Close**.

NOTE: If you change a storage group after a backup has been performed, it will not affect that data. Only new backup data will use the new storage group.

---

8. To display the stored size in backup sets reports for all DS-Clients, select the Show "stored size" in Backup Sets report for all DS-Clients.

9. To define a default DS-Client backup policy that you can select when creating DS-Client accounts for the customer, select the **Enable a default Backup Policy for DS-Clients under this Account** check box, and then do the following:

   a) Click **Edit**.

      F1 Help: Edit DS-Client Backup Policy

   b) In the **Edit DS-Client Backup Policy** dialog box, type, cut-and-paste, or import the default backup policy text from a file. For instructions on how to create a backup policy, see Section 5.19, "Using a Centrally Managed Backup Policy", on page 128.

   c) Click **OK**.

10. Click **OK**.

4.3.2 Configuring the storage quota

To configure the storage quota:

1. In the **Customers** tab, select the customer you want to configure.

2. On the **Customer** menu, click **Edit** and then click the **Storage Quota** tab.

   F1 Help: Edit Customer Profile - Storage Quota Tab

3. Make any required configuration changes. Refer to the F1 help for information on specific fields.

4. Click **Apply** to save any changes.

4.3.3 Configuring the default settings

These are the default settings that will appear in the wizard that creates new DS-Client accounts.

To configure the default settings:

1. In the **Customers** tab, select the customer you want to configure.
2. On the **Customer** menu, click **Edit**, and then click the **Defaults** tab.

   F1 Help: Edit Customer Profile - Defaults Tab
3. Make any required configuration changes. Refer to the F1 help for information on specific fields.
4. Click **Apply** to save any changes.

4.3.4 Configuring the LDAP server settings

You can optionally configure LDAP server settings to add another layer of security for DS-Client to DS-System connections. These settings apply to all DS-Client accounts belonging to this customer. Each DS-Client must supply credentials that the DS-System will validate on the selected LDAP server.

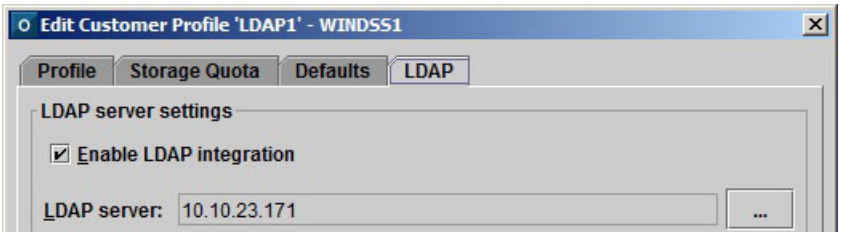
Once this feature is enabled on DS-System, you must configure the LDAP server where the DS-Clients will authenticate. Each DS-Client is required to configure LDAP user validation by supplying their LDAP server user account credentials. If validation is successful, DS-System will save the LDAP user settings.

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.

NOTE: DS-System supports validation of accounts from an Active Directory (AD) server. DS-System can connect directly to the LDAP server or connect via a proxy server.

To configure the LDAP server settings:

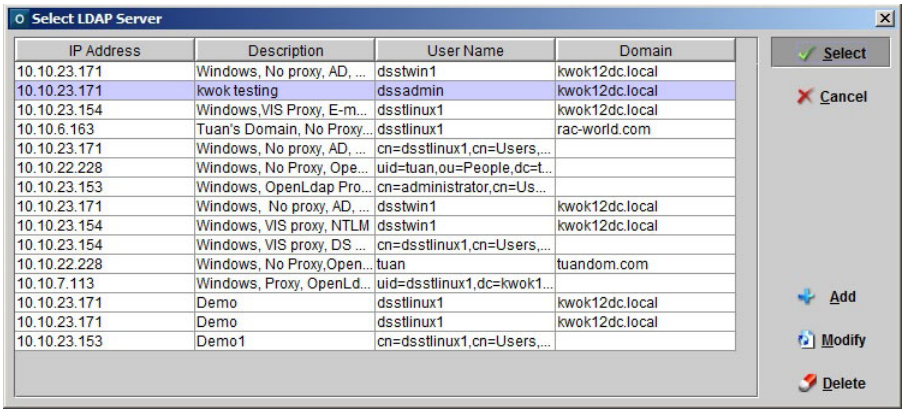
1. In the **Customers** tab, select the customer you want to configure.
2. On the **Customer** menu, click **Edit**, and then click the **LDAP** tab.



F1 Help: Edit Customer Profile - LDAP Tab

3. To activate this option for all DS-Clients belonging to the customer, select the **Enable LDAP integration** check box.

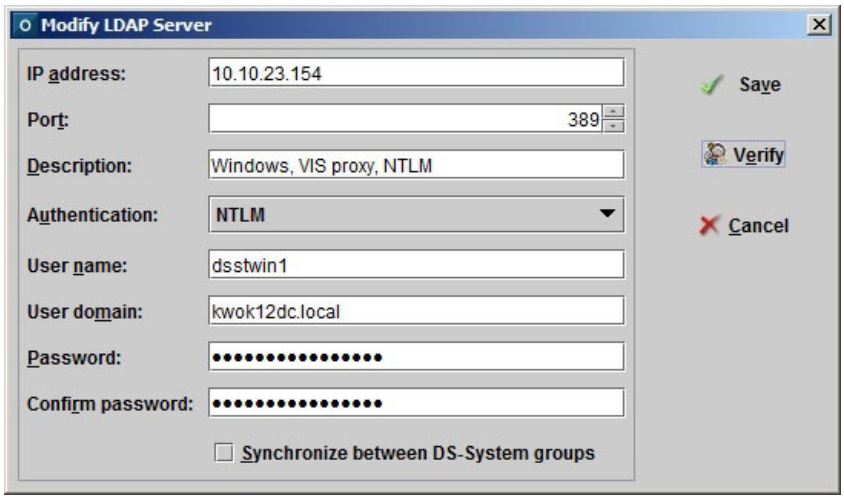
4. Click the **[...]** button beside the **LDAP server** box.



F1 Help: Select LDAP Server

5. In the **Select LDAP Server** dialog box, do one of the following:

   - To add a new LDAP server, click **Add**.
   - To modify an existing LDAP server, select it from the list and click **Modify**.



F1 Help: Add / Modify LDAP Server

6. In the **IP address** box, type the IP address of the LDAP server.

7. In the **Port** box, keep the default setting of 389 unless you have a specific requirement to use another port.

8. In the **Description** box, type additional information to help identify the LDAP server.

9. In the **Authentication** box, select one of the following options depending on how the LDAP server is configured:

   - NTLM

- Domain Account
- Distinguished Name

10. If you selected **NTLM** (Windows only) or **Domain Account** do the following:
    a) In the **User name** box, type the user account on the LDAP server. This account must be able to list all of the LDAP server users and their status (specifically if they have been disabled).
    b) In the **User domain** box, type the domain where the user account will be validated.

NOTE: Normally, each of the customer's DS-Clients will have a separate LDAP server user account created, and those credentials are used to configure LDAP user validation in DS-Client.

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11. If you selected **Distinguished Name**, in the **User DN** box, type the distinguished name of the user. This is usually in a format similar to: `cn=admin,cn=users,DC=domain,DC=company,DC=com`
12. In the **Password** box, type the user password.
13. In the **Confirm password** box, re-type the user password.
14. If you are using DS-System replication groups and want to automatically push changes in the DS-System's customer account to the other replicated customer accounts on the replication DS-Systems, select the **Synchronize between DS-System Groups** check box.

NOTE: For more information on replication groups, see Section 10.8, “Replication”, on page 213.

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15. To check if the configuration works, click **Verify**.
16. To save the LDAP server configuration, click **Save**.
17. Select the LDAP server you want to use and click **Select**.
18. Click **Apply** to save any changes.

All of the customer's DS-Clients must configure LDAP user validation to connect with the DS-System. For more information, see the *DS-Client User Guide*.

4.4 Finding a customer account

To find a customer account in the Customers tab:

1. On the **Customer** menu, click **Find Customer**.

   F1 Help: Find Customer

2. In the list, select the customer you want to find, and click **Select**.
3. The **Customers** tab appears with the customer selected in the tree.

4.5 Locking or unlocking a customer account

If an account is locked, none of the customer DS-Clients can connect with the DS-System. Locked accounts appear on the **Customers** tab in orange.

To lock or unlock a customer account:

1. In the **Customers** tab, select the customer you want to configure.
2. On the **Customer** menu, click **Lock Customer** or **Unlock Customer**.

   The customer account's color in the tree indicates if it is locked (orange).

4.6 Migrating a customer to another DS-System

You can migrate a customer account to a new DS-System. This feature supports cross-platform migration between DS-Systems (for example: Linux DS-System to Windows DS-System).

- For DS-Client level migration, see Section 5.15, "Migrating a DS-Client account to another customer or DS-System", on page 121.

Migration should be planned carefully, because you should expect the export and import processes to take hours to complete, especially if there are millions of files and many terabytes of data.

Before you begin:

- Make sure the DS-System computer does not restart.
- Make sure the version of both the source and target DS-Systems is the same. (For example, if you want to migrate a customer from a v13.3 DS-System, you must make sure the target DS-System is also v13.3.)
- It is very important to check for any errors at each step during migration.
- Before you export, you should run system admin and autonomic healing on each DS-Client account of the customer you are going to export. If errors are reported, you should fix them.

- You must verify that enough space is available for the export and import processes before performing them.
- For extensible storage, even if there is enough physical space for the data to be imported, you must manage the logical space in each storage location. If the storage locations run out of logical space, the customer's backup processes will not be allowed.
- Before you export, deactivate all the customer's DS-Client accounts.

4.6.1 Exporting a customer account

To export a customer account:

1. In the **Customers** tab, select the customer you want to migrate.
2. On the **Customer** menu, click **Export Customer**. The **Export Customer [...]** dialog box appears.

   F1 Help: Export Customer / DS-Client [...]
3. Select a valid path (buffer directory) on the DS-System or DS-System network that can accommodate the full storage of the selected customer.
   - At this point, you must decide where to export the data: on the same extensible storage volume of the target DS-System, or to a different volume entirely.
   - If you export to a location on the same storage volume, the import customer process will give you the option of a faster import method.
   - Click **Start**.

   NOTE: The **Overwrite Options** dialog box appears if you are retrying the export customer process and DS-System detects that usable data exists in the export location. This can happen if the previous process was stopped or interrupted. You can choose to overwrite the data and restart from the beginning, or try to resume from the point before the first error.
4. In the **Customers** tab, select the customer whose data you have just started to export. On the **Customer** menu.
5. Click **Export History**. The **Export history for [...]** dialog box appears

   F1 Help: Export history for [...]
6. Type a valid path (buffer directory) on the DS-System or DS-System network to place the history (database logs) for this customer and click **Save**.

These customer logs will not be imported to the new DS-Systems. Since you can choose to delete the original customer, you may wish to save these logs for historical purposes.

NOTE: For UNIX DS-Systems, you must use a mount point.

4.6.2 Importing a customer account

To import the customer data to the target DS-System:

1. Connect to the destination DS-System where you want to import the customer data.
2. On the **Customer** menu, click **Import Customer**. The **Import Customer** dialog box appears.

   F1 Help: Import Customer / DS-Client
3. Select the source path where the DS-System can import the customer data.
4. Click **Start**. This process will automatically create the customer account and DS-Client accounts, as well as copy the backup data to the DS-System.
   - If DS-System can find a storage location on the same volume as the specified path, a popup dialog box appears:

     F1 Help: Select Import Method

     – The **Move** option is faster, but the data (not including library files) will be moved to the one storage location. Therefore the storage distribution may not be balanced after import.
   - If the logical size (available to DS-System in the storage location) is less than the data being moved, a warning appears. There is enough physical space because the move process is just renaming files in the storage location. However, DS-System will not put new files into that storage location if DS-System has no available logical space.
   - If DS-System cannot find a storage location on the same volume as the specified path, a popup dialog box appears. If you click **Yes**, DS-System will automatically balance the import of data among all its storage locations:
   - The **Select Storage Group** dialog box appears if the DS-System is going to balance the data across storage locations. In this case, you must select a storage group. (Section 3.6, “Configuring extensible storage locations”)

     F1 Help: Select Storage Group
5. You will be asked if you want to overwrite the Global Options for the current DS-System (Additional Charges, Billing Plans, Business Parameters).

6. Once complete, the DS-Client number and DS-System IP address will be changed.
7. On the old DS-System, select each migrated DS-Client account. On the **Customer** menu, click **New Registration Info**. The **Enter New Registration Info** dialog box appears.

   F1 Help: Enter New Registration Info
8. Type the new information. The customer will see this when trying to connect to the old DS-System.
9. Inform your customer of each new DS-Client number, and have them update their DS-Client configuration with the new DS-Client number and DS-System IP address.

NOTE: To make it easier for your customers, you can create a DS-Client Registration Information (.CRI) file for each of the migrated DS-Clients. See: Section 5.6, “Exporting DS-Client registration information”, on page 115.

4.7 Configuring the bandwidth throttle settings

This dialog box allows you to configure the bandwidth throttle for all the DS-Client accounts on the DS-System.

At the customer or DS-Client levels, you may set a maximum bandwidth for each DS-Client. A bandwidth throttle limits bandwidth usage at the individual customer or individual DS-Client level. This is useful, in particular if several DS-Clients are on the same network.

Default bandwidth throttle settings are configured when a customer account or DS-Client account is created:

- See Section 4.2, “Creating a customer account”
- See Section 5.2, “Creating a DS-Client account”

To configure the bandwidth settings for any DS-Client account:

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

   F1 Help: Bandwidth Throttle
2. Select the check box beside each DS-Client account you want to configure.
3. In the **Bandwidth Throttle** section, choose a setting in the **To DS-System** and **From DS-System** boxes:
   - **Unlimited**
   - **Limited to** ([...] Kilobytes per second)

- **Scheduled**: see Section 4.7.1, “Scheduling the bandwidth throttle”

4. Click **Apply**. The DS-Client list updates with the changes.

4.7.1 Scheduling the bandwidth throttle

This feature increases your management flexibility on the DS-System. Instead of assigning a fixed bandwidth throttle, the level can be adjusted at different times during the week according to a schedule. These details can be down to the minute, allowing you very precise 24/7 bandwidth control.

The bandwidth throttle schedules can be accessed from any of the different dialog boxes where you can select a bandwidth throttle setting:

- **Bandwidth Throttle** dialog box
- **DS-System Configuration - Default** tab
- **DS-System Configuration - DS-NOC** tab
- **Enter defaults for new DS-Clients** dialog box
- **DS-Client - Parameters** tab

To schedule a bandwidth throttle:

1. In the **Bandwidth Throttle** section of the corresponding dialog box, select **Scheduled** in the **To DS-System** or **From DS-System** box and then click the **[...]** button that appears beside it.

   The **Select Bandwidth Throttle Schedule** dialog box appears. The selected schedule (if any) will appear in the calendar display on the right side of the dialog box.

   F1 Help: Select Bandwidth Throttle Schedule

2. To create a new schedule, click **New**.

   To edit a schedule, select the one you want and click **Edit**.

3. In the **Bandwidth Throttle Schedule** box, configure the schedule name.

4. To create a schedule detail, click **New Detail(s)**.

   To edit a schedule detail, select the one you want and click **Edit Detail(s)**.

   To edit multiple details with the same start time and bandwidth throttle level, select one of the details and click **Select Group** and then, click **Edit Detail(s)**.

   The **Bandwidth Throttle Schedule Detail** dialog box appears.

   F1 Help: New / Edit Bandwidth Throttle Schedule Detail

   - Select the day and time to start, and the bandwidth throttle level and then click **OK**.

   The **Details** list updates with your changes.

5. Continue configuring details until you have the schedule you want, then click **Add Schedule** or **Update Schedule**.
6. The dialog box changes back to its calendar display.
   - In the **Display interval** box, you can adjust the display settings to see what throttling will occur at different times during the week with this schedule.
7. Click **Select** to choose the selected bandwidth throttle schedule.

   In the original dialog box, your selection appears to the right of the **Scheduled** box.

4.8 Configuring the storage quotas

At the customer or DS-Client levels, you may set a storage quota, which is the maximum storage amount allowed. This dialog box allows you to configure the storage quota for multiple customer accounts or DS-Client accounts at the same time.

To configure storage quotas:

1. On the **Customer** menu, click **Storage Quotas**. The **Storage Quotas** dialog box appears on the **Customer Quota** tab.

   F1 Help: Storage Quotas - Customer Quota Tab
2. To configure a customer quota, click **Find**.

   To configure a DS-Client quota, click on the DS-Client Quota tab and then click Find.

   F1 Help: Storage Quotas - DS-Client Quota Tab
3. In the corresponding list, select the customer(s) or DS-Client(s) you want to configure and click **Edit**.

   F1 Help: Edit Storage Quota for Selected Customers

   F1 Help: Edit Storage Quota for Selected DS-Client(s)
4. In the **Edit Storage Quota** dialog box, configure the storage quota and then click **Save**.

4.9 Configuring the hotfix directory

For service providers with large numbers of customers, it may be more convenient to stagger the hotfix upgrades to DS-Clients. This feature allows you to place each hotfix in a separate directory and assign DS-Clients to the desired hotfix, based on your management schedule.

IMPORTANT: Read the hotfix release notes before deploying any hotfix on a DS-System. Service pack releases and new version releases will always require all the DS-Clients to be upgraded to that version before they are compatible with the DS-System.

Before you begin:

A hotfix subfolder must exist in the DS-System's AutoUpgrade folder. This is the **Upgrade Path** parameter listed in the `dssys.cfg` file. If this key does not exist, you must add it and restart the DS-System.

- You should give the hotfix folder a unique, easily identifiable name (such as "hot_fix_13_0_0_2" or "customer_abc_hotfixes").
- Place the corresponding hotfix files in this folder. If more than one hotfix version is placed in the same folder (such as "13.0.0.3" and "13.0.0.7"), only the latest version (13.0.0.7) will be applied.

To assign a hotfix directory to DS-Clients:

1. In the **Customer**s tree, select the DS-System and then on the **Customer** menu, select **Hotfix Directory**.

   F1 Help: Hotfix Directory

   The **Hotfix Directory** dialog box appears, where you can view and set the HotFix directory location for customers and DS-Clients.

2. In the **Hotfix Directory** box, click the **[...]** button.

   F1 Help: Select Hotfix Directory

3. The **Select Hotfix Directory** dialog box, select the hotfix directory you want to use and click **Select**.

4. In the list of customers or DS-Clients, select the items you want and click **Apply**. The **Hotfix Directory** column will update automatically.

   - If a hotfix directory is set at customer level, all of the customer's DS-Clients assigned to **<DEFAULT>** will use that setting unless an individual DS-Client is assigned to another hotfix directory.
   - Once a DS-Client is configured with a hotfix directory, it will download the latest hotfix from that directory if it has not already been applied.

- You are responsible for managing these hotfix directories.

NOTE: You can use the DS-Client Version Report to track the version status of the DS-System's DS-Clients. (On the **Reports** menu, click **DS-Client Version**.)

4.10 Activating or deactivating a customer account delete lock

NOTE: This feature will have a significant impact on the storage behavior for locked DS-Client accounts.

The delete lock feature allows the DS-System administrator to override data deletion processes at the customer account level (for all the customer's DS-Clients) or at the DS-Client level. Once a delete lock is applied, any request to delete data from a locked DS-Client's online storage will fail as follows:

If a BLM Archiver is available, any data that would be deleted is moved to BLM;

- OR -

If a BLM Archiver is not available:

- Any on-demand delete request (including delete from a retention process) will fail and an error will be reported.
- Recycled generations deletion will not occur. For example, if a backup item is configured for 30 generations, and there are 30 generations online, with the delete lock, the next backup will not recycle (overwrite) the oldest generation. Instead, 31 generations will be kept online (overriding the DS-Client's backup setting). This will continue as long as the delete lock is enabled on the DS-Client.

To configure a delete lock for a customer account:

1. In the **Customers** tab, browse and select the customer account you want.
2. Right-click and select **Activate Delete Lock** or **Deactivate Delete Lock**. The **Activate / Deactivate Delete Lock** dialog box appears.

   F1 Help: Activate / Deactivate Delete Lock

   - In the **Comment** box, type some descriptive information. This comment will be appended for historical purposes in the DS-System database.
3. Click **Lock** or **Unlock** to activate or deactivate the delete lock.

   In the **Customers** tab, the delete lock icon appears or disappears from the customer.

4.11 Deleting a customer account

You can only delete a customer if the account does not have any DS-Clients associated with it. For information about removing DS-Clients from a customer account, see Chapter 5, “Working with DS-Client accounts”.

To delete a customer account:

1. In the **Customers** tab, select the customer you want to configure.
2. On the **Customer** menu, click **Delete**.
3. A confirmation popup appears. Click **Yes** to proceed.

5 Working with DS-Client accounts

This section provides information on how to create and work with DS-Client accounts.

5.1 About DS-Client accounts

A DS-Client account must be created on the DS-System before your customer can use the DS-Client software to back up their data. Once you create a DS-Client account, send the DS-Client account number to your customer in order for them to register their DS-Client installation. For more information, see: Section 5.6, “Exporting DS-Client registration information”.

The initial default group of 99,999 DS-Client accounts can be identified by the prefix “DSC” and unique system ID, which contains 4 alphanumeric characters followed by a sequentially generated DS-Client number (for example, from DSCxxxx00001 to DSCxxxx99999).

In addition to the default group of 99,999 DS-Client accounts, the DS-System can support another 100 groups of 99,999 DS-Client accounts. Additional groups of 99,999 DS-Client accounts can be identified by the prefix “D00”, “D01”, and so on (for example: D00xxxx00001, D01xxxx00001, etc.).

5.2 Creating a DS-Client account

DS-Client accounts are created with a wizard, but can be modified later in the DS-Client properties dialog tabs:

To create a DS-Client account:

1. In the **Customers** tab, select the customer where you want to create a new DS-Client account.
2. On the **DS-Client** menu, click **New**. The New DS-Client Wizard appears.

   F1 Help: DS-Client - Connection Tab
3. On the **Enter DS-Client Connection** page, configure the required information. The fields in this dialog box are the same as Section 5.3.1, “Configuring the connection settings”. This information is used to confirm the DS-Client's identity when it connects to the DS-System.
4. Click **Next**.

   F1 Help: DS-Client - DS-Tools Tab
5. On the **Select DS-Tools** page, configure the DS-Tools for the DS-Client account. The fields in this dialog box are the same as Section 5.3.2, “Configuring the DS-Tools”.

6. Click **Next**.

   F1 Help: DS-Client - Parameters Tab

7. On the **Enter DS-Client Connection** page, configuration is optional. Default settings are supplied, based on the customer where you are adding the DS-Client account. The fields in this dialog box are the same as Section 5.3.3, “Configuring the parameter settings”.

   - Bandwidth Throttle
   - DS-Client Storage Quota
   - RLM Trial Client

8. Click **Next**.

   F1 Help: DS-Client - Advanced Tab

9. On the **Advanced Options** page, configuration is optional. Default settings are supplied, based on the customer where you are adding the DS-Client account. The fields in this dialog box are the same as Section 5.3.4, “Configuring the advanced settings”.

   - DS-Client Report
   - Storage History Setting (used in Reports Menu > Charts > Storage Trend)
   - Storage Group
   - Mass Deployment. For information, see Section 5.20, “Using a DS-Client mass deployment template”.
   - DS-Client Backup Policy

10. Click **Finish** to create the DS-Client account.

Once the DS-Client account entry is created, most options to manage and configure it are available from the right-click menu and DS-Client menu.

5.3 Configuring a DS-Client account

When you configure a DS-Client account, you use the **DS-Client** properties dialog box. Its tabs correspond to the similar **New DS-Client Wizard** panels you see when creating a new DS-Client account.

5.3.1 Configuring the connection settings

You can specify the type of connection and IP address that the DS-Client will use to the DS-System.

To configure the DS-Client connection settings:

1. In the **Customers** tab, select the DS-Client account you want to configure.
2. On the **DS-Client** menu, click **Edit**.

   F1 Help: DS-Client - Connection Tab
3. Edit the settings as required.
4. Click **Apply** to save any changes.

5.3.2 Configuring the DS-Tools

You can selectively enable tools for each DS-Client account.

To configure the DS-Client DS-Tools:

1. In the **Customers** tab, select the DS-Client account you want to configure.
2. On the **DS-Client** menu, click **Edit**, and then click the **DS-Tools** tab.

   F1 Help: DS-Client - DS-Tools Tab
3. Edit the settings as required.

   NOTE: You can configure VM replication based on the number of replicated virtual machines or on their native capacity.

4. Click **Apply** to save any changes.

5.3.3 Configuring the parameter settings

You can set optional parameters for the DS-Client account's available bandwidth and storage quota.

To configure the DS-Client parameter settings:

1. In the **Customers** tab, select the DS-Client account you want to configure.
2. On the **DS-Client** menu, click **Edit**, and click the **Parameter**s tab.

   F1 Help: DS-Client - Parameters Tab
3. Edit the settings as required.
4. Click **Apply** to save any changes.

5.3.4 Configuring the advanced settings

You can configure advanced settings for the DS-Client account. All configurations in this screen are optional.

To configure the DS-Client advanced settings:

1. In the **Customers** tab, select the DS-Client account you want to configure.
2. On the **DS-Client** menu, click **Edit**.
3. Click the **Advanced** tab.

   F1 Help: DS-Client - Advanced Tab
4. Under **DS-Client Report**, do one of the following:
   - To allow the DS-Client to display a column for stored size in its Backup Sets Report, select the **Show "stored size" in backup sets report** check box.
   - To hide this column, clear the check box. The DS-Client's Backup Sets Report will only show the "protected size" (default).
5. Under **Storage History Setting**, in the **History Interval** box, select the interval at which DS-System will record storage history information for the DS-Client.

   NOTE: This information is used in the Storage Trend Report. More frequent intervals require more space in the DS-System database, but provide more precise storage trend information.
6. In the **Storage Group** box, select where the DS-System will save data that is backed up from the DS-Client. For more information, see *Storage Groups* in: Section 3.6.2, "Configuring an extensible storage location", on page 50.).

7. To enable or disable two-factor authentication on the DS-Client, select or clear the **Enable two-factor authentication** check box. If you disable two-factor authentication, you must type your current DS-Operator log on password in the **Password** box that appears.

NOTE: Once 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. Authorized users will be required to type an authentication code that the DS-System generates.

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8. In the **Email Address** box, type the email where DS-System will send administrative notifications for the DS-Client.
9. In the **Description** box, type the descriptive text that you want to appear beside the DS-Client number in the Customers tab.
10. Under **Mass Deployment**, do the following:
    - To specify the number of DS-Clients that can automatically register to use the DS-Client mass deployment template, select the **Auto-registration counter** check box, and then specify the number of DS-Client accounts that can be created.
    - To include the computer name in the description of each DS-Client that registers to use the DS-Client mass deployment template for easier sorting, select the **Fill up description with DS-Client computer name** check box.

NOTE: For information on the DS-Client mass deployment template, see Section 5.20, “Using a DS-Client mass deployment template”.

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11. Under **DS-Client Backup Policy**, do one of the following:
    - To use the default DS-Client backup policy, select the **Use Customer's default Backup Policy** check box. For more information, see Section 4.3.1, “Configuring the profile information”, on page 94.
    - To define a custom DS-Client backup policy, select the **Define a Backup Policy for this DS-Client** check box, and then do the following.

      a) Click **Edit**.

      F1 Help: Edit DS-Client Backup Policy

      b) In the **Edit DS-Client Backup Policy** dialog box, type, cut-and-paste, or import the default backup policy text from a file. For instructions on how to create a backup policy, see Section 5.19, “Using a Centrally Managed Backup Policy”, on page 128.

      c) Click **OK**.

12. Click **OK**.

5.3.5 Resetting the LDAP user settings

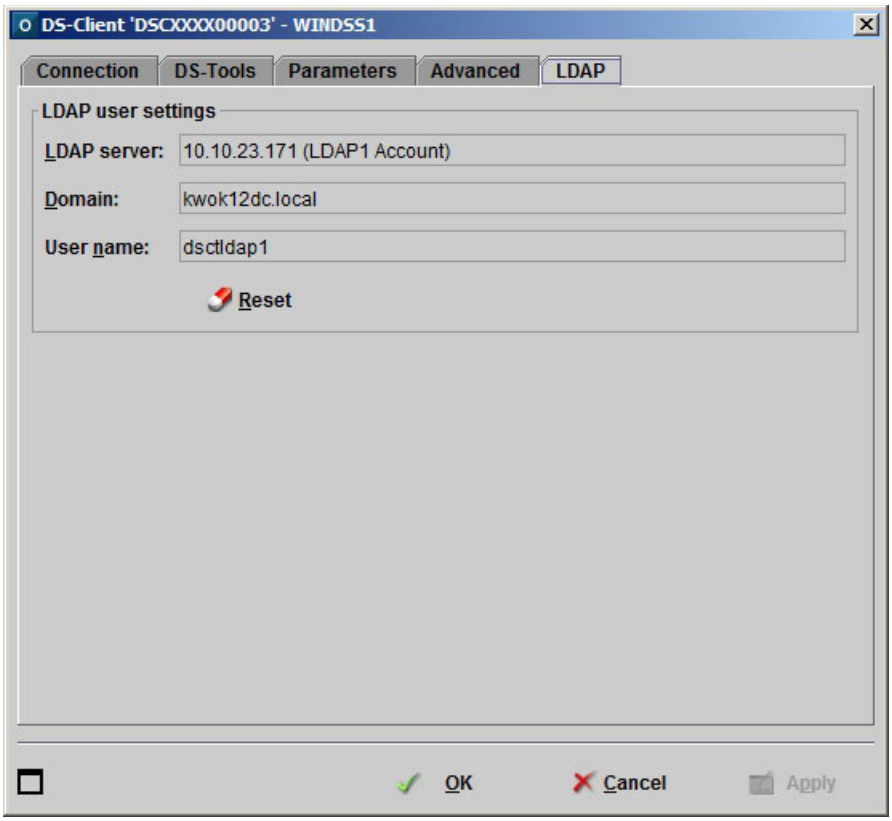
This tab appears if the customer account has been configured to validate with a third-party LDAP server. See Section 4.3.4, “Configuring the LDAP server settings”, on page 96.

Use this dialog box to view and reset a DS-Client’s LDAP user settings. If the fields are complete, it means the DS-Client has validated the credentials, and DS-System is verifying if the displayed user account exists and is not disabled on the LDAP server.

Resetting will clear all fields. This will force the DS-Client to validate the LDAP user settings again, including the password, before DS-System will permit any DS-Client activities.

To reset the DS-Client account LDAP user settings:

1. In the **Customers** tab, select the DS-Client account you want to configure.
2. On the **DS-Client** menu, click **Edit**, and then click the **LDAP** tab.



F1 Help: DS-Client - LDAP Tab

3. Click **Reset** to clear the settings. This will force the DS-Client to resend the information.

5.4 Finding a DS-Client account

If the DS-System has a large number of DS-Client accounts, you can search for a specific one with this dialog box.

To find and select a DS-Client account:

1. On the **DS-Client** menu, click **Find DS-Client**.

   F1 Help: Find DS-Client

2. You can narrow your search in the **Select by** section. By default, the search will show all DS-Client accounts.

3. Click **Find**. The DS-Client list updates.

4. Select the DS-Client account you want and click **Select**. The **Customers** tab appears with the DS-Client account selected in the tree.

5.5 Viewing DS-Client information

You can view information about a DS-Client installation once it has connected to the DS-System.

To view a DS-Client account's information:

1. In the **Customers** tab, select the DS-Client account you want.

2. On the **DS-Client** menu, click **DS-Client Info**.

   F1 Help: Info for DS-Client

5.6 Exporting DS-Client registration information

You can optionally export a DS-Client account's registration information to a file for distribution to the customer. This allows your customer to browse for this file during DS-Client installation for easy entry of the registration information.

To export DS-Client registration information:

1. In the **Customers** tab, select the DS-Client account you want.

2. On the **DS-Client** menu, click **Export Registration Info**.

3. The **Export DS-Client Registration Info** dialog box appears. The information that will be exported to the .CRI file is displayed.

   F1 Help: Export DS-Client Registration Info

- **DS-System Address**: By default, the **DS-System Address** box is populated with all available private IP addresses used by the DS-System. Since the customer may have to connect via an external (public) IP address, this field can be changed. This can be done manually by clicking the **[...]** button beside the field.
  - To make exporting of multiple .CRI files easier, you can add the **External IP Addr** parameter to the DS-System configuration file (`dssys.cfg`). If that value is set, the **DS-System Address** box will be populated with those IP addresses. For more information see: Section 3.18, “Updating the DS-System configuration file parameters”, on page 88.
- **Export DS-Client Encryption Keys**: If the DS-Client has forwarded its encryption keys, you have the option to include them in the .CRI file you generate. They will be in an encrypted format that can be used during the initial DS-Client configuration.

IMPORTANT: This means whoever has the .CRI file can recreate a functioning copy of that DS-Client installation.

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4. To change the DS-System address, click the **[...]** button beside the field. The **DS-System Connection Entry** dialog box appears.

   F1 Help: DS-System Connection Entry

   - Add, modify, or delete from the list of DS-System addresses, then click **OK**.
5. Click **OK** to save the file. Its content will look like this:

```
[RegistrationInfo]
UserName=COMPANY1
AccountName=COMPANY1
ClientNumber=DSCTEST00011
SystemAddress=10.10.70.102; Address_2; Address_3; Address_n
```

6. Distribute this file to the customer.

5.7 Locking or unlocking a DS-Client account

You can selectively lock and unlock DS-Client accounts. If a DS-Client account is locked, then the DS-Client cannot connect to the DS-System.

To lock or unlock a DS-Client account:

1. In the **Customers** tab, select the DS-Client account you want.
2. On the **DS-Client** menu, click **Lock** or **Unlock**.

   Locked DS-Client accounts appear on the **Customers** tab in orange.

5.8 Running System Admin on a DS-Client account or backup set

Run System Admin to update the storage information. This information is used in the various reports generated by the DS-System. System Admin can be run at the DS-Client level or at the backup set level.

To run System Admin:

1. In the **Customers** tab, select the DS-Client account or backup set you want.
2. On the **DS-Client** menu, click **Run System Admin**.

   For a backup set, right-click and select **Run System Admin**.

   F1 Help: Run System Admin
3. In the **Options** section, select the options you want to run:
   - **Perform Regular Scan to Update Statistical Info**:
     - **Full**: Force the System Admin to scan all directories and files.
     - **Regular**: (Faster process) System Admin will skip directories checked by a previous System Admin, and scan only new or modified directories.
   - **Perform Full Scan to Update Stored Size Invoice Info**: checks only the stored size, no file consistency check performed.
   - [DS-System N+1 Only] N**+1 ID to Perform Activity**: Select from the available N+1 DS-Systems to perform this activity.
4. Click **OK**. The System Administration process for the selected DS-Client account appears in the current activities list at the bottom of the DS-Operator main window.

5.9 Configuring a DS-Client account for hardware registration

The first successful connection to DS-System from a DS-Client will automatically register its hardware and operating system information with the DS-System database. If the DS-Client account is configured with the **Requires Registration** option, each subsequent connection to DS-System is validated against the registered hardware profile.

Manual hardware registration needs to be performed only if an existing DS-Client requires re-registration.

You (the service provider / DS-System administrator) must co-ordinate this activity with the customer. The customer (DS-Client administrator) must manually register (from **DS-User**: Setup menu > Configuration tab: Register Now). For enhanced security, registration must be done within the registration window you set in the following steps.

NOTE: Make sure that the DS-Client's IP address is correct and that the **Requires Registration** check box is selected in the **DS-Client Connection** tab (see: Configuring the connection settings).

To configure a DS-Client account for hardware registration:

1. In the **Customers** tab, select the DS-Client account you want.
2. On the **DS-Client** menu, click **Hardware Registration**. The **Hardware Registration** dialog box appears.

   F1 Help: Hardware Registration
3. Select the **Register with DS-Client Hardware Reset** check box to activate this option.
4. In the **Registration Timer** box, you can adjust the window of time the DS-Client administrator has to complete the registration from the DS-Client side.
5. Click **OK**.
   - By default, a 5-minute registration window opens, during which the DS-Client administrator may re-register the selected DS-Client (from DS-User > Setup menu > Configuration > Setup tab: “Register Now”).

NOTE: If a registered DS-Client computer's hardware or operating system is changed after it has been registered, the DS-Client will receive an error for all connections to DS-System until it is re-registered.

5.10 Deactivating a DS-Client account

When you deactivate a DS-Client account on the DS-System, the DS-Client will be unable to connect to the DS-System. This is an intermediary step before you can delete the DS-Client's files.

To deactivate a DS-Client account:

1. On the **DS-Client** menu, click **Deactivate**. The **Deactivate DS-Client** dialog box appears.

   F1 Help: Deactivate DS-Client

2. In the **DS-Client** box, type the full alphanumeric DS-Client number.
3. Click **Deactivate**. A confirmation dialog box appears.
4. Click **Yes** to proceed.

   Deactivated DS-Client accounts appear red in the **Customers** tab.

5.11 Reactivating a DS-Client account

You can reactivate any deactivated DS-Client account with the same configurations it had at the time of deactivation.

To reactivate a DS-Client account:

1. In the **Customers** tab, select the DS-Client account you want to reactivate.
2. On the **DS-Client** menu, click **Reactivate**. A confirmation dialog box appears.
3. Click **Yes** to proceed.
4. You are prompted to specify a **Service Ends** date for DS-Billing. You can clear the **Service Ends** check box if you do not want to specify an end date.

   F1 Help: Reactivate - Select Service End Date

5. Click **OK**. The DS-Client color changes from red to black in the **Customers** tab. The DS-Client is immediately able to connect with the DS-System.

5.12 Activating or deactivating a DS-Client account delete lock

For a description of the behavior, see Section 4.10, “Activating or deactivating a customer account delete lock”, on page 106.

NOTE: This feature will have a significant impact on the storage behavior for locked DS-Client accounts.

To configure a delete lock for a DS-Client account:

1. In the **Customers** tab, browse and select the DS-Client account you want.
2. Right-click and select **Activate Delete Lock** or **Deactivate Delete Lock**. The **Activate / Deactivate Delete Lock** dialog box appears.

   F1 Help: Activate / Deactivate Delete Lock

   - In the **Comment** box, type some descriptive information. This comment will be appended for historical purposes in the DS-System database.
3. Click **Lock** or **Unlock** to activate or deactivate the delete lock.

   In the **Customers** tab, the delete lock icon appears or disappears from the DS-Client.

5.13 Deleting a DS-Client account

You can delete an unregistered DS-Client account immediately. These appear blue in the **Customers** tab.

To delete a DS-Client account:

1. In the **Customers** tab, select the DS-Client account you want to delete.
2. On the **DS-Client** menu, click **Delete**. A confirmation dialog box appears.
3. Click **Yes** to proceed.

NOTE: If you manually delete a shared DS-Client from one DS-System in a replication group, replication will not remove any other replicated DS-Clients from the replication DS-Systems. This means you must manually deactivate and remove the DS-Client from each replication DS-System.

5.14 Removing a DS-Client account and its backed up files

You can only remove files from a deactivated DS-Client account. These appear red in the **Customers** tab. For more information, see: Section 5.10, “Deactivating a DS-Client account”, on page 119.

To remove a DS-Client account and its backed up files:

1. In the **Customers** tab, select the deactivated DS-Client you want.
2. On the **DS-Client** menu, click **Remove DS-Client and backed up files**.
3. In the confirmation screen that appears, do the following:

   F1 Help: Remove DS-Client

   a) If the DS-System is registered with a BLM (Backup Lifecycle Management) Archiver, you can select the following options:

      - To save a copy of all data you are deleting to BLM Archiver, select the **Archive all DS-Client data to BLM before deletion** check box.
      - To use a new BLM archive package, select the **Force new BLM Archive package** check box. If not selected, this archive request will be added to the current archive package on the BLM Archiver (if applicable).
      - To allow the BLM archive package to contain references to older packages, select the **Use back-references** check box. This may save space by removing data redundancy. The default, when this option is not selected, is for each archive package to contain all of the required files.

   b) Type your current DS-Operator log on password in the **Password** box.

   c) To confirm removal of the DS-Client and its backed up files, click **Remove**.

If successful, the DS-Client is removed from the Customers tab.

Depending on the DS-System configuration, files are either deleted immediately or are moved to a trash folder.

NOTE: If deleted data is moved to the corresponding storage location’s trash folder, make sure to run periodic **Empty Trash** processes (see Section 3.6.4, “Emptying the trash from an extensible storage location”).

5.15 Migrating a DS-Client account to another customer or DS-System

You can migrate a DS-Client account to another customer, or to a new DS-System. This feature supports cross-platform migration between DS-Systems (for example: Linux DS-System to Windows DS-System).

- For customer level migration, see Section 4.6, “Migrating a customer to another DS-System”, on page 99.

Migration should be planned carefully, because you should expect the export and import processes to take hours to complete, especially if there are millions of files and many terabytes of data.

Before you begin:

- Make sure the DS-System computer does not restart.
- It is very important to check for any errors at each step during migration.
- Before you export, you should run system admin and autonomic healing on the DS-Client account you are going to export. If errors are reported, you should fix them.
- You must verify that enough space is available for the export and import processes before performing them.
- For extensible storage, even if there is enough physical space for the data to be imported, you must manage the logical space in each storage location. If the storage locations run out of logical space, the customer’s backup processes will not be allowed.
- Before you export, you must deactivate the DS-Client account. See: Section 5.10, “Deactivating a DS-Client account”, on page 119.
- For more details after exporting, see: Section 5.15.2, “Importing a DS-Client account”

5.15.1 Exporting a DS-Client account

To export a DS-Client account:

1. In the **Customers** tab, browse and select the DS-Client account you want to migrate.
2. On the **DS-Client** menu, click **Export DS-Client**. The **Export DS-Client [...]** dialog box appears.

   F1 Help: Export Customer / DS-Client [...]
3. Select a valid path (buffer directory) on the DS-System or DS-System network that can accommodate the full storage of the selected DS-Client account.
   - At this point, you must decide where to export the data: on the same extensible storage volume of the target DS-System, or to a different volume entirely.
   - If you export to a location on the same storage volume, the import customer process will give you the option of a faster import method.

- Click **Start**.

NOTE: The **Overwrite Options** dialog box appears if you are retrying the export customer process and DS-System detects that usable data exists in the export location. This can happen if the previous process was stopped or interrupted. You can choose to overwrite the data and restart from the beginning, or try to resume from the point before the first error.

NOTE: For UNIX DS-Systems, you must use a mount point.

5.15.2 Importing a DS-Client account

Any DS-Client account that has been successfully exported can be imported to a new customer account on the same DS-System or to a different DS-System.

Before you begin importing:

- Before you import, you must create a target DS-Client account on the destination DS-System under the required customer account.

  See: Section 5.2, “Creating a DS-Client account”, on page 109.

IMPORTANT: The new customer account must have the same account encryption key (including the same encryption strength) as the original.

To import the DS-Client data:

1. On the destination DS-System's **Customers** tab, browse and select the target DS-Client account.
2. On the **DS-Client** menu, click **Import DS-Client**. The **Import DS-Client** dialog box appears.

   F1 Help: Import Customer / DS-Client
3. Select the source path where the DS-System can import the DS-Client data.
4. Click **Start**. This process will copy the backup data to the DS-System.
   - If DS-System can find a storage location on the same volume as the specified path, a popup dialog box appears:

     F1 Help: Select Import Method

     – The **Move** option is faster, but the data (not including library files) will be moved to the one storage location. Therefore the storage distribution may not be balanced after import.

- If the logical size (available to DS-System in the storage location) is less than the data being moved, a warning appears. There is enough physical space because the move process is just renaming files in the storage location. However, DS-System will not put new files into that storage location if DS-System has no available logical space.
- If DS-System cannot find a storage location on the same volume as the specified path, a popup dialog box appears. If you click **Yes**, DS-System will automatically balance the import of data among all its storage locations for the DS-Client account's storage group.

5. On the old DS-System, select the migrated DS-Client account. On the **DS-Client** menu, click **New Registration Info**. The **Enter New Registration Info** dialog box appears.

   F1 Help: Enter New Registration Info

6. Type the new information. The customer will see this when trying to connect to the old DS-System.
7. Inform your customer of their new DS-Client number, and have them update their DS-Client configuration with the new DS-Client number and DS-System IP address.

NOTE: To make it easier for your customers, you can create a DS-Client Registration Information (.CRI) file for the migrated DS-Client. See: Section 5.6, "Exporting DS-Client registration information", on page 115.

5.16 Performing an automatic upgrade of the DS-Client software

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NOTE: To configure DS-Clients of a specific sales group with upgrade packages that have different software branding, you must use the DS-Billing GUI. For more information, see: Section 10.4, "DS-Billing" and the *DS-Billing User Guide*.

By default, DS-System is configured to automatically upgrade its DS-Clients. Each time a DS-Client connects to the DS-System, the DS-System validates the DS-Client's version number. If the upgrade package on the DS-System is higher than the current DS-Client version, the DS-Client downloads the package and then will silently upgrade itself.

The DS-User, DS-MLR, and DS-Recovery Tools installations download their automatic upgrade packages from the DS-Client.

The default folder depends on the type of automatic upgrade package:

- DS-Client full release: `<Backup_Root>\Upgrade\Default\`
- DS-Client service pack or hotfix: `<Backup_Root>\Upgrade\`

- DS-User, DS-MLR, or DS-Recovery Tools: `<Backup_Root>\Upgrade\`

By default, the full release and service pack DS-System installations place all the DS-Client software automatic upgrade packages in these folders. It is recommended to keep this default setting.

You can change this folder to any location visible to the DS-System, provided the path is a valid physical drive or UNC path that DS-System can access without supplying a user name and password. You cannot use a mapped drive.

NOTE: If you change the path, you will have to manually copy any new upgrade files to this directory.

Hot fixes are released as required for individual DS-Client software components. They must be manually placed in the upgrade folder. For more information, see Section 4.9, “Configuring the hotfix directory”, on page 105.

If your environment has multiple DS-Clients and you do not want to upgrade them all at the same time, you can upgrade them in a controlled manner by performing a rolling upgrade. For more information, see Section 5.17, “Configuring rolling upgrades of DS-Clients”.

NOTE: To disable automatic upgrades, set the value of the **AutoUpgrade** parameter to 0. (On the **Setup** menu, click **Advanced Configuration**.)

5.17 Configuring rolling upgrades of DS-Clients

Rolling upgrade is the process where software is developed continuously with updates which are released in between the major releases. These include hotfixes, patches, and service packs. These updates are compatible with earlier versions where a complete re-installation of the software is not required.

If your environment has multiple DS-Clients, and you want to upgrade them selectively in stages, you can do so in a controlled manner by performing a rolling upgrade.

Before you begin

- Ensure that all the required upgrade packages (hotfixes, patches, service packs, or upgrades) are in their corresponding folders in DS-System.
- Set the value of the **AutoUpgrade** parameter to -1. (On the **Setup** menu, click **Advanced Configuration**.)

To configure rolling upgrades of DS-Clients:

1. On the **Setup** menu, click **Rolling Upgrade**.
2. In the **Rolling Upgrade** dialog box, select the required DS-Clients for upgrade.

F1 Help: Rolling Upgrade

3. In the **Select priority level** box, select a priority level and click **Apply Priority**.
4. To set the priority level as the default priority level for new DS-Clients added to DS-System, select **Add the default upgrade priority for all new DS-Clients added to the DS-System** check-box**.**
5. In the **Rolling upgrade period** boxes, specify the time period during which the upgrade should run.
6. In the **Define time difference between two priority levels** box, specify the dates to specify the period during which the upgrade should be run in the **Rolling upgrade period From... To...** field.

NOTE: When specifying the rolling upgrade period and time interval between two priority levels, take into account the number of DS-Clients being upgraded and the size of the upgrade packages.

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7. Click **Save**, and then click **Close**.

DS-Clients with auto-upgrade enabled will automatically download and apply the upgrade package from the DS-System. If a DS-Client with a priority level 1 is not upgraded for any reason and DS-Clients with a lower priority level are scheduled for an upgrade, the DS-Client with priority level 1 will be upgraded first.

5.18 Sending DS-System IP configuration updates to DS-Clients

The DS-System can send an update of its IP address configuration to DS-Clients. This upgrade can contain new, updated, or changed DS-System IP addresses.

NOTE: At least one existing DS-System IP address must be functional because the DS-Client must connect to receive the update.

To send DS-System IP configuration updates to DS-Clients, you must place an XML format file in the Upgrade folder on the DS-System machine. The name of the file determines if the update applies to all DS-Clients, a specific customer account, or a specific DS-Client. For example:

- `update.xml` – Applies for all DS-Clients.
- `update_????.xml` – Applies to all DS-Clients of a specific customer (where ???? is the account number, for example: `update_CUST000001.xml`).
- `update_????.xml` – Applies only to a specific DS-Client (where ???? is the DS-Client number, for example: `update_DSCXXXX00001.xml`).

In case more than one update applies for a particular DS-Client, the highest priority update will be used. Update priority is in the following order (highest to lowest):

- An update specific to a DS-Client.
- An update specific to a customer account.
- An update for all DS-Clients.

Update file format

The update file is an XML file with the following schema:

```
<!ELEMENT asigra-config-update
(system-connection,secondary-connection*)>
<!ELEMENT system-connection (dns*)>
<!ELEMENT secondary-connection (dns*)>
<!ELEMENT dns (#PCDATA)>
```

The dns entries contain either the dns name of a DS-System or the DS-System IP address. The following is a sample file:

```
<asigra-config-update>
   <system-connection>
      <dns> sys1.yourcompany.com </dns>
      <dns> sys2.yourcompany.com </dns>
      <dns> 192.168.1.203 </dns>
   </system-connection>
   <secondary-connection>
      <dns> backup1.yourcompany.com </dns>
      <dns> backup2.yourcompany.com </dns>
   </secondary-connection>
   <secondary-connection>
      <dns> 10.11.12.13 </dns>
   </secondary-connection>
   <secondary-connection>
      <dns> finalfallback.yourcompany.com </dns>
   </secondary-connection>
</asigra-config-update>
```

DS-Client auto-update functionality

The DS-Client will download the auto-update during its admin processes (daily or weekly), when it connects to the DS-System. The DS-Client will save the update file as `update.xml` in its DS-Client buffer path.

The DS-Client will replace existing IP addresses from the primary connection entries with the newly received IP addresses (if any). In case the update does not contain any IP addresses, the existing primary connection will be kept.

Updating primary and secondary DS-System IP connection information

When DS-Systems are part of a DS-System replication group, their DS-Clients can be configured with secondary DS-System connection information for failover purposes in the event the primary DS-System is unresponsive or unreachable for any reason. For more information on how to configure the DS-System for replication, see Section 10.8, “Replication”.

In the XML update file, the primary DS-System connection is the first one and it is placed between the <system-connection> tags. This is the DS-System where backup data is normally sent. Afterwards, the data is replicated to the other DS-Systems in the DS-System replication group (if the DS-Client has been shared for replication).

Secondary DS-System connection information is optional. You can update this information for DS-Clients to take advantage of the alternate replication DS-Systems, whenever they cannot reach the primary DS-System.

All other connections (to any other DS-System) are secondary connections, with each replication DS-System placed between its own set of <secondary-connection> and </secondary-connection> tags. Each secondary connection will be added as a separate line in the DS-System connection settings for the DS-Client.

5.19 Using a Centrally Managed Backup Policy

When a Centrally Managed Backup Policy is enabled for the DS-Client in the DS-System, all policies (backup sets, schedules, retention rules, etc.) are configured and managed by the DS-System.

When you configure a backup policy, the XML file must have the same structure as the **config-update.xml**. Sample XML files are available for the Windows DS-Client, Linux DS-Client, Mac DS-Client, DS-Mobile Client, and DS-Notebook Client on the DVD. You can modify the sample XML file as required, and then cut-and-paste or import the text as part of the configuration process. No validation is performed on the XML, so you must test and verify that it works as you intend.

Once the backup policy is configured, the next time the DS-Client connects to the DS-System, it will download the backup policy to a file in the installation directory named **backup_policy.xml**. When the file is applied, it is renamed with a consecutive number (for example, backup_policy_001.xml). DS-Client will detect the change and apply the new configurations each time you change the backup policy. This is how you can control the DS-Client's configurations and activities remotely from the DS-System.

For the DS-Mobile Client (Windows) and DS-Notebook Client (Mac), when the backup policy option is enabled, the auto-configuration feature is disabled for the DS-Client. Only XML configurations it obtains directly from the DS-System will be applied. It will not apply to files that are manually copied into the DS-Client installation directory with the name **config-update.xml** or **backup_policy.xml**.

For instructions on how to configure a default backup policy for all DS-Clients that belong to a customer account, see Section 4.3.1, “Configuring the profile information”, on page 94.

For instructions on how to configure a backup policy for individual DS-Client accounts, see Section 5.3.4, “Configuring the advanced settings”, on page 112.

5.20 Using a DS-Client mass deployment template

Mass deployment enables you to use XML files to create a large number of DS-Client accounts on a DS-System, silently deploy the Windows DS-Client software, and automatically configure each DS-Client.

IMPORTANT: DS-Client mass deployments are supported only for standalone DS-Clients (not for Grid DS-Clients).

From the DS-System side, mass deployment helps you quickly configure multiple DS-Client accounts. Instead of manually creating many DS-Client accounts, you can create one DS-Client mass deployment template and re-use the same connection information (or .CRI file) for all DS-Client accounts you want to deploy under that customer account. For more information, see: Section 5.6, “Exporting DS-Client registration information”.

The DS-Clients will initially connect to the DS-System to register as the template DS-Client, but will be automatically assigned a different sequential DS-Client number (with the exception of the “Requires Registration” note below).

- When the Auto-registration counter reaches “1”, it will not allow any new DS-Clients to be created.
- The template DS-Client account will not allow itself to be registered as an actual DS-Client account until you clear the **Auto-registration counter** option.
- If this template DS-Client account has the **Requires Registration** option selected (in the DS-Client - Connection Tab), each time a new DS-Client request is received, the DS-System will check the hardware cookie it receives with those of all existing DS-Clients under this same customer account. If a matching cookie is found (meaning an existing hardware installation is trying to re-install a DS-Client), DS-System will re-assign the existing DS-Client number corresponding to the matching cookie. (This also means that if the **Requires Registration** option is off, a new DS-Client number is generated every time a new DS-Client installation is requested from this template DS-Client account.)

This simplifies DS-Client creation in mass deployment scenarios: you only need to make one template, and all DS-Clients will be created with the same settings.

NOTE: For more information on mass deployment of DS-Clients, see the *DS-Client Mass Deployment Guide*.

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6 Monitoring the system

This section provides information about viewing backup set structures. Backed up files are normally encrypted and compressed, but you can view the original file size and stored file size, compression ratio, and other storage options that have been applied.

6.1 Viewing backup set information

Backups are organized hierarchically on the DS-System. The basic structure is that the DS-System contains any number of customer accounts. A customer account contains any number of DS-Client accounts. A DS-Client account contains any number of backup sets.

For any backup set on the DS-System, you can browse the directory structure and view information about backed up files, including generations of the same file and storage options.

To view a backup set:

1. In the **Customers** tab, browse to the customer, DS-Client, and select the backup set you want to view.
2. Right-click and select one of the following browse options:
   - **Fast Browse**: For very large directories, this omits the statistics. Information is cached until refresh, or restart of the service. This is the default selection if you double-click on the backup set.
   - **Browse**: Full directory and file information will be displayed, including storage statistics.
3. This opens a browse window for the backup set.

   F1 Help: DS-System: \\Server\Backup_Set_Name
4. Browse through the folder structure and select the directory with the files you want to view.

   NOTE: The files in any directory you browse are not immediately displayed, since this could take some time if the directory contains a large number of files. You must specify you want to view the files in any directory you browse.

5. Right-click and select **Show Files**. The files that reside in the directory appear on the right hand side of the browse window.
6. For additional information on a file, double-click on it. The **Storage Info for 'filename' (**\...\file_number.generation_number)** dialog box appears.

   F1 Help: Storage Info for: [...]

7. This dialog box shows the name of the file, the file path and number on the DS-System, the file generation, and other pertinent storage information. From this dialog box, you can perform the following tasks on a file generation:
   - Verifying link information for a file generation
   - Optimizing master generations
   - Restoring a file generation (without involving DS-Client)

6.1.1 Verifying link information for a file generation

When viewing the storage information for an individual file, you see a list of all the backed up generations. You can check the link(s) required by a specific generation of a file, which confirms that DS-System can find all the required components for that backup generation.

- For **Delta** generations, this verifies the links to required data blocks in previous generations (back to the master).
- For **Master** and **Regular** files, this verifies the link to the source file.
- For **Library** files, this verifies the link to the source library file.

To verify a file link:

1. In the **Storage Info for** dialog box, select the file generation you want to verify.

   F1 Help: Storage Info for: [...]

2. Click **Verify Link**. A popup message appears with information about the link.

6.1.2 Optimizing master generations

This feature allows you to try to reduce space occupied by master generations.

To optimize at the individual backup file-level:

1. In the **Storage Info for** dialog box, select the master generation you want to optimize.

   F1 Help: Storage Info for: [...]

2. Click **Optimize**.
   - DS-System will try to optimize the master at the block-level (it may achieve slightly better de-duplication than the DS-Client).
   - If the preceding generation is also a master, DS-System will convert the master you are optimizing into a delta that depends on it.

To optimize an entire backup set:

1. In the **Customers** tab, browse to the customer, DS-Client, and select the backup set you want to view.
2. Right-click, and select **Run Master/Delta Optimize**. The **Master/Delta Optimization** process starts immediately.
   - By default, the DS-System will try to optimize the backup set's master files at the block-level (it may achieve slightly better de-duplication than the DS-Client). It will also convert back-to-back masters into the master-delta chain (where appropriate).
   - Additional optimization depends on the setting of the **FixDeltaChain** advanced configuration parameter. This will convert a delta generation into a master when the DS-System detects the delta chain is too long, For more information, see: Section 3.4, "Configuring the advanced settings".

6.1.3 Restoring a file generation (without involving DS-Client)

This feature allows you to restore a specific backed up file generation without involving the DS-Client by browsing the backup set with DS-Operator. This can be attempted with any backed up file on the DS-System, with the following conditions:

- If the file is backed up with File Permissions / ACL ("P" flag in the Flags column of the Storage Info for [...] dialog box), those permissions are not restored.
- If the file is backed up with Streams ("S" flag in the Flags column of the Storage Info for '...' dialog box), those streams are not restored.

To restore a specific file generation:

1. In the **Storage Info for** dialog box, select the generation you want to restore.

   NOTE: Only one generation can be restored at a time.

   F1 Help: Storage Info for: [...]

2. Click **Restore**. The **File Restore** dialog box appears.

   F1 Help: File Restore

3. In the **Private Key Type** box, select the encryption type. In the **Private Key** box, type the DS-Client private encryption key. (You must know the key.)
4. In the **Account Key Type** box, select the encryption type. In the **Account Key** box, type the customer account encryption key. (You must know the key.)
5. In the **Restore Reason** box, select the explanation for this restore request.
6. Click **Restore** to attempt to restore.

- If the keys are valid, a **Save As** window appears for you to choose the restore destination for the file.

NOTE: When attempting to restore a generation from a backup set that contains multiple files that are inter-dependent components, the restored files might not be usable. Even if you restore all the component files, you would require the DS-Client to resolve them to the original backup state.

6.2 Viewing statistics

You can view the statistics for a customer, a DS-Client, a backup set, or a directory within the backup set. The information displayed shows the last backup date, the original file size, and the file size occupied on the DS-System. These statistics categorize the backup files as library, regular, master, or delta.

To view the statistics for a customer, a DS-Client, or a backup set:

1. In the **Customers** tab, browse and select the customer, DS-Client, or backup set you want.
2. Right-click and select **Statistics**. The corresponding **Statistics** dialog box appears, containing the following tabs:
   - **System Admin Statistics** tab: Shows statistics gathered during the last System Admin.

     F1 Help: Statistics - System Admin Statistics Tab
   - **Real-time Statistics** tab: Shows current statistics from the DS-System database.

     F1 Help: Statistics - Real-time Statistics Tab
   - **BLM Statistics** tab: Shows statistics from BLM Archiver.

     F1 Help: Statistics - BLM Statistics Tab

To view the statistics for a directory in a backup set:

1. In the **Customers** tab, browse and select the backup set containing the directory you want.
2. Right-click and select **Browse**.
3. In the browse window, select the directory whose statistics you wish to view.
4. Right-click and select **Statistics**. The **Item Statistics** dialog box appears with information on the selected directory.

   F1 Help: Item Statistics

6.3 Viewing library statistics

All items that are backed up to the DS-System are scanned to determine whether duplicate copies exist online. If a copy already exists, then the file is saved as a library file (a link to the common library file will be saved, rather than the entire file, thus reducing storage space on the DS-System).

Library files are saved in the client library, the customer library, or the public library, depending on where the duplication occurs:

- Common files within a DS-Client's backup sets are saved to the client library (using the DS-Client's encryption key).
- Common files within a customer's backup sets are saved to the customer library (using the customer's account encryption key).
- Common files from different customers' backup sets are saved to the public library (no encryption is used).

To view the library statistics:

1. In the **Customers** tab, browse and select the DS-System, customer, or DS-Client you want.
2. Right-click and select **Library Statistics**. The **Library Statistics** dialog box appears.

   F1 Help: Library Statistics

6.4 Viewing library files

You can search for and view DS-Library files. The information displayed indicates the customer, and DS-Client using the selected library file.

To view the library files:

1. On the **Setup** menu, click **Libraries**.

   F1 Help: Libraries

2. The tabs at the bottom of the dialog box indicate which type of library files are displayed:

Public	Unencrypted library files (common to more than one customer)
Customer	Files encrypted with the Customer Key (common to one customer)
DS-Client	Files encrypted with the DS-Client Key (common to one client)
Not Used	Search for unused library files (due to deletion).
Library ID	Search for a specific library file by its ID number (troubleshooting tool).

3. By default, the 10 files with the largest count in the selected library will be displayed. You may optionally display any number of files, or sort by the number or size of the library files.

4. Click **Find**. The dialog box shows the library files that conformed to the search.

6.4.1 Viewing the usage of a library file

To view usage of a specific library file:

1. On the **Setup** menu, click **Libraries**.
2. Select the library type tab containing the file you want, and click **Find**.
3. In the list available, select the library file you want and click **Select**.
4. Click **Select**. The **Usage for Library file [...]** dialog box appears, with a list of the customer accounts and DS-Client accounts using the selected library file.

   F1 Help: Usage for the Library File [...]
5. For more information on each use of the library file, select it in the list and click **File Info**.

   The file information is retrieved, and the dialog box displays the customer account, DS-Client number and the original file path in the customer's backup set. In the **File Information** section, you can view the DS-System path, originating computer, backup set name, and backup date.

6.4.2 Invalidating a library file

Invalidating a library file means the actual common file stored on the DS-System will be replaced with the next backup that contains the common file. This is a troubleshooting tool.

To invalidate a library file:

1. On the **Setup** menu, click **Libraries**.
2. Select the library type tab containing the file you want, and click **Find**.

   F1 Help: Libraries
3. In the list available, select the library file you want and click **Invalidate**.
4. A confirmation popup appears. Click **Yes** to proceed.

   In the **Libraries** dialog box, the **Valid** column indicates the current status of the library file.

6.4.3 Viewing a library file's header information

You can display the header information for a selected library file. This allows you to view the storage information about the library file.

To view a library file's header information:

1. On the **Setup** menu, click **Libraries**.
2. Select the library type tab containing the file you want, and click **Find**.

   F1 Help: Libraries

3. In the list available, select the library file you want and click **Show Header**. The **Storage Info for [...]** dialog box appears.

   F1 Help: Storage Info for: [...]

   This dialog box is essentially the same as the **Storage Info for** file generations, with the exception that only one generation is represented.

6.5 Viewing the current activity monitor

The current activity monitor is the list at the bottom of the DS-Operator main window. It provides a view of all the activities that are currently running on the DS-System. When an activity is finished, the process disappears from the list.

To view more details about any current activity:

1. Select the activity, right-click and click **Monitor**. A **Process** window appears.

   F1 Help: Process Windows

   - The **Working on** section contains real-time information on the current directory and set is being processed.
   - The **Progress** section shows a breakdown of the categories of files being processed. Totals are provided for the size and number of files, as well as the actual physical storage that these files will occupy.

2. To view the events for this process, click **Events**: This opens the event log for this process.
3. To stop the process, click **Stop**. This action is irreversible.

6.5.1 Viewing the total system backup

The system backup summary process runs constantly, from the startup of the DS-System service. This monitors the cumulative addition (or subtraction) of backup data to the DS-System from the time the DS-System service was started.

The system backup summary process is the first process that appears in the current activity monitor list.

To view the total DS-System backup since service or daemon startup:

- Select the system backup summary process, right-click and click **Monitor**.

  F1 Help: System Backup Summary

6.6 Viewing the current delta chain length information

DS-Operator has a right-click menu option to view the current delta-chain length information that applies to a specific backup set or for all backup sets in a DS-Client account.

To view the current delta-chain length information for a DS-Client account or backup set:

1. In the **Customers** tab, browse and select the DS-Client account or backup set you want.
2. Right-click and select **Delta-Chain Length Info**. The **Delta Chain Length Info** dialog box appears.

   F1 Help: Delta Chain Length Information

   - For backup sets, you will see the specific delta chain length that currently applies.
   - For DS-Client accounts, you will see a list of all the backup sets types and the current (DS-Client level) delta chain lengths that apply.

   NOTE: Any delta chain lengths configured at backup set level will supersede these values.

For more information on configuring the delta chain length, see Section 3.8, “Configuring the delta chain settings”, on page 67.

6.7 Monitoring critical errors

(Avoid automatic corrective deletes by DS-System administrative processes.)

This is an optional feature that can be enabled or disabled as required. When enabled and configured, it activates a monitor of specific error messages. If the number of these errors exceed the specified limit within the configured time period, the DS-System will place itself in **Critical** status. While in this status, the specified administrative processes will be stopped or prevented from starting, thereby allowing you to prevent any automatic corrective deletion of data by those processes.

This feature is useful if you know your network and hardware infrastructure well enough to identify errors on the DS-System that occur because of the network or hardware.

To configure critical error monitoring:

1. On the **Setup** menu, click **Critical Errors Monitoring**.

   F1 Help: Critical Errors Monitoring - Configuration Tab

2. In the **Configuration** tab, do the following:

- Enable / Disable this feature. If disabled, DS-System will run its administrative processes automatically, as required.
- View the current status of the DS-System (for Critical Errors Monitoring).
  - Reset the DS-System status (if DS-System is in **Critical** status).
- Set the number of errors that is the limit, after which the DS-System will switch to **Critical** status. This number is combined with the **Time Period** selection.
- **Time Period**: Set the time period during which the number of monitored errors is counted.
- DS-System constantly checks its database for monitored errors. If an error from the Critical Errors Monitoring List appears, DS-System will check if **Critical** status applies.

3. Click **Monitored Events** tab.

   F1 Help: Critical Errors Monitoring - Monitored Errors Tab

   - The Monitored Errors List contains a default list of errors to monitor.
   - You can add or remove monitored errors as required with the corresponding **Add** and **Remove** buttons. For your convenience, the **Select** button opens a special version of the Event Log Viewer, which allows you to search for a specific event that you want to add to the monitoring list. (This avoids you having to manually type the Event #, Category, and Description.)
   - If the sum of all the errors that occurred from this list reaches the configured error limit in the monitoring time period, DS-System will switch to **Critical** status.
   - For example: If you know that when your network encounters issues, the DS-System will suffer several “Invalid directory location” errors, you can monitor for this specific event. If it occurs enough times in the defined monitoring timespan, that would trigger the **Critical** status, which stops all of the specified Administrative Processes from running. This gives you time to solve the network issue, before DS-System takes its own corrective action on its stored data.

4. Click **Administrative Processes** tab.

   F1 Help: Critical Errors Monitoring - Administrative Processes Tab

   - This tab shows the list of DS-System administrative processes that will be stopped and prevented from running, whenever the DS-System is in **Critical** status.
   - You can add or remove processes as required.

5. Click **Apply** to save any changes made on the tabs of this dialog box.

6.8 Sending DS-System maintenance notifications to DS-Clients

You can send your customers notifications of maintenance downtime or other messages as you see fit. These messages will appear under the menu bar of the DS-User when it is connected to the DS-Client.

To configure a maintenance notification or message for DS-Clients:

1. On the **Setup** menu, click **Maintenance Notification**.

   F1 Help: Maintenance Notification

2. Click **New**.

   F1 Help: New Notification

3. In the **Send the following** box, select **Maintenance Notification** or **Message**.
4. Type the message that you would like to appear in the DS-User GUI.
   - For maintenance notifications, select the date and time when the DS-System downtime will occur. You must give at least two days advance notice to the customers.
   - For messages, select an expiry time when it will no longer appear.
5. Click **OK**.
6. A confirmation popup appears. Click **Yes** to proceed.

   The message appears in the maintenance notifications list.

6.9 Viewing the DS-Client monitoring settings for DS-NOC

This tool must be enabled from the DS-NOC server. DS-NOC automatically connects to the DS-System if properly configured.

To view the DS-Client monitoring settings for DS-NOC:

1. On the **Setup** menu, click **DS-Client Monitoring Settings**.

   F1 Help: DS-Client Monitoring Settings

2. This dialog box shows information about which DS-Clients on the DS-System are being monitored by the DS-NOC server.

6.10 Maintaining the system

The following sections provide instructions for DS-System maintenance tasks.

6.10.1 Performing a daily DS-System database dump

When DS-System starts (or at the configured time), a database dump is automatically performed, provided that a dump does not already exist from the current date. The name of the dump file includes the date of the dump. By default, the dump is located in the primary storage location (for example: `\storage_location_1\dump`). This location is configurable using the `DBDumpPath` advanced parameter. For more information on the database dump parameters, see Section 3.4, “Configuring the advanced settings”, on page 31.

NOTE: The SQL service account must have read/write permission for the dump location (UNC path).

By default, DS-System keeps the last two dumps. When consolidating SQL dumps, the DS-System will compress the older one. For Microsoft SQL Server databases:

- DS-System performs an hourly differential backup of the DS-System database. If the dump for the current date does not exist, DS-System performs a full database dump.
- If the database is in full recovery mode, DS-System also backs up (dumps) the transaction logs.
- DBCC is executed before the daily database dump. If DBCC fails, the dump will not be performed.

6.10.2 Backing up the DS-System

We strongly recommend that you perform daily backups of the DS-System database and online storage data to an off-site location. By default, Windows DS-System performs a full database backup to the primary storage location once a day at 00:00 (midnight) and appends a differential dump to that database backup file every hour after.

IMPORTANT: We recommend that you do not schedule additional Microsoft SQL Server maintenance jobs on the Microsoft SQL Server database, because the differential dumps depend on each previous differential backup.

If you have two or more DS-Systems, you can configure them for replication to achieve a constant backup. For more information, see Section 10.8, “Replication”.

6.10.3 Recovering the DS-System database

The DS-System is configured to perform a full database backup every day. Under extreme conditions, you might need to recover the DS-System database. In case of a hard disk failure (either the disk holding the data or the disk holding the log files), there are 2 scenarios:

If the disk holding the log files fails:

1. Perform a full backup of the DS-System database (data files) immediately.
2. Replace the failed disk.

If the disk holding the data files fails:

The database could be restored to the state it was at the point of failure if the current transaction log file for the database is available and undamaged. To restore the database as it was at the point of failure:

1. Back up the current active transaction log.
2. Replace the failed disk.
3. Restore the most recent backup of DS-System database without recovering the database.
4. If you perform other backups between two consecutive daily backups, perform the following steps:
   - If differential backups exist, restore the most recent one.
   - Restore each transaction log backup created since the database or differential backup in the same sequence in which they were created without recovering the database.
5. Apply the most recent log backup and recover the database.

If you restore from an older DS-System database dump, the following issues will apply:

1. New or modified DS-Client and customer information since the dump time will be lost.
2. Activity logs and event logs since the dump time will be lost.
3. Reports since the dump time will be lost.
4. Potential libraries information since the dump time is lost. Libraries might not get reused and new library creation will take longer for some library files.
5. Invalid library links may in some extreme situations even prevent synchronization of backup sets and this means no backup or restore for that particular set until the links are manually fixed.

6. Used libraries may be marked as unused in the restore database. The Clean Library process will delete these files and restore of data will fail for those files. This error will not be detected during the next backup. To fix this problem, run a full System Admin.

7. New library numbers will start with the last ID found in the database, potentially overwriting existing libraries and rendering restored data useless.

While the loss of information described above from 1-5 does not affect the online files, the last issue (7) would result in overwriting valid files with different new ones. Restoring files linked to such libraries will retrieve completely different files and will fail because of a different signature, encryption or compression.

To address this problem, whenever DS-System database is restored from an older dump, the information in the database must be updated with the current online storage before anything else. This process will add records into the database for all libraries created after the dump. This synchronization is triggered when the DS-System service starts, if there is a negative value in the **db_number** field from the **ds_data** table in the **dssystem** database. For example if **db_number** has a value of 231, change it to –231.

Whenever you restore a DS-System database dump, before starting the DS-System service, make sure that you run the latest installation to apply all the latest database patches, and make sure that the **db_number** field from the **ds_data** table in the **dssystem** database is negative.

It is recommended that you run a full System Admin as soon as the DS-System service starts.

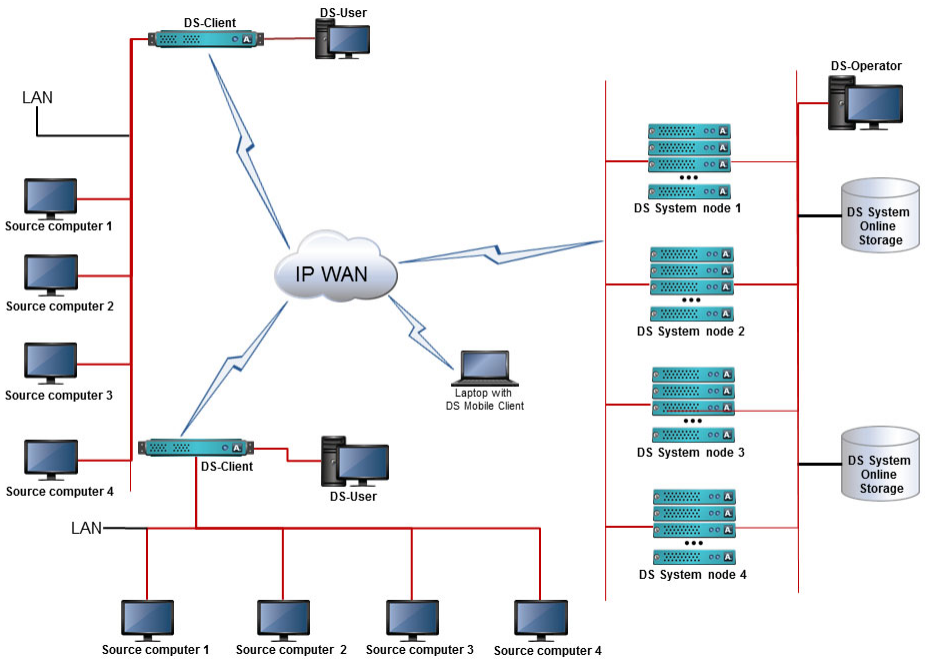
7 Managing an N1 configuration

This section provides information about managing a DS-System in an N+1 configuration.

7.1 About an N1 configuration

NOTE: An N+1 DS-System must be licensed for this type of configuration from the DS-License Server. For instructions, see the *DS-License Server User Guide*.

An N+1 DS-System consists of at least three DS-System nodes on the same LAN working together to provide backup and restore services for DS-Clients. Each DS-System node performs its own storage and retrieval activities, but share a common database and online storage.



The benefits of using an N+1 DS-System include performance, scalability, and redundancy. All the nodes share the backup processing load and if a node fails, the N+1 DS-System continues to function. Hardware can be added to the extensible storage as required.

To ensure the nodes do not run conflicting activities, one node is chosen as random to be the DS-Director. The DS-Director node keeps track of the data storage, sends notifications, and distributes scheduled activities for the entire N+1 DS-System.

NOTE: For N+1 DS-System with 10 or more nodes, the DS-Director is dedicated to DS-Director tasks only.

In the event of a mode failure, the N+1 DS-System will continue running as long as more than half of its nodes are active. This is represented by the formula (n/2)+1. For example:

Total number of nodes	Minimum number of active nodes required to keep system running	Maximum number of inactive nodes
3	2	1
5	3	2
8	5	3

If the number of active nodes becomes less than the minimum number required to keep the system running, the N+1 DS-System switches to standby mode and waits until enough DS-System nodes start. No DS-System will accept DS-Operator or DS-Client connections.

NOTE: For detailed instructions on how to install and configure an N+1 DS-System, see the *Server Software Installation Guide*.

7.2 Viewing the status of an N1 configuration

The N+1 menu only appears if the DS-System is licensed and configured for that formation. It gives you access to the **N+1 Status** dialog box for a display of the current status of the N+1 configuration.

To view the status of an N+1 configuration:

1. On the **N+1** menu, click **Status**.

   F1 Help: N + 1 Status

   The **N+1 Status** dialog box appears on the **Graph** tab.

2. In the **Graph Layout** box, you can change the display.

3. You can click the **List** tab to view a display of the **System Backup Summary** information for each node.

4. Click **OK**.

7.3 Adding an N1 node

This feature allows you to add N+1 nodes without shutting down the entire N+1 DS-System. Some additional non-GUI steps are required for this feature to work.

To add an N+1 node:

1. Configure the new N+1 DS-System computer node's operating system, and test the connection of this computer to the existing N+1 database and online storage.
2. Add the node in DS-Operator and obtain the ClusterID:
   a) On the **N+1** menu, click **Status**.
   b) Click the **List** tab, and then click **Add Node**. The **Add N+1 Node** dialog box appears.

      F1 Help: Add N+1 Node

   c) Type the required information and click **OK**. The new node appears at the bottom of the list. Make a note of the node ID.
3. Run the DS-System installation on the new node and point to the same database and the same online storage used by the N+1 DS-System.

   IMPORTANT: Do not start the service.

   a) Edit the node's DS-System configuration file (dssys.cfg).

      For Windows, the path is:

      `%Program%Files\CloudBackup\DS-System\dssys.cfg`

      For Linux, the path is:

      `/etc/dssys.cfg`

   b) Add the ClusterID information obtained in Step 2c by adding the following line to dssys.cfg:

      `ClusterID : <number>`

      where `<number>` is the unique ID number of the node listed in the **N+1 Status** dialog box.
4. On the DS-License Server: add the IP address of the new node to the N+1 DS-System license.
5. In DS-Operator: on the **Setup** menu click **License Server** and then click **Update**.
6. On the new node, start the DS-System service. It should join the N+1 immediately.

7.4 Stopping an N1 node

The **N+1 Status** dialog box gives you a visual display of current status of the N+1 configuration.

To stop an N+1 node:

1. On the **N + 1** menu, click **Status**.

   F1 Help: N + 1 Status

2. Click the **List** tab to view a display of the **System Backup Summary** information, sorted by node.

3. To stop a node (stop the DS-System service on that node), select the node you want and click **Stop Node**. The **Stop N+1 Node** dialog box appears.

   F1 Help: Stop N + 1 Node

4. Select how to handle current activities on the DS-System:

   - **Wait for all running activities to complete:** Stops the DS-System 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-System on the selected node after all the current activities have completed, or force a stop after the specified time has elapsed. No new activities will be allowed once you click OK.

5. Click **OK**.

IMPORTANT: Once you stop a node, it cannot be restarted from DS-Operator. If you stop the node that is currently the DS-Director, the N+1 will have to reform.

You can view the change in the **N+1 Status** dialog box.

7.5 Upgrading from a standalone DS-System to an N1 DS-System

This section describes the steps to upgrade an existing standalone DS-System to an N+1 DS-System.

Before you start the upgrade process:

- Determine how many nodes you will have in your N+1 configuration and prepare the required hardware.

To upgrade:

1. On your DS-License Server, change the DS-System's license:
   a) Change the **Configuration** from **StandAlone** to **N+1**.
   b) In the **DS-System IP for Production** field, configure the IP address(es) for each node of the new N+1. The DS-License Server will only validate the license for the DS-System if a connection is established with one of the IP addresses listed in this field.
2. Stop the standalone DS-System service / daemon.

IMPORTANT: For Windows DS-Systems, if the storage locations are configured as local drives, you must change them to UNC paths in the DS-System configuration file (**dssys.cfg**) and in the **dssystem** database's **storage_locations** table. For example, `D:\<folder>` would become `\\windowssystem\d$\<folder>`, where `<folder>` specifies the path to the storage location.

---

3. Install the DS-System software on each node of the future N+1.
   a) Make sure that all the DS-System nodes have rights and can access the standalone DS-System database and the standalone DS-System online storage.
   b) During installation, select the existing database instance (the one being used by the standalone DS-System) and the existing primary storage location (<backup_root>).
4. Configure the dssys.cfg file for all the N+1 DS-System nodes with the required line:
   - On each node, edit the DS-System configuration file.
     – For Windows, the default location is: `%Program%Files\CloudBackup\DS-System\dssys.cfg`
     – For Linux, the default location is: `/etc/dssys.cfg`
   - Add the following line:

     ```
     ClusterID : <number>
     ```

where `<number>` is a value from 1 to *n* that identifies a DS-System node in the N+1.

5. Configure the N+1 configuration file (`<backup_root>/cluster/config`):

   a) In the backup root of the DS-System, create a sub-directory called `cluster`.

   b) In that folder, create a text file called `config` and add the required lines to this text file in the following format:

```
IP_of_node_#1 port_number
IP_of_node_#2 port_number
```

IMPORTANT: Ensure that the IP addresses are listed in the same order as the numbering of the N+1 nodes from the `dssys.cfg` file.

For example, if you are upgrading to an N+1 DS-System with three nodes, where:

- node #1 has IP address 10.10.60.90 and has the entry in its local `dssys.cfg` file as ClusterID: 1
- node #2 has IP address 10.10.60.93 and has the entry in its local `dssys.cfg` file as ClusterID: 2
- node #3 has IP address 10.10.60.91 and has the entry in its local `dssys.cfg` file as ClusterID: 3

Then you must type the following lines (sequentially) in the `<backup_root>/cluster/config` file:

```
10.10.60.90 3009
10.10.60.93 3009
10.10.60.91 3009
```

6. Start the N+1 nodes one-by-one to join the N+1 formation. A DS-Director is automatically selected. After the N+1 has started you will be able to connect to the N+1 DS-System using DS-Operator.

7. The DS-System now has new nodes. Use the **DS-System IP configuration update to DS-Client** feature to update all DS-Clients with the new DS-System connection information. Otherwise, all the DS-Clients will connect to only one node from the N+1 DS-System (the original standalone DS-System).

   See Section 5.18, “Sending DS-System IP configuration updates to DS-Clients”, on page 126.

7.6 Deleting an N1 node

You can only remove the last node in the list. The node must be stopped (DS-System service / daemon is not running).

To delete an N+1 node:

1. On the **N+1** menu, click **Status**.
2. Click the **List** tab to view a display of the **System Backup Summary** information, sorted by node.
3. Select the last node in the list and click **Delete Node**. A confirmation dialog box appears.
4. Click **Yes**. The node will be marked "`deleted`" in the N+1 Cluster `config` file and is removed from the **N+1 Status** dialog box.

7.7 Viewing the N1 configuration event log

The **N+1 Log** displays all events specific to the N+1 configuration.

To view the N+1 configuration event log:

1. On the **N+1** menu, click **Log**.

   F1 Help: N + 1 Log

2. You can narrow the display in the **Select by** section.

8 Viewing logs

This section describes how to use the DS-System logs.

8.1 About logs

The DS-System service has the following logs:

- Activity Log
- Event Log
- Audit Trail
- Recovery Log

Logs are stored in the DS-System database. There are more internal logs containing data for specific reports or activities.

Old logs are cleared from the database to text files according to the advanced configuration settings. They can also be cleared from the database manually. For more information, see Section 3.13.2, “Deleting the DS-System logs”, on page 71.

8.2 Viewing the Activity Log

The activity log lets you examine the connections and activities on the DS-System. You can find out the length of the connections, a description of the activity, the amount of data transferred, whether or not any errors occurred, and other information.

To view the Activity Log:

1. On the **Logs** menu, click **Activity Log**.

   F1 Help: Activity Log Viewer

2. Click **Find**.

   The information displayed reflects the default selections in the **Filter** section. By default, the search is for all of the current day’s activities.

3. You can select an activity and click **Event Log** to view events specific to that activity.

4. To view the DS-Client event log, select an activity and click **DS-Client Event Log**.

F1 Help: DS-Client Event Log Viewer

NOTE: Some logs for the last activity of a DS-Client are not available until the next activity connects from that DS-Client.

Clear the **Sys ID** or **Cln ID** check box, and select a wider **From** and **To** period to see the DS-Client events from other activities.

8.3 Viewing the Event Log

The event log is a record of network activity, error messages, and other information items.

To view the Event Log:

1. On the **Logs** menu, click **Event Log**.

   F1 Help: Event Log Viewer

2. Click **Find**.

   The information displayed reflects the default selections in the **Select by** section. By default, the search is for all of the current day's events.

3. If the event has details of a specific directory or file path, you can click **Convert** to access the **Storage Path Converter**. (See: Section 3.16, "Converting a physical path", on page 87.)

8.4 Viewing the Audit Trail

The audit trail provides a record of all changes made to the DS-System database. It shows who made a change, the time, and what the changes were.

To view the Audit Trail:

1. On the **Logs** menu, click **Audit Trail**.

   F1 Help: Audit Trail

2. Click **Find**.

   The information displayed reflects the default selections in the **Select by** section. By default, the search is for all of the current day's operations.

8.5 Viewing the Recovery Log

The recovery log is a record of recovery-based activities (DS-Client initiated restores, Disc/Tape requests, and individual file restores from either DS-Operator or DS-NOC). This log is used to count the total recovery amount used for billing purposes. It is this log that is counted by the DS-Billing server.

To view the Recovery Log:

1. On the **Logs** menu, click **Recovery Log**.

   F1 Help: Recovery Log

2. Click **Find**.

   The information displayed reflects the default selections in the **Filter** section. By default, the search is for all of the current day's recoveries.

9 Working with reports

This section provides information on the various reports that DS-Operator can display and print.

9.1 About reports

Reports are an important administrative and bookkeeping tool. All reports may be generated at any time on demand.

NOTE: Business settings have been moved out of DS-System to a separate module called DS-Billing (separate installation required). For more information, see: Section 10.4, “DS-Billing” and the *DS-Billing User Guide*.

If you are an advanced user, you can create your own reports, based on the data provided from the DS-System database tables.

- See: Generating a customized report

9.2 Configuring the font for reports

Each DS-Operator GUI installation can customize the font used in the PDF reports it generates:

To configure the report font:

1. On the **Reports** menu, click **Report Setup**.

   F1 Help: Report Setup - Font Tab

   - To configure a specific font:

     a) Click **Select** and browse for a TrueType font file (ending in .ttf or .ttc).

     b) Click **Open**.

   - To use the default Arial font, clear this box.

2. Click **OK**.

   Reports generated on demand from this DS-Operator GUI installation will use the selected font.

9.3 Generating a Backup Sets Report

This report shows a summary of backup sets for a customer or DS-Client. It is produced on demand.

To generate a Backup Sets Report:

1. On the **Reports** menu, click **Backup Sets**.

   F1 Help: Backup Set Report

2. In the **Report Selection** section, you must choose the following:
   - How the backup sets will be listed: by customer or by DS-Client.
   - Branding (if applicable)
3. Click **View**. A preview of the report appears. The toolbar at the top has icons that allow you to navigate, print, or save.
4. To print the report, do the following:
   a) On the viewer toolbar, click the printer icon.
   b) Select the printer, and then click **OK**.
5. To save the report to a file, do the following:
   a) On the viewer toolbar, click the save icon.
   b) In the **Save In** box, select the destination folder.
   c) In the **File Name** box, type a file name.
   d) In the **Files of Type** box, select the report format, and then click **Save**.

Backup Set Report Details

Header	The header lists the service provider address and the date of the report.
Backup Set List	A sorted list of backup sets covered by this report.
DS-Client #	Lists the DS-Client numbers.
Backup Set	Shows the backup set Share \ Name \ Owner.
Protected Size (MB)	Shows the amount of data that the DS-Client has backed up to the DS-System (Size of the files as they were backed up).
Stored Size (MB)	Shows the amount of data that the DS-Client has backed up to the DS-System (Physical size on the DS-System).

Native Size (MB)	Shows the original size of the latest generation of all data that the DS-Client has backed up to the DS-System. (This is the “Restorable Size” of data, as seen from the DS-User Restorable Report.) This includes restorable data that has been deleted from the source, but not from online. [Configuration of 'NativeSize' Advanced Configuration Parameter is required on the corresponding DS-System. Otherwise this column displays '0'.]
GRAND TOTAL	Totals appear at the bottom of the report.

9.4 Generating a Backup Status Report

This report shows a summary of backup status for DS-Clients on the DS-System. It is produced on demand.

To generate a Backup Status Report:

1. On the **Reports** menu, click **Backup Status**.

   F1 Help: Backup Status Report

2. In the **Report Selection** section, you must choose the following:
   - A start date and time for the report.
   - What to display: All customers, a specific customer, or a specific DS-Client.
   - Branding (if applicable)
   - The level of details to display in the report (represented by the available check boxes).
3. To export to HTML, click **Export** and then click **Save**.
4. Click **View**. A preview of the report appears. The toolbar at the top has icons that allow you to navigate, print, or save.
5. To print the report, do the following:
   a) On the viewer toolbar, click the printer icon.
   b) Select the printer, and then click **OK**.
6. To save the report to a file, do the following:
   a) On the viewer toolbar, click the save icon.
   b) In the **Save In** box, select the destination folder.
   c) In the **File Name** box, type a file name.

d) In the **Files of Type** box, select the report format, and then click **Save**.

NOTE: A MICRO Report appears if the report displays details at the backup set level, otherwise a MACRO Report appears.

Backup Status Report Details

Header	The header lists the service provider address and the period covered in the report.
Customer Backup Status Summary • Customer Name: Indicates the overall status of that customer for the report period. • Customer Backup Status Summary: Indicates the overall status of that customer for the report period.	
DS-Client Backup Status Summary • DS-Client #: Shows the DS-Client number. • Description: Same text from the DS-Client properties (Edit DS-Client > DS-Client - Advanced tab). • Version: DS-Client version number at the last connection with DS-System. • Status • Backup Status Summary	
Backup Set Last Backup Status [MICRO Backup Status Report only] • Backup Set: Computer_Name\Backup_Set_Name\backup_set_owner • Last Backup: Last time a backup activity ran for the corresponding backup set. • Completion: How the last backup activity finished for the corresponding backup set.	

9.5 Generating a Backup/Restore Report

This report shows a summary of the backup and restore activities for the specified period. It is only generated on demand.

To generate a Backup/Restore Report:

1. On the **Reports** menu, click **Backup/Restore**.

   F1 Help: Backup/Restore

2. In the **Report Selection** section, you must choose the following:

   - From Date: type the earliest date you want to display. No data older than this date will be displayed. By default, this is set to the first day of the current month.
   - To Date: type the latest date you want to display. No records newer than this date will be displayed. By default, this is set to the current date.
   - What to display: All customers, a specific customer, or a specific DS-Client.
   - Branding (if applicable)

3. If the **Account #** or **DS-Client #** field is active, you must specify either one customer or one DS-Client.
   a) Click **[...]** to select from a list of all customers or DS-Clients. The **Select Customer** or **Find DS-Client** dialog box appears.

      F1 Help: Find DS-Client / Select Customer

   b) Choose the customer or DS-Client and click **Select**.
4. Click **View**. A preview of the report appears. The toolbar at the top has icons that allow you to navigate, print, or save.
5. To print the report, do the following:
   a) On the viewer toolbar, click the printer icon.
   b) Select the printer, and then click **OK**.
6. To save the report to a file, do the following:
   a) On the viewer toolbar, click the save icon.
   b) In the **Save In** box, select the destination folder.
   c) In the **File Name** box, type a file name.
   d) In the **Files of Type** box, select the report format, and then click **Save**.

NOTE: A MACRO report appears for multiple DS-Clients. A MICRO report appears for a single DS-Client.

Backup / Restore Report Details

If the report is sorted by customer, the details are listed by the customer's DS-Clients. If the report is sorted by DS-Client, the details are listed by day.

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Header	The header lists the service provider address and the period covered in the report.
Details Table	
Account # / DS-Client #	Lists the customer account and DS-Client numbers for the corresponding activities. (For a summary of a single DS-Client, the date of the corresponding activities appears in this column.)
Date	For a summary of a single DS-Client (Micro Backup/Restore Report), the date of the corresponding activities appears.
Connections	Lists the duration and number of connections to the DS-System.
Backup Activities	Lists the number of backed up files, backup amount and number of backup activities.
Restore Activities	Lists the number of restored files, restore amount and number of restore activities.

9.6 Generating a BLM Destruction Certificates Report

The BLM module must be enabled in the DS-System license, in order for this menu option to appear.

To generate a BLM Destruction Certificates Report:

1. On the **Reports** menu, click **BLM Destruction Certificates**.

   F1 Help: BLM Destruction Certificate

2. In the **Report Selection** section, specify the what you want to display in the report:
   - Period: The month and year of the report you want to generate.
   - A specific customer or DS-Client.
   - Branding (if applicable)
3. Click **View**. A preview of the report appears. The toolbar at the top has icons that allow you to navigate, print, or save.
4. To print the report, do the following:
   a) On the viewer toolbar, click the printer icon.
   b) Select the printer, and then click **OK**.
5. To save the report to a file, do the following:
   a) On the viewer toolbar, click the save icon.
   b) In the **Save In** box, select the destination folder.
   c) In the **File Name** box, type a file name.
   d) In the **Files of Type** box, select the report format, and then click **Save**.

BLM Destruction Certificate Details

Each page contains a certificate of destruction.

Header	The header lists the service provider address and the period covered in the report.
Destroyed Archive	Details on the specific archive package that was destroyed.
Backup Set Information	The backup set related to the destroyed archive package.
Destruction Information	Details on what was destroyed, and the destruction type.
Destruction Request	Details on who requested and who confirmed the destruction.

9.7 Generating a DS-Client Version Report

This report shows a summary of DS-Clients with information about the DS-Client version, type, and whether it is currently compatible with the DS-System. It is produced on demand.

To generate a DS-Client Version Report:

1. On the **Reports** menu, click **DS-Client Version**.

   F1 Help: DS-Client Version Report

2. In the **Report Selection** section, you must choose the following:
   - Which DS-Client(s) to display: All DS-Clients, one customer's DS-Clients, or a specific DS-Client.
   - Sort order (if applicable): DS-Clients are displayed in the report sorted by this column.
   - Branding (if applicable)
3. Click **View**. A preview of the report appears. The toolbar at the top has icons that allow you to navigate, print, or save.
4. To print the report, do the following:
   a) On the viewer toolbar, click the printer icon.
   b) Select the printer, and then click **OK**.
5. To save the report to a file, do the following:
   a) On the viewer toolbar, click the save icon.
   b) In the **Save In** box, select the destination folder.
   c) In the **File Name** box, type a file name.
   d) In the **Files of Type** box, select the report format, and then click **Save**.

DS-Client Version Report Details

Header	The header lists the service provider address and the date of the report.
DS-Client list	
DS-Client	Lists the DS-Client numbers.
Customer Name	Shows the customer name, as defined from the customer's profile information.
DS-Client Type	Shows the DS-Client type and installation platform.
Version	Shows the version of the DS-Client.
DB Build	Shows the latest DS-Client database build patch that has been applied.

Compatible	Shows if DS-Client is compatible with DS-System.
Operating System	Shows the Operating System running on the DS-Client computer.
Info Received	Last time the DS-Client connected with DS-System and sent its version information.
Statistics • Version Info Available • Version Info Not Available • Total DS-Clients	
Version Compatibility This section compares the DS-Client versions with the DS-System version. • Compatible with (current DS-System version number) • Number of DS-Clients that need to be upgraded (the executable file) before they will be compatible with the current DS-System version. • Number of DS-Clients that need to update their database to the latest build patch before they will be compatible with the current DS-System version.	
Operating Systems This section shows the total number of DS-Clients installed on each listed operating system: • Windows • Linux • Macintosh	
Windows DS-Clients Windows DS-Clients can be installed in the following configurations: • DS-Mobile DS-Clients • Standalone DS-Clients • Grid DS-Clients	
Linux DS-Clients Linux DS-Clients can be installed on the following Operating Systems: • DS-Clients (RedHat) • DS-Clients (SUSE)	
Macintosh DS-Clients Macintosh DS-Clients can be installed in the following configuration / platforms: • DS-Notebook Clients • Regular DS-Clients (i386) • Regular DS-Clients (PowerPC)	

9.8 Generating a DS-VDR Usage Report

This report shows a summary of DS-VDR Tool count and allocation per DS-Client on the DS-System. It is produced on demand.

To generate a DS-VDR Usage Report:

1. On the **Reports** menu, click **DS-VDR Usage**.

   F1 Help: DS-VDR Usage Report

2. In the **Report Selection** section, you must choose the following:

   - How the DS-Clients will be listed: the default is to sort by DS-Client however you can choose any column in the report.
   - Branding (if applicable)

3. Click **View**. A preview of the report appears. The toolbar at the top has icons that allow you to navigate, print, or save.

4. To print the report, do the following:

   a) On the viewer toolbar, click the printer icon.

   b) Select the printer, and then click **OK**.

5. To save the report to a file, do the following:

   a) On the viewer toolbar, click the save icon.

   b) In the **Save In** box, select the destination folder.

   c) In the **File Name** box, type a file name.

   d) In the **Files of Type** box, select the report format, and then click **Save**.

DS-VDR Usage Report Details

Header	The header lists the service provider address and the date of the report.
DS-Client List	A sorted list of DS-Clients covered by this report.
DS-Client #	Lists the DS-Client numbers.
Customer Name	Shows the customer name associated with the DS-Client.
Local DS-VDR Last Validation	Shows the last time the DS-Client validated its Local DS-VDR license count with the DS-System.
Local DS-VDR Count	Local DS-VDR Count allocated by the DS-System administrator to each of the listed DS-Clients (Edit DS-Client: DS-Tools tab).
Local DS-VDR Used	Each time a DS-Client is used by a Local DS-VDR Tool to clone a Virtual Machine, this count is reduced by 1. This value is updated when the DS-Client connects to DS-System (Local DS-VDR Last Validation time).

Remote DS-VDR Count	Remote DS-VDR Count allocated by the DS-System administrator to each of the listed DS-Clients (Edit DS-Client: DS-Tools tab).
Remote DS-VDR Used	Each time a backup set is configured for Remote DS-VDR from the DS-System side, this count is reduced by 1.

9.9 Generating an Enabled DS-Tools Report

This report shows a summary of the tools enabled per DS-Client or customer. It is only generated on demand.

To generate an Enabled DS-Tools Report:

1. On the **Reports** menu, click **Enabled Tools**.

   F1 Help: Enabled Tools Report

2. In the **Report Selection** section, you must choose the following:
   - Which DS-Client(s) to display: All DS-Clients, one customer's DS-Clients, or a specific DS-Client.
   - Sort order (if applicable): DS-Clients are displayed in the report sorted by this column.
   - Branding (if applicable)
3. Click **View**. A preview of the report appears. The toolbar at the top has icons that allow you to navigate, print, or save.
4. To print the report, do the following:
   a) On the viewer toolbar, click the printer icon.
   b) Select the printer, and then click **OK**.
5. To save the report to a file, do the following:
   a) On the viewer toolbar, click the save icon.
   b) In the **Save In** box, select the destination folder.
   c) In the **File Name** box, type a file name.
   d) In the **Files of Type** box, select the report format, and then click **Save**.

Enabled Tools Report Details

Header	The header lists the service provider address and the date of the report.
DS-Client List	A sorted list of DS-Clients covered by this report.
DS-Client #	Lists the DS-Client numbers.

Customer Name	Lists the customer name.
Enabled Tools	Shows the tools enabled for the corresponding DS-Client.

9.10 Generating a Global List of Customers Report

This report shows the storage for each DS-Client on the DS-System. The report can be sorted by DS-Client #, customer name, protected size, stored size, or DS-Client creation date.

This report is only a snapshot of the storage on the printing date.

To generate a Global List of Customers Report:

1. On the **Reports** menu, click **Global List of Customers**.

   F1 Help: Global List of Customers

2. In the **Report Selection** section, you must choose the following:
   - Sort order: DS-Clients are displayed in the report sorted by this column.
   - Branding (if applicable)
3. Clear the **Include DS-Clients with no data** check box if you want to exclude those DS-Clients from the report.
4. Click **View**. A preview of the report appears. The toolbar at the top has icons that allow you to navigate, print, or save.
5. To print the report, do the following:
   a) On the viewer toolbar, click the printer icon.
   b) Select the printer, and then click **OK**.
6. To save the report to a file, do the following:
   a) On the viewer toolbar, click the save icon.
   b) In the **Save In** box, select the destination folder.
   c) In the **File Name** box, type a file name.
   d) In the **Files of Type** box, select the report format, and then click **Save**.

Global List of Customers Details

Header	The header lists the service provider address and the date of the report.
DS-Client List	A sorted list of DS-Clients covered by this DS-System.
DS-Client #	Shows the DS-Client number.

Customer Name	Shows the customer name associated with the DS-Client.
Creation Date	Shows the date when the DS-Client was created.
Status	Shows the status of the DS-Client.
Protected Size (MB)	Shows the amount of data that the DS-Client has backed up to the DS-System (Size of the files as they were backed up).
Stored Size (MB)	Shows the amount of data that the DS-Client has backed up to the DS-System (Size on the DS-System).
Native Size (MB)	Shows the original size of the latest generation of all data that the DS-Client has backed up to the DS-System. (This is the “Restorable Size” of data, as seen from the DS-User Restorable Report.) This includes restorable data that has been deleted from the source, but not from online. [Configuration of 'NativeSize' Advanced Configuration Parameter is required on the corresponding DS-System. Otherwise this column displays '0'.]

9.11 Generating a Local-Only Capacity Report

This report shows all DS-Clients that have Local-Only capacity allocated by the DS-System. The report can be sorted by DS-Client #, customer name, last validation date, allocated quota, or current Local-Only amount used.

This report is only a snapshot of the storage on the printing date.

To generate a Local-Only Capacity Report:

1. On the **Reports** menu, click **Local-Only Capacity**.

   F1 Help: Local-Only Capacity Report

2. In the **Report Selection** section, you must choose the following:

   - Sort order: DS-Clients are displayed in the report sorted by this column.
   - Branding (if applicable)

3. Click **View**. A preview of the report appears. The toolbar at the top has icons that allow you to navigate, print, or save.

4. To print the report, do the following:

   a) On the viewer toolbar, click the printer icon.

   b) Select the printer, and then click **OK**.

5. To save the report to a file, do the following:

   a) On the viewer toolbar, click the save icon.

   b) In the **Save In** box, select the destination folder.

   c) In the **File Name** box, type a file name.

   d) In the **Files of Type** box, select the report format, and then click **Save**.

Local-Only Capacity Report Details

Header	The header lists the service provider address and the date of the report.
DS-Client #	Shows the DS-Client number.
Customer Name	Shows the customer name associated with the DS-Client.
Last Validation	Shows the last time the DS-Client validated its Local-Only Capacity with the DS-System.
Calculation	Shows how each DS-Client is configured to calculate the amount of Local-Only storage used (from the DS-Client Properties > DS-Tools tab). Calculation can be based on Protected Size, Stored Size, or Native Size.
Quota (GB)	Shows the Local-Only Capacity allocated to the DS-Client (from the DS-Client Properties > DS-Tools tab).
Used (GB)	Shows the current Local-Only amount used (as of the Last Validation time).

9.12 Generating a Recovery Report

This menu option only appears if the DS-System is using DS-License Server RLM.

This report shows a summary of the recovery activities for the specified period. It is only generated on demand.

To generate a Recovery Report:

1. On the **Reports** menu, click **Recovery**.

   F1 Help: Recovery Report

2. In the **Report Selection** section, you must choose the following:

   - From Date: type the earliest date you want to display. No data older than this date will be displayed. By default, this is set to the first day of the current month.
   - To Date: type the latest date you want to display. No records newer than this date will be displayed. By default, this is set to the current date.
   - What to display: All customers, a specific customer, or a specific DS-Client.
   - Category: All recoveries, or display only those from a specific category (Regular recovery, DR Drill recovery, or Trial (RLM DS-Client) recovery).
   - Branding (if applicable)

3. If the **Account #** or **DS-Client #** field is active, you must specify either one customer or one DS-Client.

a) Click **[...]** to select from a list of all customers or DS-Clients. The **Select Customer** or **Find DS-Client** dialog box appears.

F1 Help: Find DS-Client / Select Customer

b) Choose the customer or DS-Client and click **Select**.

4. Click **View**. A preview of the report appears. The toolbar at the top has icons that allow you to navigate, print, or save.

5. To print the report, do the following:

a) On the viewer toolbar, click the printer icon.

b) Select the printer, and then click **OK**.

6. To save the report to a file, do the following:

a) On the viewer toolbar, click the save icon.

b) In the **Save In** box, select the destination folder.

c) In the **File Name** box, type a file name.

d) In the **Files of Type** box, select the report format, and then click **Save**.

NOTE: A MACRO report appears for multiple DS-Clients. A MICRO report appears for a single DS-Client.

Recovery Report Details

If this report is sorted by customer, the details are listed by the customer's DS-Clients. If the report is sorted by DS-Client, the details are listed by day.

.

Header	The header lists the service provider address and the period covered in the report. The “Category” indicates what recovery activities are displayed in the report. This can be <All> recoveries, or display only those from a specific category (Regular recovery, DR Drill recovery, or Trial recovery).
Details Table	
Account # / DS-Client #	Lists the customer account and DS-Client numbers for the corresponding activities. (For a summary of a single DS-Client, the date of the corresponding activities appears in this column.)
Date	For a summary of a single DS-Client (Micro Recovery Report), the date of the corresponding activities appears.
Online	Lists the number of recovery activities from DS-System online storage (initiated by DS-Client) and the restore amount.
Disc/Tape	Lists the number of recovery activities involving Disc/Tape requests (initiated either from DS-System or DS-Client) and the restore amount.
DS-Operator	Lists the number of recovery activities (initiated from DS-Operator) and the restore amount.

DS-NOC	Lists the number of file recovery activities (initiated from DS-NOC) and the restore amount.

9.13 Generating a Restore Activities Report

This report can be created on demand to show the restore activities provided by the DS-System.

To generate a Restore Activities Report:

1. On the **Reports** menu, click **Restore Activities**.

   F1 Help: Restore Activities Report

2. In the **Report Selection** section, you must choose the following:
   - The time period that the report shows.
   - What to display: All customers, a specific customer, or a specific DS-Client.
   - Branding (if applicable)
3. Click **View**. A preview of the report appears. The toolbar at the top has icons that allow you to navigate, print, or save.
4. To print the report, do the following:
   a) On the viewer toolbar, click the printer icon.
   b) Select the printer, and then click **OK**.
5. To save the report to a file, do the following:
   a) On the viewer toolbar, click the save icon.
   b) In the **Save In** box, select the destination folder.
   c) In the **File Name** box, type a file name.
   d) In the **Files of Type** box, select the report format, and then click **Save**.

Restore Activities Report Details

At the bottom of the report data there are summary totals.

Header	The header lists the service provider address and the printing date of the report.
Account #	• The first sub-column shows an icon. A green icon indicates a successful activity. A red icon indicates errors occurred. • The second sub-column shows the name of the account.
DS-Client #	Shows the corresponding DS-Client number.
Activity ID	Shows the unique activity ID.

Machine Name	Name of the original backup source computer.
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)	The size of the files restored, measured by the space they occupy in the DS-System (including compression).
Native Amount Restored (MB)	The size of the files restored, measured by the space they occupy after being restored (and decompressed) to the target computer.
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.

9.14 Generating a RLM Trial Client Report

This menu option only appears if the DS-System is using DS-License Server RLM.

This report shows all DS-Clients that were created with the **RLM Trial DS-Client** option selected and are still in that trial.

To generate a RLM Trial Client Report:

1. On the **Reports** menu, click **RLM Trial DS-Client**.

   F1 Help: RLM Trial Client Report

2. In the **Report Selection** section, you must choose the following:

   - What to display: All customers, a specific customer, or a specific DS-Client.
   - Sort key
   - Branding (if applicable)

3. If the **Account #** or **DS-Client #** field is active, you must specify either one customer or one DS-Client.

   a) Click **[...]** to select from a list of all customers or DS-Clients. The **Select Customer** or **Find DS-Client** dialog box appears.

      F1 Help: Find DS-Client / Select Customer

   b) Choose the customer or DS-Client and click **Select**.

4. Click **View**. A preview of the report appears. The toolbar at the top has icons that allow you to navigate, print, or save.

5. To print the report, do the following:

   a) On the viewer toolbar, click the printer icon.

   b) Select the printer, and then click **OK**.

6. To save the report to a file, do the following:
   a) On the viewer toolbar, click the save icon.
   b) In the **Save In** box, select the destination folder.
   c) In the **File Name** box, type a file name.
   d) In the **Files of Type** box, select the report format, and then click **Save**.

NOTE: A MACRO report appears for multiple DS-Clients. A MICRO report appears for a single DS-Client.

RLM Trial Client Report Details

This report shows all DS-Clients that were created with the **RLM Trial DS-Client** option selected that are still currently in their trial period.

Header	The header lists the service provider address and the period covered in the report.
Details Table	
DS-Client #	Lists the DS-Client number.
Customer Name	Company name from the customer profile.
Account #	Customer account number.
Service Start Date	Date the DS-Client was created.
Trial End Date	Date the RLM trial period ends. Once the trial ends, the DS-Client's recoveries become "Regular Recoveries".
Trial Recovery Count	How many "Trial Recoveries" have been performed. These are classified separately, and do not count for RLM licensing purposes.
Trial Recovery Size	Amount recovered for the "Trial Recoveries". These are classified separately, and do not count for RLM licensing purposes.

9.15 Generating a Storage Quotas Report

This report shows the quotas (storage limits) set for the customers and DS-Clients on a DS-System.

To generate a Storage Quotas Report:

1. On the **Reports** menu, click **Storage Quotas**.

   F1 Help: Storage Quotas Report

2. In the **Report Selection** section, you must choose the following:
   - What to display: All customers, a specific customer, or a specific DS-Client.
   - Branding (if applicable)
3. Click **View**. A preview of the report appears. The toolbar at the top has icons that allow you to navigate, print, or save.
4. To print the report, do the following:
   a) On the viewer toolbar, click the printer icon.
   b) Select the printer, and then click **OK**.
5. To save the report to a file, do the following:
   a) On the viewer toolbar, click the save icon.
   b) In the **Save In** box, select the destination folder.
   c) In the **File Name** box, type a file name.
   d) In the **Files of Type** box, select the report format, and then click **Save**.

Storage Quotas Report Details

Header	The header lists the service provider address and the customer or DS-Client(s) covered in the report. This report is printed on demand, therefore the print date appears.
Quota List	A sorted list of customers and DS-Clients covered by this report.
Quota	Shows the maximum storage limit for the corresponding customer or DS-Client (if any). • Customers: Total storage of all the customer's DS-Clients may not exceed this amount. • DS-Client: Total storage of all the DS-Client's backup sets may not exceed this amount.
Calculation	If there is a quota, this field shows if the quota is based on Protected Size, Stored Size, or Native Size.
Used	If there is a quota, this field shows the amount of space currently used by the customer or DS-Client.
Used (%)	If there is a quota, this field shows the amount of space currently used as a percentage of the available quota.

9.16 Generating a Storage Usage Report

This report can be created on demand to show the current storage usage on the DS-System.

To generate a Storage Usage Report:

1. On the **Reports** menu, click **Storage Usage**.

   F1 Help: Storage Usage Report

2. In the **Report Selection** section, you must choose the following:
   - What to display: All customers, a specific customer, or a specific DS-Client.
   - Branding (if applicable)
   - The data columns to include in the report.
3. Click **View**. A preview of the report appears. The toolbar at the top has icons that allow you to navigate, print, or save.
4. To print the report, do the following:
   a) On the viewer toolbar, click the printer icon.
   b) Select the printer, and then click **OK**.
5. To save the report to a file, do the following:
   a) On the viewer toolbar, click the save icon.
   b) In the **Save In** box, select the destination folder.
   c) In the **File Name** box, type a file name.
   d) In the **Files of Type** box, select the report format, and then click **Save**.

Storage Usage Report Details

At the bottom of the report data there are summary totals.

Header	The header lists the service provider address and the printing date of the report. • All figures reflect the state of the DS-System at the time the report was generated. • It also indicates the search key (All customers, customer, or DS-Client).
Account #	
Customer Name	
DS-Client #	

Protected Size	Represents the current (actual) Protected Size value. (Size of the files as they were backed up). • **Average**: average amount of the Protected data since the beginning of the current month. • **Peak**: highest amount of the Protected data since the beginning of the current month.
Stored Size	Represents the current (actual) Stored Size value. (Physical size of the files on the DS-System). • **Average**: same as above. • **Peak**: same as above.
Native Size	Represents the current (actual) Native Size value. (Protected size of the latest generation of all data that the DS-Client has backed up to the DS-System, including data deleted from source but still online). • **Average**: same as above. • **Peak**: same as above.
BLM Protected Size	Represents the current BLM Protected Size value. (Size of the files as they were backed up). • **Average**: same as above. • **Peak**: same as above.
BLM Stored Size	Represents the current BLM Stored Size value. (Physical size of the files on the BLM Archiver). • **Average**: same as above. • **Peak**: same as above.
GRAND TOTAL	Totals appear at the bottom of the report.

9.17 Viewing the Activity Distribution Report

This dialog box presents a visual summary of the activity log. A single click on the display will show the activity detail for the point you choose. A double click will bring up the event log for the point you choose.

To view the Activity Distribution Report:

1. On the **Reports** menu, click **Charts**, and then click **Activity Distribution**.

   F1 Help: Activity Distribution

2. You may adjust the chart as desired, then click **Find** to update the display.

   - For large time periods, you can slide the **Zoom** bar to adjust the display.

9.18 Viewing the DS-System Uptime Report

This is a visual representation of the times when the DS-System was not available. It provides a breakdown of the reasons, based on the legend at the bottom left of the dialog box.

To view the DS-System Uptime Report:

1. On the **Reports** menu, click **Charts**, and then click **DS-System Uptime**. The **DS-System Uptime** dialog box appears on the **Table** tab.

   F1 Help: System Uptime

2. Check the legend for an explanation of the colors. The text in the cells indicates the time the DS-System was not available.

3. You may change the display (year, month, and period). Click **Refresh** to update.

   - You may switch to the **Chart** tab to view a bar or line graph representation of the data.

4. For a summary of the table data totals, click **Statistics**. The **DS-System Uptime Statistics** dialog box appears.

   F1 Help: DS-System Uptime Statistics

9.19 Viewing the Load Summary Report

The Load Summary shows information about the memory and transfer loads placed on the DS-System. The default graph is a line chart, but you may modify the chart type from the drop down list at the top.

How to read the chart:

- The chart displays the period of days in the **Select by** section. You may change this period as required. By default, the last seven (7) days are selected.
- The horizontal axis shows the time intervals selected in the **Interval** box. By default, intervals each represent one day.
- The default graph points shown, represent the **Send & Receive** amount (in KB), and the **CPU load** (%) on the DS-System for the corresponding time period. Place the cursor over a point to see the details it represents.
- You can view more load information by selectively adding load summary items from the **Series** dialog box.

To view the Load Summary Report:

1. On the **Reports** menu, click **Charts**, and then click **Load Summary**.

   F1 Help: Load Summary

   - The two default items are selected: **Send & Receive**, and **CPU load**.

2. To change the information that is displayed:
   a) Click **Series**. The **Load Summary Series** dialog box appears.

      F1 Help: Load Summary Series

   b) Select the items you want to view. It is recommended to view only two items at a time.

   c) Click **OK**. The display is updated with your selection.
3. You can toggle between a bar or line chart from the **Chart Type** box.
4. To change the period covered in the display, edit the dates and interval in the **Select by** section.
5. Click **Refresh** to update the display.

9.20 Viewing the Storage Summary Report

Storage information is displayed in the **Storage Summary** dialog box, based on the information gathered from the System Admin process.

- This means the System Admin must be scheduled with the **Perform Regular Scan to Update Statistical Info** option selected. See: Section 3.14.3, “Scheduling System Admin”, on page 82.

By default, the points displayed represent the online amount (MB), number of online files for the selected customer or DS-Client, and the size of the files on the DS-System (including encryption and compression).

By default, this will display information on all of the customers with active accounts on the DS-System. Since three different amounts are displayed, this chart will automatically open and refresh on “the best fit” chart scale for the dialog box.

NOTE: Data in the Storage Summary is gathered for each DS-Client. Not all DS-Clients will display up-to-the-minute storage information, therefore this summary is meant as a display of trends only.

To view the Storage Summary Report:

1. On the **Reports** menu, click **Charts**, and then click **Storage Summary**.

   F1 Help: Storage Summary

2. Hover the cursor over any point on the graph, and a balloon will pop up to display the statistics represented by that point.
3. In the **Select by** section, you may specify different display parameters for the summary. Click **Refresh** to update the display.
4. To change the display items, click **Series**. The **Storage Summary Series** dialog box appears.

F1 Help: Storage Summary Series

- Select the items you want to view and click **OK**.

5. In the **View** section, you may choose one of the following display options:
   - **Chart**: [Default] This displays storage summary information in graphical format.
   - **List**: This displays storage summary information in a spreadsheet. This is the best way to view information if you have selected several of the series items.
6. Select the **List** / **Detailed List**. The display changes to show a spreadsheet.
7. Click **Close** when you are finished working with this dialog box.

9.21 Viewing the Storage Trend Report

This dialog box presents a visual summary of the storage trend for the DS-System. This is a display of the information gathered about individual DS-Clients, based on their storage history settings (see: Section 5.3.4, “Configuring the advanced settings”).

To view the Storage Trend Report:

1. On the **Reports** menu, click **Charts**, and then click **Storage Trend**.

   F1 Help: Storage Trend

2. Select a DS-Client and adjust the chart as desired, then click **Refresh** to update the display.

NOTE: The peak and average amounts are reset to the current stored or protected size at the beginning of each month.

9.22 Exporting DS-Client information to a file

You can export a summary of DS-Client information to a file.

To export DS-Client information to a file:

1. On the **Reports** menu, click **DS-Client Info**.

   F1 Help: Export DS-Client

2. In the **Selection** section, select how many DS-Clients to export. Each DS-Client appears on a separate line in the exported .CSV file.
3. In the **Column Selection** section, select how much information to include in the exported .CSV file. You can add, remove, and re-order the columns that appear.
4. Click **Export**. A popup message will indicate the result.
5. Click **OK**.
6. Click **Close** to exit the **DS-Client Info** dialog box.

9.23 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-Operator .ini file (oper.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-Operator .ini file (`oper.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-Operator (dsoper.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. The list shows the compiled report template files in the `\report` subdirectory of this installation of DS-Operator GUI.

3. Click **Next**. The **Customized Report Wizard - Select Data Filters** dialog box appears.

   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 Using premium backup and recovery services

This section provides information about the premium service options that you can offer your customers. These services allow you to generate additional revenue, independent from the online storage revenues.

10.1 Autonomic healing

This section describes the autonomic healing tool.

10.1.1 About autonomic healing

On rare occasions, the DS-System might encounter corrupted files that cannot be restored. The autonomic healing process helps improve the integrity of the DS-System by automatically finding these corrupted files. This process can be scheduled, run on demand, or be configured to always run on DS-System startup.

Autonomic healing works at the file level of the online storage for all backup set data. It is designed to automatically find and fix errors faster than DS-System Admin, and features a speed throttle that enables it to slow down when the DS-System is experiencing a high load of activities.

NOTE: All references to a delete process in this section are in fact a “move” process. Autonomic healing and System Admin do not delete files unless they are orphaned recycled generations. They move them to the trash directory under the “Backup Root” location.

10.1.1.1 DS-System Admin vs. autonomic healing

The following outlines the features of the autonomic healing module and how it can help with managing the DS-System:

The autonomic healing module features more advanced detection and fixing capabilities than the DS-System Admin (Core) and will record any anomalies found (caused by third-parties) so that manual fixing is possible for problems that cannot be fixed automatically.

The autonomic healing module is designed to continuously monitor the DS-System online storage for any data corruptions. It can also be configured with a variety of options (optimize space, process the selected sets repeatedly / only once for troubleshooting, speed control options, simultaneous processes, etc.).

In case corruptions are found, autonomic healing will notify the DS-System administrator. For each backup set, one notification will be sent when the first corruption is found.

The autonomic healing module has some fixing capabilities, and as long as an error can be corrected, it will do so by either fixing the problem or moving the file to the trash location. If DS-System is part of a replication group, autonomic healing will try to retrieve a correct version of the file from one of the other DS-Systems in the group. If retrieval is successful, then DS-Client is no longer involved. If the retrieval is not successful, the backup set will be marked as “out-of-sync” and DS-Client will be forced to synchronize the backup set and to re-send a replacement for the corrupted file during next backup session.

Functionality	Description	DS-System Admin	Autonomic Healing
Update Storage Statistics	Scan online size	Yes	No
	Update library link information in DS-System DB	Yes	No
	Update Statistical information	Yes	No
Running options	On-demand start/stop	Yes	Yes
	Speed adjust based on DS-System Load	No	Yes
	Minimum checking interval	30 days	1 hour
	Automatically resume on file level	No	Yes
	Balanced task assignment between processes	No	Yes
Check Capabilities	Check File Headers damage/ inconsistencies	Yes	Yes
	Check Directory Stream Headers damage/ inconsistencies	Yes	Yes
	Check library link damage/ inconsistencies	Yes	Yes
	Check Delta file damage/ inconsistencies	No	Yes
	Check file name damage/ inconsistencies across generations	No	Yes
	Check Directory ID/name damage/ inconsistencies	No	Yes
	Check File ID/name damage/ inconsistencies	No	Yes
	Check orphaned recycled generations caused by data damage/corruption	No	Yes
	Check session damage/inconsistent across generations	No	Yes

Functionality	Description	DS-System Admin	Autonomic Healing
Fixing Capabilities	Delete corrupted files (move to deleted files folder)	Yes	Yes
	If DS-System is part of a replication group, attempt to retrieve the deleted files from a Replication DS-System. If all deleted files are successfully retrieved in this manner, skip step 3 (below).	Yes	Yes
	Mark backup set as out-of-sync after deletion or corrupted files are fixed	Yes	Yes
	Fix files/directories ID damage/ inconsistencies	No	Yes
	Fix directory location damage/inconsistencies	No	Yes
	Fix file name damage/inconsistencies within directories	No	Yes
	Fix file name damage/inconsistencies across generations	No	Yes
	Fix delta linking/reconstruction damage/ inconsistencies	No	Yes
	Fix library link damage/inconsistencies	Yes	Yes
	Remove orphaned recycled generations caused by data damage/inconsistencies	No	Yes
	Clean recycled generations to optimize storage space.	Yes	No
	Fix session damage/inconsistencies across generations	No	Yes
Reporting and Notification	Report found damage/inconsistencies in event log	Yes	Yes
	Send notifications	Yes	Yes
Manager	Regular monitoring of the progress	Yes	Yes
	Separate monitor to monitor and manage the process on selected backup sets	No	Yes
	Integrated processing history management	No	Yes

10.1.1.2 Best practices for autonomic healing

Autonomic healing is designed to be scheduled to run continuously in the background to check the DS-System online storage. When scheduled, it features a speed throttle that enables the module to slow down when the DS-System is experiencing a high load of activities.

There are some considerations that affect the time it takes to complete one pass through the entire online storage:

- Number of files on DS-System storage locations (more files on each storage location makes autonomic healing scanning slower).
- Number of storage locations on the DS-System: This directly determines the number of links between different storage locations. If autonomic healing has to follow more links, it will be slower.
- Number of autonomic healing processes running on one DS-System Storage location at the same time from multiple nodes.

To improve the autonomic healing scan speed you can do the following:

1. On the **Setup** menu, click **Autonomic Healing**, and then click **Autonomic Healing Manager**.
2. In the **Autonomic Healing Manager** dialog box, click **Refresh**. Select the backup set(s) you want to process, and then click **Set Options**.
   - Do not select the **Force DR scan** option. This option forces DS-System to verify all storage locations for a file, which increases the duration of the autonomic healing scan.
3. On the **Setup** menu, click **Advanced Configuration**:
   - Set the value of **DeltaCheckOption** to 0 to configure autonomic healing to validate only meta-data information about a file. This reduces the scan time because autonomic healing skips validation of the delta block signatures (the file content).
4. On the **Setup** menu, click **Autonomic Healing**, and then click Start Autonomic Healing. In the **Processes to start** box, configure how many simultaneous autonomic healing processes to run.

NOTE: Running more autonomic healing processes may not significantly increase the scan speed. It can, however, decrease the overall performance of your DS-System due to the increased I/O to the online storage.

10.1.2 Configuring the autonomic healing manager

The **Autonomic Healing Manager** displays a list of all backup sets on the DS-System and their healing status.

To configure autonomic healing:

1. On the **Setup** menu, click **Autonomic Healing**, and then click **Autonomic Healing Manager**.

   F1 Help: Autonomic Healing Manager

2. In the **View by** section, you can select what to display:

   - **Current** — (Current healing status) Shows the current healing status of backup sets on the DS-System.
   - **History** — (Healing status history) Shows a historical list of each time autonomic healing processed a backup set.

3. By default, all backup sets will be displayed. In the **Select by** section, you can filter to limit what is displayed:

   - Selected Backup Set: (Current healing status only) Only shows those flagged as **Selected** (Set Options).
   - Customer or DS-Client
   - Set type
   - Errors or warnings
   - From Time / To Time (Healing status history only)

4. Click **Refresh** to update the list.

5. In the list, select the backup sets you want to work with and click one of the following:

   - **Event Log** — Allows you to view the autonomic healing events (if any) when the corresponding backup set was processed.
   - **Set Options** — (Current healing status only) Allows you to apply the selected option(s) to individual backup sets the next time autonomic healing processes its files.

     F1 Help: Set Options (Autonomic Healing)

Select	This option flags the backup set for a special (one-time) autonomic healing process. It applies the next time autonomic healing is run on demand with the “Process selected backup sets only” option. This option applies only once. After autonomic healing processes the corresponding backup set, the option flag is removed.

Promote	This option increases the backup set's priority in the autonomic healing Processing order. It will be put at the top of the list for processing (Processing Order column). Once selected, this option always applies to the corresponding backup set (unless you clear it).
Force DR scan	This option flags the backup set to have the autonomic healing process run a DR scan on it. A DR scan will verify all storage links in the Extensible Storage Locations. (Note this may significantly increase the processing time). This option applies only once. After autonomic healing processes the corresponding backup set, the option flag is removed.
Full Speed	This option removes any autonomic healing speed control settings, so the corresponding backup set is processed at 100% (i.e. as fast as possible). This option applies only once. It only applies to 'background' and scheduled autonomic healing processes (not for on-demand). After autonomic healing processes the corresponding backup set, the option flag is removed.

- **Set Priority** — (Current healing status only) Allows you to adjust an individual backup set's healing priority from among the entire list of backup sets.

10.1.3 Starting autonomic healing

Autonomic healing can be scheduled, or started on demand. You can start as many on-demand autonomic healing processes as you require.

NOTE: To schedule autonomic healing, see Section 3.14.1, "Scheduling autonomic healing", on page 81.

To start autonomic healing on demand:

1. On the **Setup** menu, click **Autonomic Healing**, and then click **Start Autonomic Healing**. The **Start Autonomic Healing Processes** dialog box appears.

   F1 Help: Start Autonomic Healing

   - **Process all backup sets (continuously in background)** — Starts an autonomic healing session that will continuously process all backup sets.
   - **Process selected backup sets (once only)** — Limits the autonomic healing processes you are about to start to the selected backup sets (ones that have been flagged as "selected" from the **Autonomic Healing Manager**). Once backup sets have been processed, the "selected" flag is removed.

     NOTE: This option always runs at full speed with no speed control.

- **Processes to start** — Select the maximum number of autonomic healing processes to run simultaneously. (Note: if the speed control takes effect, the total healing speed might be limited.)

2. Select the options and click **Start**.

   Autonomic healing processes will appear in the process list at the bottom of the DS-Operator main window.

   You can also open the **Autonomic Healing Manager** to:

   - View the status of individual backup sets.
   - View the autonomic healing process details at the backup set level.

10.1.4 Stopping autonomic healing

Autonomic healing can be stopped on demand.

To stop autonomic healing:

1. On the **Setup** menu, click **Autonomic Healing**, and then click **Stop Autonomic Healing**. The **Start Autonomic Healing Processes** dialog box appears.

   F1 Help: Stop Autonomic Healing Processes

2. Select the stop option:

Stop All Autonomic Healing	All autonomic healing processes will be stopped.
Stop Selected Autonomic Healing	Only selected (on-demand) autonomic healing processes will be stopped. Any scheduled or background autonomic healing processes will continue.
Stop Scheduled Autonomic Healing	Only scheduled autonomic healing processes will be stopped. Any on-demand or background autonomic healing processes will continue.
Stop Background Autonomic Healing	Only background autonomic healing processes will be stopped. These are autonomic healing processes started with the option: **Process all backup sets (continuously in background)**. Any on-demand or scheduled autonomic healing processes will continue.

3. Click **OK**. The corresponding autonomic healing processes will stop.

10.2 Backup Lifecycle Management (BLM)

This section describes how to configure DS-System to work with a BLM Archiver.

10.2.1 About BLM

This module must be enabled as part of your license agreement, and will be activated through the DS-License Server. Once activated, it is automatically available for all DS-Client accounts on the DS-System (see: Section 5.3.2, “Configuring the DS-Tools”).

To configure a BLM billing scale:

[Optional] This can be done with the DS-Billing module.

BLM billing scales are similar to online billing scales. They apply to DS-Client data stored by the BLM Archiver.

- For more information, see: Section 10.4, “DS-Billing”, on page 200.

10.2.2 Registering with a BLM Archiver

You must register the DS-System with the BLM Archiver that it will work with. This DS-System must be configured on the BLM Archiver otherwise no accounts will appear.

To register the DS-System with a BLM Archiver:

1. On the **BLM** menu, click **Register**. The **BLM Registration Wizard** appears.

   F1 Help: BLM Registration Wizard

2. In the **Address** box, type the IP address of the BLM Archiver and click **Refresh** Available.

3. In the **Available Accounts** list, select the DS-System’s account and click **Finish**.

10.2.3 Configuring the BLM Archiver settings

To configure the BLM Archiver settings:

1. On the **BLM** menu, click **Status**. The **BLM Status** dialog box appears.

   F1 Help: BLM Status

2. Configure the settings as required and click **OK**.

3. To stop using the BLM Archiver, click **Unregister**.

10.2.4 Creating a BLM Archive request

You can create or add to BLM archive packages on demand from the DS-System using the DS-Operator GUI.

You can create a copy of the latest generation, or of all generations of the items in a backup set.

To archive backup set data to BLM on demand:

1. In the **Customers** tab, browse and select the backup set you want.

2. Right-click and select **BLM Archive**. The **BLM Archiving Wizard** appears.

   F1 Help: BLM Archiving Wizard - Select Items for Archiving page

3. In the **Select items for archiving** page, select the items to from the backup set to include in the BLM archive package.

4. Click **Next**. The **Review selection and select archiving options** page appears.

   F1 Help: BLM Archiving Wizard - Review Selection page

5. In the **Archive Options** section:

   a) Type a description in the **Session Label** box. This can make it easier to search for this specific archiving session from the BLM. See the *BLM Archiver User Guide*.

   b) In the **Generations to include** list, select **All** or **Latest**.

   c) The remaining check boxes are optional. For more information, see the F1 help and Section 10.2.5, “Third-party snapshot”.

6. Click **Finish**.

10.2.5 Third-party snapshot

IMPORTANT: You must have the third-party software installed and functioning properly, otherwise the backup set will remain locked until you delete the BLM request.

- If not selected, DS-System locks a backup set for the duration of the BLM Archiving activity.
- If selected, you instruct DS-System to use a third-party snapshot for the BLM copy requests (to unlock a backup set as quickly as possible). DS-System integrates with third-party software to create a snapshot of the required directories. Once the snapshot is created, DS-System unlocks the backup set. The BLM request will be performed from the snapshot data.

To configure DS-System for third-party snapshot with BLM Archiving:

1. DS-System writes a “request” file for the third-party software to read (located in the primary storage location, in a sub-folder called **blm_pitc**). This is a text file named **sreq_n.txt**, where n is the request number. This file lists all storage locations where the requested backup set data is located. For example:

   ```
   1 D:\<folder>\data\1\1\1\9\
   2 e:\<folder>\data\1\1\1\9\
   3 c:\<folder>\data\1\1\1\9\
   ```

   where <folder> specifies the path to the storage location.

2. The third-party software must read this file and copy that data. Once it is copied, the third-party software writes a “response” file to the DS-System’s primary storage location in the sub-folder called **blm_pitc**). This must be a text file named **sresp_n.txt**, where `n` is the unique request number. This file lists the image locations where DS-System should read the data. For example:

   ```
   1 W:\snap\location_1\9\
   2 W:\snap\location_2\9\
   3 W:\snap\location_3\9\
   ```

   NOTE: The order of the folders must be identical in the request and response files. The file must be in Text File Format (UTF-8, no Unicode marker).

3. The third-party software deletes the request file (**sreq_n.txt**). DS-System unlocks the backup set.
4. DS-System starts copying data to the BLM Archiver from the third-party snapshot location. When the BLM archiving process is finished, DS-System deletes the response file (**sresp_n.txt**).

10.2.6 Viewing active BLM Archive requests

The following dialog boxes allow you to manage any active BLM archive requests on the DS-System.

To view the current BLM Archive requests:

1. On the **BLM** menu, click **Active Archive Requests**. The **Active Archiving Requests** dialog box appears.

   F1 Help: Active Archive Requests

   For any BLM archive requests that were stopped or interrupted, you have the option to restart or delete the request. This is useful, since the backup set will remain locked until the archiving is finished or the request is deleted.

2. To restart an archive request:

   a) Select the archive request from the list. If there are many requests, you can use the options in the **Filter** section to narrow what is displayed.

   b) Click **Start**.

      F1 Help: Restart Archive Requests

   c) In the **Restart Archive Request options** section, configure the options.

   d) Click **OK**.

3. To delete an archive request:

   a) Select the archive request from the list and click **Delete**.

   b) A confirmation popup appears. Click **Yes** to proceed.

10.2.7 Registering a DS-Client with a BLM Archiver

NOTE: This is a right-click menu feature only.

If a DS-Client does not have any archive packages on the BLM Archiver, it will not appear in the BLM GUI's BLM Archiver(s) tree. The DS-Client account must appear in that tree if you want to import data converted for BLM using the DS-Client Tape Converter (see *DS-Client User Guide*).

To register a DS-Client account with the BLM Archiver:

1. In the Customers tab, browse and select the DS-Client account you want.
2. Right-click and select **Register DS-Client with BLM**.
3. Registration is immediate. A confirmation appears in the DS-System event log for the DS-Client (activity type: **BLM Archiving**):

```
BLM connection established in order to register the DS-Client.
No data will be transmitted.
```

4. If successful, the DS-Client account will appear in the corresponding BLM Archiver. Refer to the *BLM Archiver User Guide* for further instructions on importing data.

10.3 Disc/tape

This section describes how to prepare the disc/tape restore media.

10.3.1 About disc/tape restores

For each disc/tape request, you can generate the restore data in disc/tape restore format for restore via the DS-Client. DS-System copies the requested data to a buffer path. From that path, you can copy or burn the data to whatever media you choose to support for your customers (CD, DVD, hard disk drive, or tape).

NOTE: A disc/tape request (initiated from either the DS-Client side or the DS-System side) will lock the corresponding backup set until the request is successfully completed (written to buffer) or deleted from the Disc/Tape Orders list.

If a customer needs to restore their entire LAN (or any large quantity of data), this may take a long time (even with a high bandwidth connection). It may be faster to write the required data to local media connected to the DS-System. Then you can ship the media to the DS-Client's physical location where it can be attached as a local drive or restored via a LAN connection. This can be accomplished using the disc/tape feature.

There is a **disk** media type that allows you to write an unlimited capacity to the disc/tape buffer (presumably for a hard disk or other similar media). Speed is maximized by multi-threaded data writing where you select the number of threads to process the disc/tape request.

When using disc/tape requests for disaster restore purposes, you should:

- Create an **unlimited** media type to use for the disc/tape buffer.
- Perform the write to buffer process using multiple threads. The number of threads to use depends on existing activities, number of CPUs, etc..

If the disc/tape directory already exists in the disc/tape buffer, the DS-System will prompt you to select if the disc/tape process should be resumed or overwritten:

- **Resume** will try to continue based on the records included in the catalog file. (If the resume fails, the DS-System will perform an overwrite.)
- **Overwrite** will force the DS-System to rewrite all the data in the disc/tape buffer for the required backup set.

10.3.2 Configuring the disc/tape media

Before you begin, make sure the DS-System has the following:

- Adequate buffer space where the files will be copied.
- A disc burner or tape writer, if applicable.

To configure the disc/tape media:

1. On the **Disc/Tape** menu, click **Media**. The **Disc/Tape Media** dialog box appears.

   F1 Help: Disc / Tape Media

2. To add a new media type, click **Add**.

   To edit, select the media from the list and click **Modify**.

   F1 Help: Add New Media / Edit Media

3. Configure the media (pre-defined settings exist, but they can be customized):

   - **Limited size** — disc/tape requests will be written into buffer folders that will accommodate the size of the media.
   - **Unlimited size** — disc/tape requests will be written to a single buffer location, but can take advantage of multiple write threads for faster performance.

4. Click **OK** to save the media profile. The media list is updated.

   - From the DS-Client, your customers can now use the disc/tape option. For more information, see the *DS-Client User Guide*.

     NOTE: The DS-Client must have the **Disc/Tape** tool enabled. See Section 5.3.2, “Configuring the DS-Tools”, on page 111.

   - From the DS-System, you can create disc/tape snapshots at the backup set level using the DS-Operator GUI.

10.3.3 Initiating a disc/tape request

Disc/tape requests can be initiated by the customer through the DS-Client, or by the DS-System administrator.

Customer (DS-Client) initiated request

Customers can issue disc/tape requests on demand. These requests can be either for a snapshot of the latest generation of a backup set or selective files from a backup set.

Once a customer sends the request, it is added to the DS-System's Disc/Tape Orders list (Disc/Tape menu > Generate). You must now write the requested data to the disc/tape buffer.

Service provider (DS-Operator) initiated request

This option allows the service provider to generate a snapshot of the latest generation of a backup set from the DS-System side.

1. Customer contacts you to request a disc/tape and specifies which backup sets to include.
2. You initiate the disc/tape request using DS-Operator by selecting the requested backup set in the **Customers** tab.
3. Right-click and select **Disc/Tape Request**.

   F1 Help: Disc / Tape Mailing Information
4. Type the customer's name, phone number, and address information, then select the media, and click **OK**.
5. The request is added to the Disc/Tape Orders list (**Disc/Tape** menu > **Generate**). You can now write the requested data to the disc/tape buffer.

10.3.4 Generating a disc/tape order

You must instruct the DS-System to write the files to the DS-System's buffer directory.

To generate a disc/tape:

1. On the **Disc/Tape** menu, click **Generate**.

   F1 Help: Disc / Tape Orders
2. Select the disc/tape request you want (the status must be **Purchased**).
3. Click **Write to Buffer**.
   - For N+1 DS-Systems, a popup dialog box will ask you to select which N+1 node will perform the activity.
4. In the **Generate Files to Buffer** dialog box, configure the following:
   - **Processes to start** — (for **Disk** media type with **Unlimited** size only) The number of threads you want to use to write data to the buffer. You can select from 1 to 99 threads (the default is 3). All threads execute parallel to shorten the generation time.
   - **Path** — Shows the default path where the disc/tape files will be written. To change the path, type a new path or click **[...]** to browse for it.
   - **Restore Reason** — Select a reason for the disc/tape request.
   - **Restore classification** — See the F1 help for more details.

F1 Help: Generate Files to Buffer

5. Click **OK**. The **Disc/Tape Meta-data Encryption** dialog box appears. If desired, select the encryption to use for the meta-data (the descriptive files used to manage the disc/tape restore).

   F1 Help: Disc / Tape Meta-data Encryption

6. Click **OK**.

NOTE: The **Overwrite Options** dialog box appears if you are retrying the **Write to Buffer** process for a disc/tape request and DS-System detects that usable data exists in the disc/tape buffer. This can happen if the previous process was stopped (by the user, because of DS-System shutdown, because connection to disc/tape buffer was lost, etc.). You can choose to overwrite the data and restart from the beginning, or try to resume from the point where the last **Write to Buffer** process was interrupted. Click **OK**.

---

7. When complete, the request status will show **Finished** in the **Disc/Tape Orders** dialog box.

   a) Copy the data from the buffer directory to the media specified in the customer's order (CD, DVD, hard disk, or tape).

   b) Ship the media to the customer's specified mailing address: select the disc/tape request and click **More Info**.

      F1 Help: Disc / Tape Order Details

8. Once the files in the buffer have been written to the customer's selected media, you should mark the request as **Mailed**.

   a) Select the order in the list (the status must be **Finished**) and click **Mark Mailed**.

      F1 Help: Disc / Tape Billing Information

   b) Type the number of copies of the media to send and click **OK**. The files will be automatically deleted from the buffer.

9. In the **Disc/Tape Orders** dialog box, the status of the order will be **Mailed**. At this point, all data from that request in the buffer directory is deleted.

   Once a request is **Mailed**, the accompanying charge will be applied to the DS-Client's Additional Charges list for the applicable month, if configured in DS-Billing. For more information, see the *DS-Billing User Guide*.

10. You may wish to delete some older requests from the list to keep it manageable.

    a) In the **Disc/Tape Orders** dialog box, select the request you want to delete.

    b) Click **Delete**. A confirmation popup appears. Click **Yes** to proceed.

10.4 DS-Billing

This section describes how to configure the DS-System to work with a DS-Billing server.

10.4.1 About DS-Billing

Billing is performed through the DS-Billing Module. This requires a separate product installation to interact with the DS-System. For more information, refer to the *DS-Billing User Guide* and the DS-Billing section in the *Server Software Installation Guide*.

10.4.2 Registering the DS-Billing module

Before DS-Billing can work with a DS-System, you must grant that specific DS-Billing server permission to register with the DS-System:

To register a DS-Billing server with the DS-System:

1. On the **Billing** menu, click **Billing Registration**. The **Billing Registration** dialog box appears.

   F1 Help: Billing Registration

2. In the **IP** box, type the IP address of the target DS-Billing server. The DS-System will permit the DS-Billing server at this address to connect.

3. Click **OK**.

10.5 DR Drill requests

This section describes how to configure backup sets for DR Drills.

NOTE: These options apply only to DS-Systems that are connecting to a DS-License Server that is configured for the Recovery License Model (RLM).

10.5.1 About DR Drill requests

DS-Systems licensed from a DS-License Server RLM can have a pool of DR Drill Capacity allocated. This feature lets you allocate from this pool to specific backup sets in order for the customer (or you) to perform a disaster recovery drill at a predetermined time to practice in anticipation of a real-life disaster.

DR Drill capacity is allocated per backup set in the **DR Drill Requests** dialog box. During the scheduled drill period, when a recovery activity is performed on a flagged backup set, an additional option appears that allows the user to specify if the activity is a DR Drill. The following recovery activities will show the **Restore classification** option when it is available in DS-Operator:

- Disc/Tape orders (when they are written to buffer). (Section 10.3, “Disc/tape”)
- Restore of a file generation via DS-Operator. (Section 6.1.3, “Restoring a file generation (without involving DS-Client)”)

NOTE: In addition, regular restores from DS-System online storage initiated by the customer through the DS-User GUI will show the **Restore classification** option at the end of the restore wizard (see the *DS-Client User Guide*).

10.5.2 Configuring a DR Drill request

To configure a backup set for a DR drill:

1. On the **DR Drill** menu, click **Manage DR Drills**. (Alternatively, you can select a backup set from the Customers tab and right-click **DR Drill Request**. This will automatically skip to step 4.)
2. The **DR Drill Requests** dialog box appears with a list of all disaster recovery drills configured for the DS-System. You can expand or narrow what is displayed in the list by using the options in the **Select by** section.

   F1 Help: DR Drill Requests
3. To add a new DR Drill Request, click **Add**.

   To edit a pending request, select it and click **Edit**. The **New / Update DR Drill Request** dialog box appears.

   F1 Help: New / Update DR Drill Request

   a) In the **Backup Set** box, select the backup set that you want to configure for a DR Drill.

   b) In the **Scheduled Start Date** box, select the date when the DR Drill will start. The customer will be able to start a DR Drill for the selected backup set any time during this period.

   c) In the **Quota** box, select the amount of DR Drill capacity you want to allocate. This is the maximum limit you want to permit to be restored and classified as DR Drill. When the drill period starts, the allocated amount is deducted from your DS-System license’s **DR Drill Capacity**. For more information, see Section 3.1, “To view the DS-System’s current license limits and tools:”, on page 20.

   d) Click **OK**.

4. To stop a scheduled DR Drill before the drill period starts (as long as the status is **Pending**), select it in the list and click **Delete**.

10.6 Initial backup

This section describes how to handle initial backup sets.

10.6.1 About initial backup

The first backup will take the most time, since all files selected must be backed up. If the customer requires backup of a large capacity, an initial backup may be the fastest solution. This feature allows your customer to backup to a local buffer on the DS-Client computer, or to any other buffer location at LAN speed. Then, they will ship that media (disks) to the DS-System's physical location.

When you receive the initial backup media, you will import the data to the DS-System. Once it is imported to the DS-System, your customer can continue performing scheduled and on-demand backups (of incremental changes).

NOTE: The initial backup service is not a software-only process. It must be coordinated with the DS-Client administrator.

10.6.1.1 Best practices for initial backup

When running initial backups, consider the following:

- 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.
- When running several initial backups at the same time, make sure 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 may 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 the service provider (in DS-User, 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 (Right-click the backup set > Synchronize: Normal). To resume, start another backup session. The other option is to reset the backup set as **Incomplete**, then re-run the initial backup from the beginning (DS-User > Initial Backup > Status).
- If the file system on the initial backup buffer cannot be directly read by the operating system on DS-System side (like a Mac DS-Client connected to a Windows DS-System), NFS or CIFS can be used for the initial backup import.

10.6.2 Performing an initial backup

To perform an initial backup:

1. On the DS-System, create the customer account and DS-Client account.
2. On the DS-Client, have your customer register their DS-Client with the DS-System.
3. Your customer can then create as many initial backup sets as required, which are written to a media buffer that is physically shipped to the DS-System location. See the *DS-Client User Guide* for instructions.
   - An initial backup buffer must contain backup sets from the same DS-Client.
   - Customers can send as many initial backup buffers as required.
4. When you have received the initial backup buffer media, connect it to the network so it is visible to the DS-System.
5. In DS-Operator, browse the **Customers** tab and select the DS-Client account whose data is in the initial backup buffer. On the **DS-Client** menu, select **Import Initial Backup**.
   - For N+1 DS-Systems, a popup dialog box will ask you to select the N+1 Node to perform the activity.
6. The **Initial Backup Import** dialog box appears.

   F1 Help: Initial Backup Import
7. In the **Import initial backup from** box, type or browse for the path where the DS-System can read the initial backup data.
   - For Windows: The path must be in the form `<local_drive>:\initial_backup_dir` or `\\server\share\initial_backup_dir` (for example: `\\MEDIA\drv$d\buf`)
   - For UNIX: The path must be in the form `/initial_backup_directory`

- For N+1 DS-Systems: The initial backup is performed by the selected node. Make sure that the initial backup buffer is either directly attached to that node, or is specified as a UNC path (if attached to a different computer) and the selected node has rights to access it.

8. Click **OK**. The **Select Initial Backup Sets** dialog box appears. All backup sets in the initial backup buffer that can be imported to the DS-System are listed.

   F1 Help: Select Initial Backup Sets

9. In the **Available Backup Set** list, select all the backup sets you want to import and click the **[>>>]** button. Your selection moves under the **Selected Backup Set for Import** list.

   - If you need to input an encryption key, the **Initial Backup Meta-data Encryption** dialog box appears.

     F1 Help: Initial Backup Meta-data Encryption

   - Type or import the encryption key and click **OK**.

10. Click **OK** to proceed with the import. The **Initial Backup Import Options** dialog box appears.

    F1 Help: Initial Backup Import Options

11. In the **Select import method** section, configure the following:

    - **Move** — This is available only for unencrypted buffer data. If any meta-data encryption was used, the move option is disabled. If DS-System can find a storage location on the same volume as the specified path, you will be offered the move option as an import method. The data will be moved to the one storage location. Therefore the storage distribution will not be balanced after import.

      – If the logical size (available to DS-System in the storage location) is less than the data being moved, a warning appears. There is enough physical space because the move process is just renaming files in the storage location. However, DS-System will not put new files into that storage location if DS-System has no available logical space.

    - **Copy** — The copy option will automatically balance the import of data among all the storage locations in the DS-Client's storage group. However, it will take longer than if using the move option.

12. In the **Options** section, configure the following:

    - **Concurrent import activities** — Each import activity represents a different backup set that is processed in parallel.

    - **Additional threads for each import activity** — Number of additional processing threads to run for each import activity.

13. Click **Start** to begin transferring the initial backup from the initial backup buffer media to the DS-System. Once successfully completed, those backup sets can have backups start to run on schedule or on-demand from DS-Client.

- After the import has completed, verify the activity log. The event log for the import activity will contain a comparison between the number of files saved by the DS-Client to the initial backup buffer and the number of files the DS-System imported from the buffer. These numbers should match.

10.7 Remote DS-VDR

This section describes how to configure DS-System for Remote DS-VDR.

NOTE: This section assumes the reader has administrative experience with Hyper-V and VMware.

10.7.1 About Remote DS-VDR

Remote DS-VDR is a tool that is licensed for the DS-System from the DS-License Server in the form of an incremental counter called the **Remote DS-VDR Count**. The DS-System administrator can assign the license count to DS-Client accounts individually from this pool. Each DS-VDR configuration that is licensed reduces the pool by 1 count.

This tool is configured using the DS-Operator GUI. The service is intended to run on a remote Windows or Linux server to be the engine that processes DS-VDR requests.

Remote DS-VDR can be configured for Hyper-V backup sets and VMware VADP backup sets. The backup must be of an entire functioning virtual machine (not just an individual disk) and it must already be stored in the DS-System's online storage.

The customer must configure the backup set with 3 or more generations because the Remote DS-VDR tool only supports restoring master/delta generations (not regular files).

When a backup set is scheduled for Remote DS-VDR restore, the latest backed up generation is automatically restored to a standby virtualization server. In the event that you suffer a disaster or other event, you can switch immediately to the standby virtualization server.

DS-System can connect to multiple Remote DS-VDR Tools, thereby distributing the load, as required.

For each Remote DS-VDR restore activity:

- DS-System establishes the connection on port 4406 (default) to the Remote DS-VDR Tool. It sends all configuration parameters and required encryption keys to the DS-VDR Tool.
- DS-System sends the list of files that need to be restored and other meta-data information generated from the backup set's Remote DS-VDR configuration.

- The Remote DS-VDR Tool is the software that will interact with the virtualization server. The tool creates a virtual machine and disks based on the meta-data information.
- DS-System starts sending file data to the Remote DS-VDR Tool, which then decrypts and decompresses it and then saves it in the disks that the tool itself has created. The tool returns completion logs to DS-System.
- When manually triggering a Remote DS-VDR restore, the user can select from the available backup generations stored on DS-System.
- Decompression and decryption are performed on the Remote DS-VDR computer, thereby relieving the DS-System of processing load.
- The Remote DS-VDR Tool is responsible for creating the virtual machines and their disks as configured in each backup set.
- (VMware VADP only) Virtual machines are restored under a unique name that consists of the prefix “RVDR”, the name of the source virtual machine, and the backup session time stamp of the restored generation.
- (Hyper-V only) The virtual machine will be restored with its original name. No time stamp will be added.
- Depending on the Remote DS-VDR configuration, the restored virtual machine can be powered on or left powered off after successful restore.

NOTE: If you select the **Power On** option, a full restore is always performed.

10.7.1.1 Handling multiple encryption keys

The configuration and management of the Remote DS-VDR service is performed solely on the DS-System side through DS-Operator. DS-Client has no direct involvement with Remote DS-VDR. However, encryption key forwarding must be enabled in DS-Client and the encryption keys must be forwarded to the DS-System and be available in the DS-System database. See: Section 3.2.7, “Configuring the encryption keys settings”, on page 26.

For each restore session, DS-System provides the required encryption key(s) for the corresponding backup set to the Remote DS-VDR Tool. This enables the tool to handle multiple restore sessions from different DS-Clients.

Encryption keys that are sent to the Remote DS-VDR Tool remain in an encrypted format. They are kept in temporary memory only during each Remote DS-VDR restore and are discarded when the restore is finished.

10.7.1.2 Preserving the disaster copy virtual machine

The disaster copy virtual machine should only be manually powered on through the virtualization server in the case of an actual disaster. Once powered on, the operating system present in the disaster copy will modify its disk, and incremental virtual machine restores will no longer be possible after this point.

IMPORTANT: If a test of the disaster copy is required, clone the disaster VM to another location and use that copy for testing. If the disaster copy has already been used for testing purposes, and then an actual disaster occurs, the disaster copy may have already been altered during testing and no longer be suitable as a disaster copy.

10.7.2 Configuring a Remote DS-VDR server

You can configure a DS-System to use multiple Remote DS-VDR servers. You must have at least one Remote DS-VDR service running and accessible from the DS-System via TCP/IP on port 4406 (default). If you are using a firewall, port 4406 must be configured to allow TCP/IP connections on both the DS-System and the DS-VDR server.

NOTE: Hyper-V backup sets require a DS-VDR service running on Windows.

To configure a Remote DS-VDR server:

1. On the **DS-VDR** menu, click **Remote DS-VDR Servers**. The **Remote DS-VDR Servers** dialog box appears.

   F1 Help: Remote DS-VDR Servers

2. Do one of the following:

   - To add a Remote DS-VDR server, click **Add**.
   - To modify an existing Remote DS-VDR server, select the server from the list, and then click **Modify**.

3. In the **Add / Modify DS-VDR Server Info** dialog box, type the required information, and then click **OK**.

   F1 Help: Add / Modify DS-VDR Server Info

4. To save the Remote DS-VDR server configuration, click **OK** or **Apply**.

NOTE: The Remote DS-VDR service or daemon must be running on the server at the IP address you specify.

10.7.3 Configuring a virtualization server

You can configure a DS-System to use multiple virtualization servers. A virtualization server is the target destination where the backed up virtual machine will be restored. You must have at least one virtualization server (Microsoft Hyper-V or VMware vCenter) configured and running for DS-System to perform DS-VDR restore.

IMPORTANT: The target virtualization server must be the same type as the backup set (Hyper-V to Hyper-V, or VMware to VMware).

To configure a virtualization server:

1. On the **DS-VDR** menu, click **Virtualization Servers**. The **Virtualization Servers** dialog box appears.

   F1 Help: Virtualization Servers

2. Do one of the following:

   - To add a virtualization server, click **Add**.
   - To modify and existing virtualization server, select the server from the list, and then click **Modify**.

3. In the **Add / Modify Virtualization Server** dialog box, type the required information, and then click **OK**.

   F1 Help: Add / Modify Virtualization Server

4. To save the virtualization server configuration, click **OK** or **Apply**.

10.7.4 Configuring a backup set for remote DS-VDR

NOTE: This procedure applies to Microsoft Hyper-V and VMware VADP backup sets only.

Once DS-System has been configured with at least one Remote DS-VDR server and one target virtualization server, you can configure an eligible backup set for Remote DS-VDR.

DS-VDR is meant to be scheduled, or otherwise triggered to automatically restore to a standby virtualization server in order for the latest backed up version to be running and ready for use if the service is requested by the end customer.

By default, when you configure a backup set for Remote DS-VDR restore, you must assign it to a schedule (even if it is **None**).

NOTE: Each backup set configured and licensed for Remote DS-VDR reduces the Remote DS-VDR Count allocated to the DS-System by 1.

To configure a virtual machine backup set for remote DS-V DR:

1. On the **DS-VDR** menu, click **Remote DS-VDR Global**. The **Remote DS-VDR Global** dialog box appears with a list of the virtual machine backup sets that are eligible for Remote DS-VDR.

   F1 Help: Remote DS-VDR Global

2. Select the **Licensed** check box of the backup set you want to configure and click **Configure**. The **Remote DS-VDR Configuration Wizard** appears.

   F1 Help: Remote DS-VDR Configuration - Select Method and Tools

3. In the **Select Method and Tools** dialog box, you must configure all of the following:

   - **Restore Type**: Select **Full** or **Incremental**.

     IMPORTANT: If you select the incremental restore type for a VMware VADP backup set, you must verify that the source backup set is not configured with the **Backup Virtual Machine Memory** option. An incremental restore of the virtual machine will fail with a disk error if this option is enabled. For more information on configuring a VMware VADP backup set, see the *DS-Client User Guide*.

   - **Remote DS-VDR**: Select the Remote DS-VDR service to use. The tool must be installed and running on the remote server.
   - **vCenter / Host / Datacenter**: (VMware VADP) Select the target where the virtual machines in this backup set will be restored.
   - **Virtualization Server**: (Microsoft Hyper-V) Select the target where the virtual machines in this backup set will be restored.

4. Click **Next**.

   F1 Help: Remote DS-VDR Configuration - Select Location

5. For VMware VADP backup sets, specify the **Host**, **Folder**, and **Datastore**.

   For Microsoft Hyper-V backup sets, specify the **Folder**.

   - Settings configured in the **Global** section apply by default to all virtual machines in the list, unless they are individually configured with overrides.

- Settings configured for individual virtual machines will override the **Global** defaults.

IMPORTANT: Make sure there is enough space in the target destination.

6. Click **Next**.

   F1 Help: Remote DS-VDR Configuration - Select Remote DS-VDR Options

7. In the **Set Restoration Time** section, select when to perform the remote DS-VDR restore.

8. In the **Options** section, configure the restore options for each virtual machine as necessary.

   NOTE: If you select the **Power On** option, a full restore is always performed.

9. Click **Finish** to save the configuration.

Once a backup set has been configured for Remote DS-VDR, restores will run at the **Set Restoration Time** that has been configured. However, you can perform an on-demand restore at any time.

To perform an on-demand remote DS-VDR restore:

1. In the **Remote DS-VDR Global** dialog box, select the backup set you want to configure in the list, and then click **Restore**.

2. In the **Remote DS-VDR Restore** dialog box, do the following:

   F1 Help: Remote DS-VDR Restore

   a) In the **N+1 ID to Perform Activity** box, select the node that will perform the restore. (This only appears for N+1 DS-Systems.)

   b) In the **Generation** box, select the generation you want to restore. By default, the latest generation is selected.

   c) Select one of the following restore options:

      - **All virtual machines** - Select this option to restore all virtual machines, including virtual machines that might not contain all their virtual disks or have virtual disks with errors. If a VM is restored with a disk count that does not match the original configuration, the event log will display a warning.

      - **Only valid virtual machines** - Select this option to restore only virtual machines that have all their virtual disks without any errors. If a VM is not restored, the event log will explain the reason for it not being restored.

   d) Click **Restore**.

10.7.5 Preventing a full restore when the virtual machine configuration has changed

NOTE: This section applies to VMware VADP backup sets only.

Before initiating a restore, the Remote DS-VDR Tool compares the backup generation to be restored to the previous restore point. The following may occur to a VMware VADP backup set configured for **Incremental** virtual machine restore through Remote DS-VDR:

If the Remote DS-VDR Tool detects changes to one or multiple virtual machine configuration parameters since the previous restore point, DS-Operator will generate an error message that lists the virtual machine configuration parameter(s) that have changed. The Remote DS-VDR Tool will then force a **Full** virtual machine restore.

To prevent a **Full** virtual machine restore from occurring because of changed virtual machine configuration parameters, modify the value of one or both of these parameters in DS-System Advanced Configurations dialog box:

- **VADPCfgIgnoreList**
- **VADPCfgDevIgnoreList**

In particular, add the changed virtual machine configuration parameter(s) as regular expressions to the two ignore lists. Follow these steps:

1. On the **Logs** menu, click **Event Log**.
2. In the **Event Log Viewer**, select the error message that lists the virtual machine configuration parameter(s) that have changed.
3. Copy and save the description of the error message.
4. On the **Setup** menu, click **Advanced Configuration**.
5. In the **Advanced Configuration** dialog box, select each of these parameters and click **Edit** to view its **Value** field and click **OK**:
   - **VADPCfgIgnoreList**
   - **VADPCfgDevIgnoreList**

   In the **Edit Parameter** dialog box, the **Value** field lists the virtual machine configuration parameters that will be ignored by the Remote DS-VDR Tool during **Incremental** virtual machine restore.
6. Determine the appropriate regular expression(s) to represent the virtual machine configuration parameter(s) that need to be ignored.
7. In the **Advanced Configuration** dialog box, select the relevant ignore list (**VADPCfgIgnoreList** or **VADPCfgDevIgnoreList**) and click **Edit**.
8. In the **Value** field, add the regular expression(s) to the ignore list and click **OK**.

10.7.6 Updating the Remote DS-VDR configuration file

On the server where the Remote DS-VDR Tool is installed, there is a configuration file (`dsvdr.cfg`). It is a text file that contains parameter and value pairs, separated by a colon (:). By default, it is located in the following folders:

- **Linux**

  `/opt/CloudBackup/Remote_DS-VDR/etc/dsvdr.cfg`

- **Windows**

  `C:\Program Files\CloudBackup\Remote DS-VDR\dsvdr.cfg`

IMPORTANT: If you make any changes to the configuration file, you must restart the Remote DS-VDR service or daemon for the changes to take effect.

This file contains the following parameters:

Parameter	Description
Port	The port the Remote DS-VDR Tool service listens on for DS-System connections. • Default is 4406 • Do not change this unless there is a specific requirement to do so.
MaxRestore	The maximum number of concurrent virtual machine restores allowed. • Default is 5. • Changing this value can significantly impact performance, therefore testing and optimization is strongly recommended if you alter the default value. • Tip: The memory consumption varies in accordance with the number of threads and size of the virtual machine being restored. Typically, one thread takes approximately 1-2GB of RAM for a virtual machine total restore size of approximately 5-10GB. Therefore if using the default (5 threads), you would need at least 5-10GB RAM on the computer running the DS-RVDR daemon.
LogLevel	Varies the amount and type of logging information inside the /tmp/vdr.out log file. Valid values: • **none** = (Default) No information is logged. • **error** = Logs errors. • **debug** = Logs detailed messages for debugging. • **warning** = Logs warnings. • **info** = Logs information messages. • **trace** = Logs all of the above.
LogFilter	This string specifies a filter in Perl regular expression format. A regex search operation is performed and only matching lines are printed. • Default is . (dot, meaning log all)
SoapDebug	This is to get detailed logging of the Hyper-V or VMware communication between Remote DS-VDR server and virtualization server. Logs typically go to /tmp/soap_sent.log, /tmp/soap_recv.log and /tmp/soap_test.log. • Valid values: ON or OFF • Default is OFF.

10.8 Replication

This section describes how to configure DS-System for replication.

10.8.1 About replication

Replication allows you to send data from a primary DS-System to other DS-Systems in a DS-System replication group. You can add as many DS-Systems (Windows or Linux) as you want to a DS-System replication group, and each DS-System will have a copy of the shared DS-Client data.

You need at least two DS-Systems to perform replication. A FullFeatured DS-System can replicate DS-Client data one way to a replication DS-System. Two FullFeatured DS-Systems can replicate shared DS-Client data to each other. Only backup data replicates from one DS-System to another. Items that are not replicated include logs and DS-Client configuration settings. By default, DS-Systems in a replication group communicate with one another on port 4409.

NOTE: You can change the DS-System group communication port by updating the **GrpPort** parameter. For more information, see Section 3.4, “Configuring the advanced settings”, on page 31.

Once a DS-System group is configured and is replicating, the corrective capabilities are multi-directional. This means that any data loss on one DS-System can be corrected with the data from another. When a DS-Client connects to a replication DS-System, it can continue to restore data as if it were connecting to the primary DS-System. The only condition is the replication DS-System must be up-to-date with the production DS-System data. For more information, see Section 10.8.11, “Clearing the replication flag”, on page 222.

To maximize the replication speed, DS-Systems in a replication group send only deltas after the first master generation of a file is replicated (replication is “incremental forever”). For example, a backup file with 100 generations even if it has 1 master every 10 generations on the primary DS-System, would only replicate the first master file and then send 99 delta generations. Since each DS-System is responsible for managing its own backup data, the task of optimizing what is stored is left to each replication DS-System. Because replication sends one master and only deltas for a backed up file, each DS-System that receives replicated data may encounter long delta chains (e.g. 20 or more deltas in a row after a master). Since this may create a performance issue in the event you need to restore, the DS-System has a built-in optimization capability that it runs on schedule. By default, the DS-System schedules and runs a delta chain optimization task once a day. For more information, see Section 3.8, “Configuring the delta chain settings”, on page 67.

Since some backup files can be very large, replication has the capability to resume at the block-level from failed transmissions of replicated data. Block-level resume is performed for files that are over 10 MB in (stored) size on the DS-System online

storage. Block-Level Resume allows the replication to continue from the last successful file block transmitted to the replication DS-System. The benefit increases with the size of the file being replicated. Without this feature, replication of a large file that is interrupted because of a slow / poor connection would have to restart from the beginning of the file.

The protected size always remains the same for each replicated DS-Client's data. However, replication tries to optimize on transmission time and storage, which can result in the stored size being significantly different between the primary and replication DS-Systems. For this reason, an invoice generated in DS-Billing for a replication DS-System might show different storage numbers than an invoice generated in DS-Billing for the primary DS-System. The following are some possible reasons:

- Library files are replicated from a primary DS-System to a replication DS-System as libraries and their information is inserted in the DS-System database of the replication DS-System so that future files with the same content will link to them. The invoices in DS-Billing for the primary DS-System are calculated by adding a library amount once for each DS-Client that links to that library. If only some of the DS-Clients are replicated from the primary DS-System, those differences will show up in the invoiced amount.
- Incremental forever replication is performed from the primary DS-System. Only the first generation of a file that qualifies for master/delta processing is replicated as a master generation (including all data blocks). Incremental generations are replicated as delta generations. In certain scenarios, the primary DS-System might store more master generations for the same file than the replication DS-System. Those differences will show up in the invoiced amount (stored size). All new DS-System installations will ignore recycled delta generations when calculating 'stored size'. You can configure this behavior separately, for each DS-System in the replication group using the **ExcludeRecycleDelta** parameter. For more information, see Section 3.4, “Configuring the advanced settings”, on page 31.

For customers who need to recover a large quantity of data, the disc/tape feature may not provide a fast enough solution. For these cases, a replication DS-System allows you to use that replica of the production DS-System to be physically sent to the remote location. It can be used as follows:

1. Ship the replication DS-System to the remote restore location.
2. Connect replication DS-System to the remote restore LAN with the fastest possible connection speeds.
3. On each DS-Client, change the IP address to the replication DS-System.
4. Restore at LAN speed.

10.8.2 Switching from a replication DS-System to a production DS-System

In a disaster scenario where you lose your production DS-System, you can switch the replication DS-System to a production DS-System so your DS-Clients can continue to backup and restore data without interruption.

When using a Capacity License Management (CLM) license, if the secondary sites are running replication DS-Systems, you must obtain an emergency software license for the production license ID to enable the replication DS-Systems to accept new backup data. DS-Clients can be preconfigured with the alternate IP address of the replication DS-System or can be updated with the secondary DS-System connection information automatically. For more information, see Section 5.18, “Sending DS-System IP configuration updates to DS-Clients”, on page 126.

When using a Recovery License Model (RLM) license, you must change the DS-System license type to FullFeatured to accept new backup data from DS-Clients.

To switch a replication DS-System to a FullFeatured production DS-System:

1. Ensure that the production DS-System IP address can be maintained. If not, ensure that DS-Clients have the replication DS-System's IP address configured as a secondary DS-System connection.
2. On the DS-License Server, change the DS-System type from **Replication** to **FullFeatured** and allocate the same license capacities. For more information, see the *DS-License Server User Guide*.

NOTE: If the DS-License Server does not have enough license capacity available for allocation, you can disable the old production DS-System license on the DS-License Server, which will immediately free its allocated license storage capacity.

10.8.3 Performing the initial replication

This section describes how to perform the initial backup of replication data.

NOTE: You must be familiar with the initial backup process. For more information, see Section 10.6, “Initial backup”, on page 202.

In a replication environment, each replication DS-System must receive a copy of the initial backup data. This can be accomplished in one of two ways:

- You can allow replication to occur automatically from the production DS-System. No action is required other than importing the initial backup data. However, the backup sets will replicate the data over the WAN, which can take some time for large amounts of data.
- You can perform the initial backup to all the DS-Systems in the replication group. This requires some configuration and specific steps . However, once completed, you will be able to perform a backup immediately. Incremental forever backups can take place immediately after the initial backup has been imported to the production DS-System. However, you must wait until the initial backup has been imported to all the replication DS-Systems before sharing the DS-Clients again for replication.

To perform the initial backup to all DS-Systems in a replication group:

1. Perform an initial backup of the data to removable media that can be shipped to both the production DS-System and then to the replication DS-System(s).

   NOTE: The DS-Client account must exist on the production DS-System and all replication DS-Systems.

2. Unshare the DS-Client on all DS-Systems (production and replication). This will prevent any replication processes from being triggered for that DS-Client.
3. Run the initial backup import from the removable media to the production DS-System.

   NOTE: After this import is complete, the DS-Client can immediately perform backups of this backup set to the production DS-System.

4. Run the initial backup import from the same removable media to the replication DS-System(s).
5. Once the import is finished, share the DS-Client again for replication on all DS-Systems.
6. On the production DS-System, perform a replication check on the imported backup sets. (On the **Setup** menu, click **DS-System Group**, and then click **Check Replications**.)

If the initial backup was successfully imported to all DS-Systems, there will be no replication send / receive for this backup set.

10.8.4 Enabling replication

To set up multi-directional replication:

Enable the replication feature on each DS-System that will be part of the DS-System replication group. You must configure at least two DS-Systems.

1. On the **Setup** menu, click **Advanced Configuration**. The **Advanced Configurations** dialog box appears.
2. Edit the **DSSysGroup** parameter to a value of “1” (active) and click **OK**.
   - The advanced parameter values for **GrpSerialCode**, **GrpPort** and **GrpEncrypt** must be the same for all DS-Systems in the same replication group.
   - You can also configure the other replication settings. These deal with how the DS-Systems communicate with one another in the replication group. The defaults are sufficient, and can be changed later, if required. Refer to the online help for the **Advanced Configurations** dialog box for more details on each parameter.
3. Restart the DS-System service.
4. Repeat steps 1-3 on each DS-System that will be part of the replication group.

10.8.5 Configuring a DS-System group for replication

Each DS-System in a replication group must know the IP address of the other members of the group. This configuration can be done once, from a single DS-Operator connection to any of the DS-Systems.

To configure a DS-System replication group:

1. On the **Setup** menu, click **DS-System Group**, and then click **Configuration**. The **DS-System Group Configuration** dialog box appears.

   F1 Help: Replication - DS-System Group Configuration

2. Configure the list of DS-Systems that are members of the replication group. Click **New** or **Modify** to add or edit entries in the list.

   F1 Help: New / Modify DS-System Address (DS-System Group)

   - You must indicate which DS-System is the **Local DS-System** (that is, the one that the DS-Operator is currently connected with).
3. Continue until you have completed the list of DS-Systems in the replication group.

   IMPORTANT: Verify you have input the correct IP addresses.

4. Click **Apply**.

   The **Local DS-System** attempts to communicate with the other DS-Systems in the list and if successful, it will populate the replication group configuration to the other DS-Systems in the list.

10.8.6 Sharing customers and DS-Clients

Once the DS-System replication group has been configured, you can enable replication at the individual DS-Client level. Sharing a customer account permits its DS-Client accounts to be shared, however replication is only performed on shared DS-Clients.

NOTE: If you try to share a customer or DS-Client whose number already exists in the DS-System group, an error message will appear. You must change the corresponding duplicate number (see: Section 10.8.10, “Renaming a customer account or DS-Client account”, on page 221).

To share customers and DS-Clients individually:

1. On the source (original) DS-System, browse the **Customers** tree and select the customer you want to share for replication.
2. On the **Customer** menu, click **Share Customer**. The shared customer account is created on all the other DS-Systems in the replication group (it is automatically shared, which is indicated by the shared customer icon).

   NOTE: You do not need to be connected to the other DS-Systems via DS-Operator.

   - Each replicated customer account is assigned the respective DS-System’s default profile and storage settings.
   - You should review the customer profile on each DS-System to see that it is configured as you want.
3. On the source (original) DS-System: browse the **Customers** tab and select the DS-Client you want to share for replication. On the **DS-Client** menu, click **Share DS-Client**.
   - The shared DS-Client account is created on all the other DS-Systems in the replication group (under the corresponding customer account). It is automatically shared, which is indicated by the shared DS-Client icon.
   - Each replicated DS-Client account is assigned the respective DS-System’s default profile and storage settings (some are inherited from the customer account profile settings).

4. Review the DS-Client profile on each DS-System to see that it is configured as you require (in the **Customers** tab, browse and select the DS-Client, and then on the **DS-Client** menu, click **Edit**).

NOTE: At this point you are free to direct the DS-Client data to any storage location on the Replication DS-System. For example: if the data on the original DS-System was stored on three extensible storage locations, you could consolidate all of it, including libraries, to one location or storage group on the Replication DS-System.

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5. At this point, the shared DS-Client data will be automatically replicated to the other DS-Systems in the replication group, based on the source (original) DS-System's replication configurations. See Section 10.8.4, "Enabling replication", on page 216.

   To begin replication immediately:

   - On the source (original) DS-System browse the **Customers** tree and right-click on the DS-Client you want. Click **Check Replication**.

NOTE: Replication at this stage will likely take some time, since all the shared online data must be replicated to each of the other DS-Systems in the replication group.

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6. A confirmation popup appears. Click **Yes**. The Replication DS-System begins to receive the replicated backup set data.

To share multiple customers:

1. On the **Setup** menu, click **DS-System Group** and then click **Share Customers**. The **Share Customers** dialog box appears showing all customers that are not currently shared.

   F1 Help: Share Customers

2. Select all the customers you want and click **Share**. They are all immediately shared.

3. Verify the activity log (activity type: **Group Admin**) for any errors.

To share multiple DS-Clients:

1. On the **Setup** menu, click **DS-System Group** and then click **Share DS-Clients**. The **Share DS-Clients** dialog box appears showing all DS-Clients that are not currently shared.

   F1 Help: Share DS-Clients

2. Select all the DS-Clients you want and click **Share**. They are all immediately shared.

3. Verify the activity log (activity type: **Group Admin**) for any errors.

10.8.7 Checking replication

This dialog box allows you to check replication for multiple DS-Clients.

To check replication for multiple DS-Clients:

1. On the **Setup** menu, click **DS-System Group** and then click **Check Replications**. The **Check Replications** dialog box appears.

   F1 Help: Check Replications

2. The dialog box shows all DS-Clients that are currently shared.

3. Click **Check** to check replication on all the selected DS-Clients. This moves the backup sets from the selected DS-Clients to the front of the replication request queue. (See the **Replication Requests** tab of the **System Status** dialog box.)

   - Verify the activity log (activity type: **Group Admin**) to see if there were any errors.

10.8.8 Viewing the replication status

This dialog box allows you to view the replication status for the backup sets from multiple DS-Clients.

To view the replication status of multiple DS-Clients:

1. On the **Setup** menu, click **DS-System Group** and then click **Replication Status**. The **Replication Status** dialog box appears.

   F1 Help: Replication Status

2. Select the DS-Clients to view and click **Check**. The **Replication Status (DS-Clients)** dialog box appears.

   F1 Help: Replication Status (DS-Clients)

3. This dialog box shows the status of all backup sets from the selected DS-Clients.

10.8.9 Unsharing customers and DS-Clients

To unshare multiple customers:

1. On the **Setup** menu, click **DS-System Group** and then click **Share Customers**. The **Unshare Customers** dialog box appears.

   F1 Help: Unshare Customers

2. The dialog box shows all customers that are currently shared.

3. Select all the customers you want and click **Unshare**. They are all immediately unshared.

- Verify the activity log (activity type: **Group Admin**) to see if there were any errors.

To unshare multiple DS-Clients:

1. On the **Setup** menu, click **DS-System Group** and then click **Unshare DS-Clients**. The **Unshare DS-Clients** dialog box appears.

   F1 Help: Unshare DS-Clients

2. The dialog box shows all DS-Clients that are currently shared.
3. Select all the DS-Clients you want and click **Unshare**. They are all immediately unshared.
   - Verify the activity log (activity type: **Group Admin**) to see if there were any errors.

10.8.10 Renaming a customer account or DS-Client account

Since each customer must have a unique account number, you may need to rename a customer account or DS-Client account if you are using FullFeatured DS-Systems for multi-directional replication. You will get an error message if you try to share a customer or DS-Client with the same number into the DS-System Group.

IMPORTANT: If you change the customer account number or DS-Client account number, the corresponding DS-Client will not be able to connect to the DS-System until its configuration settings are updated with the new numbers.

To rename a customer account:

1. On the Local DS-System (the DS-System containing the account to be shared), browse the **Customers** tab and select the customer account you want.
2. Right-click and then select **Rename Customer**. The **Rename customer account number** dialog box appears.

   F1 Help: Rename customer account number

3. Type a new account number and click **OK**.
   - At this point, all DS-Clients for this customer will receive an error message indicating they must change the DS-Client configuration to the new account.
   - You can now re-try sharing the customer account in the replication group.

To rename a DS-Client account:

1. On the Local DS-System (the DS-System containing the account to be shared), browse the **Customers** tab and select the DS-Client account you want.
2. Right-click and select **Rename DS-Client**. A confirmation popup appears. Click **Yes**.
   - The DS-Client is automatically renumbered. This may take some time, since the path on the storage location(s) must be changed.
   - At this point, the DS-Client will receive an error message indicating the customer must change their DS-Client configuration to the new account.
   - You can now re-try sharing the DS-Client account in the replication group.

10.8.11 Clearing the replication flag

This situation can only occur on a Replication DS-System.

It occurs during the interval when a Primary DS-System has not finished sending all the data from a replication session. During that interval, the backup set is not accessible on the Replication DS-System (it will return the error "`The backup set has not yet completed the replication.`").

During this interval, if the Primary DS-System fails (connection is lost, disaster, etc.), any backup sets that have not finished replicating on the Replication DS-System will reject DS-Client connections.

- Once the Primary DS-System is back online, it will finish the replication and this situation no longer applies.

This option only applies if customers need to use the Replication DS-System immediately (that is, the Replication DS-System must perform with the data it currently has).

Any backup sets affected by this situation will not be immediately accessible, since DS-Client will receive the error: "`The backup set has not completed the replication.`" For these backup sets, you have the option of clearing the replication flag:

1. On the Replication DS-System, browse the **Customers** tab and select the backup set you want.
2. Right-click and then select **Clear Replication Flag**.
   - This allows the DS-Client to connect to Replication DS-System.
   - Any data from the last unfinished replication session will be removed when the DS-Client connects and synchronizes with the Replication DS-System. (Note the potential impact this will have on your customer.)

10.9 VM replication

This section describes how to configure VM replication.

This tool can only be licensed to a DS-System from a DS-License Server RLM.

10.9.1 About VM replication

VM replication is a feature that the DS-System can enable for its DS-Clients. Once configured, a DS-Client will allow creation of replication sets.

This VM replication set does not send any data to DS-System. When it is run, the source DS-Client instructs the target vCenter or Hyper-V server to snapshot the selected virtual machines. The source DS-Client then sends the replication data to the destination DS-Client. The destination DS-Client takes care of creating the replication virtual machine on the target vCenter or Hyper-V server.

NOTE: VM replication is based on the number of replicated virtual machines or the native capacity of the virtual machines. The source DS-Client must have sufficient VM replication capacity to cover the size of its VM replication sets.

10.9.2 Configuring a VM replication group

When configuring a VM replication group, you must add at least two DS-Clients (each line represents a DS-Client). For each Destination DS-Client IP address, you must add a line pointing to the IP addresses of the other DS-Clients in the group. This will allow the reverse transmission of data on failback. For more information, see the *DS-Client User Guide*.

To configure a VM replication group:

1. On the **VM Replication** menu, click **VM Replication Groups**.

   F1 Help: VM Replication Groups

2. In the **VM Replication Groups** dialog box, do one of the following:

   - To add a VM replication group, click **Add**.
   - To modify an existing VM replication group, select it, and then click **Edit**.
   - To delete an existing VM replication group, select it, and then click **Delete**.
   - To export a VM replication group configuration to an XML file, click **Export**, select a name and destination for the file, and then click **Save**.
   - To import a VM replication group configuration from an XML file, click **Import**, select the file, and then click **Open**.

   F1 Help: Add / Edit VM Replication Group

3. In the **Add/Edit VM Replication Group** dialog box, select a source DS-Client and then configure the destination DS-Clients it can use.

   a) To configure the list of destination DS-Clients, click **Destination**.

      F1 Help: Add / Edit VM Replication Group Destination Information

   b) In the **Add/Edit VM Replication Group Destination Information** dialog box, click **Add**, and then type the IP address and port number of the destination DS-Client.

   NOTE: You can assign multiple destination DS-Client IP addresses. However, you must also define each of these DS-Clients on a separate line as a source DS-Client in the **Add/Edit VM Replication Group** dialog box and point to the IP addresses of the other destination DS-Clients in the replication group.

   c) To save the destination DS-Client list, click **OK**.

   d) To save the replication group, click **OK**.

   e) Repeat this step for each of the DS-Clients in the replication group.

   NOTE: If the IP address of the destination DS-Client changes after replication has been performed, you must configure a new replication group.

4. Allocate the VM replication capacity and VM replication count to the DS-Client. For more information see, Section 5.3.2, “Configuring the DS-Tools”, on page 111.

IMPORTANT: You must restart DS-Client computers one-by-one after you modify a VM replication port, because each DS-Client has to update the database on the peer side. This is applicable if you modify a VM replication port from DS-User or DS-Operator. After you have modified the VM replication port settings for multiple DS-Clients, stop and restart the DS-Client service on each affected computer one at a time. Wait until the DS-Client service has successfully restarted on one computer before you stop and restart the DS-Client service on another computer.

11 DS-Operator F1 Help for GUI (Context-Sensitive)

F1 Help provides descriptions for the contents of the different GUI dialog boxes of the DS-Operator. It differs from the *DS-System User Guide* sections, which provide step-by-step instructions.

This section contains the alphabetical list of F1 Help dialog boxes for the DS-Operator.

About DS-Operator

This dialog box shows the current version of this installation of the DS-Operator program.

DS-System Info	Brings up the DS-System Version Info dialog box.
Ports	Brings up the Listening Ports dialog box.
JRE	Brings up the Java Runtime Environment Properties dialog box with information on the local computer where DS-Operator is running.

Activate / Deactivate Delete Lock

This dialog box allows you to activate or deactivate a “Delete Lock” on the selected customer account or DS-Client for the DS-System’s data.

Account Number	Shows the corresponding customer account number selected.
DS-Client Number	This field appears if a specific DS-Client is selected.
Comment	You must type a comment in this field. • This comment will be appended for historical purposes in the DS-System database.
Lock / Unlock	Click to activate or deactivate the “Delete Lock”.

Active Archive Requests

This dialog box lists all archive requests that have not finished copying data to the BLM.

Archive Request List	Each line is a separate archive request. • ID • Create Time • Account # • DS-Client # • Backup Set • Status • Request

Filter	If the Archive Request List is long, you can filter for the following conditions: • Account # • DS-Client # • Created Before • Created After
Start	Click to restart the selected item from the Archive Request List. Opens the Restart Archive Requests.
Delete	Click to delete the selected item from the Archive Request List.

Activity Distribution

This dialog box presents a visual summary of the Activity Log. A single click on the display will show the Activity Detail for that point. A double click will bring up the event log for that point.

Distribution Chart	Displays the activities over time, separated by type: Backup, Daily Admin., etc. All activities are sorted by line.
Selected Activity Detail	Shows the information from the selected point in the Distribution Chart.
Select by	Adjust the time or size of the Distribution Chart. You can also narrow down what is displayed by Customer, DS-Client, or (if applicable) DS-System ID (N+1 node).

Activity Priority Management

This dialog box allows you to assign DS-Clients to a specific priority schedule.

DS-Client List • Customer Name • Account # • DS-Client # • Schedule Name - Shows the current Activity Priority Schedule that applies to the DS-Client.	
Account #	Select a specific account number to display only DS-Clients belonging to that customer. • Click the [...] button to open the Select Customer dialog box.
Priority Schedule Name	Shows the Priority Schedule that will be set.
Set	Applies the Priority Schedule listed to the DS-Client(s) selected in the list. • Once you click **Set**, the changes are immediate.

Activity Priority Schedule

NOTE: Changing any settings in this dialog box will affect DS-System behavior. It is only intended for use by advanced administrators with specific requirements determined from their experience with DS-Client activity patterns on the DS-System. This feature changes the priority levels of the various activities that run on DS-System.

Activity Priority Schedule List • This contains the list of Priority Schedules defined on the DS-System. • There is a <DEFAULT> Activity Priority Schedule, which cannot be deleted. • All new DS-Clients are automatically assigned to the <DEFAULT> schedule.	
New	Click to create a new Activity Priority Schedule. • Opens the New / Modify Activity Priority Schedule dialog box. • Creates a new Activity Priority Schedule, based on the current <DEFAULT> Schedule Details.
Modify	Click to edit the selected Activity Priority Schedule. • Opens the New / Modify Activity Priority Schedule dialog box.
Delete	Click to delete the selected Activity Priority Schedule. • You can only delete an empty Activity Priority Schedule (one that does not have any assigned DS-Clients).
Restore Defaults	Resets the Activity Priority Schedule on the DS-System to the 'factory default settings'. • All DS-Clients will be moved to <DEFAULT>. • The <DEFAULT> Priority Schedule will be reset to its initial default settings.
Schedule Details: '...' • This contains the details for the item selected in the Activity Priority Schedule List. • The first Schedule Detail in the initial <DEFAULT> schedule covers the entire week (7 days / 24 hours). This Detail contains a list of all activities, set to their initial default settings. • The second Schedule Detail in the initial <DEFAULT> schedule covers the regular business hours in a week (Monday to Friday / 8AM-6PM). It contains the upgrade in priority for the CDP Backup activity to "2" from its default level of "12". • You can add more details or edit these existing details, as required. • If you create a new Activity Priority Schedule, it will be created with the same Schedule Details as the <DEFAULT> schedule.	
New	Click to create a new Schedule Detail. • Opens the New / Modify Schedule Detail dialog box.
Modify	Click to edit the selected Schedule Detail. • Opens the New / Modify Schedule Detail dialog box.
Delete	Click to delete the selected Schedule Detail.
Activity Priority • This contains a list of activities and their corresponding priority level during the period covered by the selected Schedule Detail.	
New	Click to add a new activity to the list. • Opens the New / Modify Activity Priority dialog box.
Modify	Click to edit the selected activity. • Opens the New / Modify Activity Priority dialog box.

Delete	Click to delete the selected activity.
DS-Clients assigned to this activity priority schedule: '...' • This list shows all DS-Clients that use this Activity Priority Schedule. • A DS-Client can only be assigned to one Activity Priority Schedule. • New DS-Clients are automatically assigned to the <DEFAULT> Schedule.	
Assign DS-Client	Click to opens the Activity Priority Management dialog box.
Move to <DEFAULT>	Click to move the selected DS-Client(s) back to the <DEFAULT> Schedule.
Select	[Only appears if this dialog box is opened from the Activity Priority Management dialog box.] • Selects the selected Priority Schedule.

Activity Log Viewer

Use this dialog box to view the DS-System activity log. To narrow your search, you can specify search parameters in the **Filter** section at the bottom. Some search combinations do not require certain fields/buttons.

Activities List	
Account #	Shows the customer account number associated with the corresponding activity.
DS-Client #	Shows the DS-Client associated with the activity.
Type	Shows the type of activity.
Description	Displays the backup set associated with the activity. (Some activities may not have any description information).
Errors	Shows the number of errors that occurred during the activity (if any).
Warnings	Shows the number of warnings that occurred during the activity (if any).
Session Start	Shows the date and time the activity was started.
Session End	Shows the time the activity was completed.
Duration	Length of time between the activity's start and end times.
Completion	Shows how the activity finished: • Premature - the activity was severed before the process could complete normally. • Successful - the activity completed normally. • With Errors(#) - the activity completed normally, but errors occurred during the activity's process. The number of errors is indicated in brackets. (Some activities may not contain any completion information).
Files	Shows the number of files that were transferred/processed.
Online Inc	(Online Incremental) Shows the net addition (or reduction) of data to the online storage amount after completion of the listed transfer session (i.e. the difference between the total online storage before, from the total online storage after the session).
Online Amount	Shows total amount of Regular (i.e. non-Delta generation or Library) files after completion of the session.

Transmit Amount	Shows the total amount of data transferred/processed between the DS-Client and DS-System (including encryption/compression). [For System Admin Activities, this number represents the actual size on the DS-System, including encryption and compression.]
Delta Amount	Shows the total amount of the data transferred/processed that are Delta generation files (excluding master files).
Lib Amount	Shows the total amount of the data transferred that was saved to the Common files libraries.
ID	Shows the ID number of the corresponding activity.
Set ID	Shows the Backup Set ID number of the corresponding activity (if applicable).
Note	Shows additional information for the corresponding activity (if applicable).
DS-Client Status	Shows the reason why the DS-Client stopped the activity (if applicable).
Filter section	
From Time	Type the earliest date you want to display in this field. No activities earlier than this time will be displayed. By default, this field will be set to the start of the current day.
To Time	Type the latest date you want to display in this field. No activities newer than this date and time will be displayed. By default, this is set to the end of the current day.
Customer	Searches for a specific customer's activities.
DS-Client	Searches for a specific DS-Client's activities.
Account # / DS-Client #	This field name reflects the enabled option. Type the customer or DS-Client number you want to view in this field. To access the customer or DS-Client list, click [...]. By default, this field is empty, which displays activities for all customers and DS-Clients.
Activity Type	To view specific activities, choose one from the activity list. The default is <All>.
Backup Set	Type the Backup Set ID number you want to view in this field. To browse for a backup set, click [...]. This brings up the Select Backup Set dialog box. By default, this field is empty, which displays activities for all Backup Sets.
System ID (N+1 DS-Systems)	To view the activities from a specific N+1 node, choose one from the list. The default is <All>.
Find	Updates the activity log display based on the parameters in the **Filter** section.
Event Log	For activities that registered errors, you can view more details by accessing the Event Log dialog box. The From Time, To Time, Select By options in the Event Log will match the start and end times of the selected activity.
DS-Client Event Log	Click this button to bring up the DS-Client Event Log Viewer (if applicable) for the selected item in the Activities List.

Add / Edit Role

Use this dialog box to add or edit a role on the DS-System.

Type	• User: Role applies to the specific user name defined. • Group: Role applies to all users who belong to the group.
User / Group Name	User or group name.
From	Select the domain or server where this user or group is defined. (DS-System will validate supplied credentials with this domain or server.)
Roles	
View Logs	Role with rights to view the logs stored on the DS-System. • All other roles can view logs. This role is intended for users who should be limited to only viewing logs.
Data Operator	User has permissions in DS-Operator to: • Perform daily maintenance work. • View reports • Perform customer account or DS-Client account management. • Manage DR Drills (if available).
Account Manager	User has permissions in DS-Operator for: • Creating, updating, or deleting customers and DS-Clients
Export CRI	User has permissions in DS-Operator for: • Exporting DS-Client .CRI (Customer Registration Information) file.

Add / Edit VM Replication Group

This dialog box allows you to view and configure a VM replication group on the DS-System. Each VM replication group is a mapping of the source DS-Client to the destination DS-Client.

Account ID	Dropdown list of all customer accounts. This is automatically filled when you select the source DS-Client.
Account #	Dropdown list of all customer accounts. This is automatically filled when you select the source DS-Client.
Source DS-Client #	Select the source DS-Client number from this list. • This is the DS-Client where you want users to be able to create the replication sets. • The Source DS-Client is responsible for connecting to the vCenter where the source Virtual Machine exists. • The Source DS-Client must be allocated enough “VM Replication Capacity”. (See “DS-Client - DS-Tools Tab”.)
Source DS-Client Port	Type the port number that the source DS-Client will use to connect to the source vCenter. The default is 8090.
Destination DS-Client IP Address:Port	Shows the destination DS-Client’s IP address and port number. • The Destination DS-Client is responsible for connecting to the target vCenter where the VM is replicated. • The Destination DS-Client must be from the same DS-System as the Source DS-Client.

Add (Add VM Replication group only)	Add a new replication group.
Destination	Click to configure the destination DS-Client IP address and port number. • Opens the Add / Edit VM Replication Group Destination Information dialog box.
Delete (Add VM Replication group only)	Delete the selected replication group from the list.
OK	Save the mapping and close this dialog box.

Add / Edit VM Replication Group Destination Information

Use this dialog box to configure the destination DS-Client IP address.

Add	Click to add a new IP address line.
Delete	Click to delete the selected IP address line.
Destination DS-Client IP Address	Click in this box and type the IP address of the destination DS-Client.
Port	By default this is set to 8090. Click in this field if you want to change the port used by the destination DS-Client.
OK	Click to accept the destination DS-Client(s).

Add / Modify a DS-System Connection

Add or modify a specific DS-System to search for on startup of this DS-Operator GUI installation.

DS-System Type	• Single DS-System • N+1 DS-System
Address	• **Single DS-System**: Address of the DS-System entry. DS-Operator will scan for this specific IP or DNS Address. • **N+1 DS-System**: Type the address of each DS-System node in the N+1.
Port	Do not change this setting unless you have a specific requirement to do so.
Use UDP protocol to discover DS-System	The UDP protocol can display the list of DS-Systems faster, though with less certainty that a DS-System is capable of accepting a connection.

Add / Modify Branding

Use this dialog box to add or modify a branding definition.

Description	Type a descriptive name for this branding image. • You will be able to pick from a list when assigning branding to individual reports.
Logo Image	Select the branding image.
Default Branding	Select to assign this as the default branding. • This may be overridden automatically if the DS-Billing has been configured to 'push' its branding settings to the DS-System.
OK	Click to update the DS-System database with the branding definition.

Add / Modify DS-VDR Server Info

Use this dialog box to configure the information for a Remote DS-VDR server.

Name	Give the Remote DS-VDR server a unique name.
Address	IP address of the Remote DS-VDR server. • The Remote DS-VDR Tool must be installed and running at this IP address. For installation instructions, see the *Client Software Installation Guide*.
Port	By default, this is 4406. Do not change unless there is a specific requirement to do so.
Description	This field is optional.
Type	Select Linux or Windows as the DS-VDR type.

Add / Modify host name or IP address

Use this dialog box to add or modify a DNS host name or IP address.

Add / Modify LDAP Server

Use this dialog box to configure an LDAP server.

IP address	Type the IP address of the LDAP server. • This can be direct or via a proxy server.
Port	The default port is 389. Do not change this, unless you have a specific requirement to do so.
Description	Type a description to help identify the LDAP server.
Authentication	Select how DS-System will supply the credentials to the LDAP server: • **Domain Account** - Connect with user name and domain (User name@User domain). • **NTLM** - (Windows only) Connect with user name and domain using NTLM (more secure). • **Distinguished Name** - Connect using the distinguished name (DN).

User name (Domain Account or NTLM only)	Type the user name the DS-System will use to connect to the LDAP server.
User domain (Domain Account or NTLM only)	Type the domain where the user name is defined.
User DN (Distinguished Name only)	Type the distinguished name (DN) the DS-System will use to connect to the LDAP server. This is usually in a format similar to: `cn=admin,cn=users,DC=domain,DC=company,DC=com`
Password	Type the password for the user account.
Confirm password	Re-type the password for the user account.
Synchronize between DS-System Groups	If the DS-System is in a replication group, you can select this option to 'push' the LDAP server configuration to the other DS-Systems in the replication group.
Verify	Click to verify the configuration with the LDAP server.
Save	Click to save the configuration.

Add / Modify Scheduled Report

This dialog box allows you to create or modify selections for a scheduled report that will be generated and emailed by DS-System.

Description	Type a descriptive name for this Scheduled Report.
E-Mail	Type the recipient's email address.
Report Format	Select the Report format (HTML or CSV).
Report Type	Select the type of report from the drop down list.
Options	The options in this section change, depending on the report selected. They are the same as those from the corresponding Report Print dialog box (when you select one from the Reports Menu).

Add / Modify Scheduled Report (Disk Report)

This dialog box allows you to create or modify selections for a scheduled report that will be generated and written to a disk location by DS-System.

Description	Type a descriptive name for this Scheduled Report.
Directory	Click [...] to browse for the directory where this report will be written to disk. This location must be accessible to the DS-System.
Report Format	Select the Report format (HTML or CSV).
Report Type	Select the type of report from the drop down list.
Options	The options in this section change, depending on the report selected. They are the same as those from the corresponding Report Print dialog box (when you select one from the Reports Menu).

Add / Modify Subnet

This dialog box allows you to type or modify a subnet entry.

Address	Type the subnet address • For example: “222.111.30” searches all resources on the “.30” subnet.
Port	The default setting is “4404”. Normally you should not change this setting.
Use UDP protocol to discover DS-System	Scanning a subnet uses the UDP protocol. • The UDP protocol can display the list of DS-Systems 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 / Modify Virtualization Server

Use this dialog box to configure the connection information for a virtualization server that will be used as a restore target for Remote DS-VDR.

IP address	IP address of the virtualization server.
User name	This must be a valid administrator-level user with permissions on the target virtualization server. • DS-System uses these credentials to access the virtualization server.
Password	Type the user’s password.
Type	Select **VMware vCenter Server** or **Microsoft Hyper-V Server** as the virtualization server type.

Add N+1 Node

When you add a node in this dialog box, you are modifying the N+1 config file (found in `<backup_root>\cluster`).

IP/DNS	IP address or DNS name of the node you want to add.
Port	Default is 3009. • Do not change this setting unless you have a specific requirement to do so.

Add New Media / Edit Media

Use this dialog to add or update information on a specific media type.

Media Name	Name given for the selected media type.
Media Type	Select from one of the options in the drop down list: CD, DVD, Tape, Disk.

Media Size	• Limited size: Allows you to define the capacity of the media (e.g. for CDs, DVDs, etc.). • Unlimited size: (Disk media type only) Disc/Tape requests will be written without consideration for media size limits.
Total Capacity (MB)	Specify the capacity of each unit for the media type (e.g. volume capacity of a CD, DVD, or tape).
Guard Size (MB)	This is a 'buffer' amount that is deducted from the Total Capacity to accommodate any additional space required (that was not estimated).
Block Size (Bytes)	It is best to leave this at the default for the selection.

Administrator Notification Settings

This dialog box allows you to configure the Administrator notification settings.

Customer / DS-Client storage quota has reached Stop Backup level.	Select to enable notification at the selected frequency.
Free space on Storage Location(s) has reached: • Warning level • Emergency level • Stop level	Select to enable notification at the selected frequency. • Notifications are sent when any of the Storage Locations reaches the corresponding level. • These levels are set by the OLWarnLevel, OLEmerLevel, and OLStopLevel parameters (Setup Menu > Advanced Configurations dialog box). Notifications will be sent for Physical space on the Storage Locations. • Physical space is represented by the “Disk Space” column in the Extensible Storage Locations dialog box (Setup Menu > Storage > Extensible Storage). If **any** location reaches a notification level, then a notification is sent.
Storage usage summary, notify between [hh] and [hh].	Select to enable notification between the listed hours. • DS-System will send one notification email with the previous day’s (00:00:00-23:59:59) storage usage.
License will expire in [...] days	Select to enable notification at the selected frequency.
DS-System has reached [..]% of the license’s storage capacity limit.	Select to enable notification at the selected frequency.
Connection between Director and Leaf was lost (N+1 DS-System only)	Select to enable notification each time this event occurs.
N+1 formation process succeeded (N+1 DS-System only)	Select to enable notification each time this event occurs.

Storage Lock for Snapshot	Select to enable notification when the storage is locked or unlocked. • This option only appears if the **AllowStorageLock** value is “1” (True) in DS-System Advanced Configurations.
Remote DS-VDR restore activity has finished	Select to enable notification at the selected frequency.
A DR Drill was activated	[DS-System using DS-License Server RLM only] Select to send an email notification each time a DR Drill is activated (status becomes “Active”).
DS-System is in “Critical Status”.	Select to enable notification each time this event occurs.

Assign Customer to delta chain configuration [...]

This dialog box shows all the customers on the DS-System that can be assigned to the selected delta chain configuration.

- A customer can only be assigned to one delta chain configuration.
- All the customer’s DS-Clients will inherit this delta chain configuration. They can also be assigned to another one at the DS-Client level (see Assign DS-Client to delta chain configuration [...] dialog box).
- Apply: Click to assign the selected customers.

Assign DS-Client to delta chain configuration [...]

This dialog box shows all the DS-Clients on the DS-System that can be assigned to the selected Delta Chain Configuration.

- A DS-Client can only be assigned to one Delta Chain Configuration.
- Apply: Click to assign the selected DS-Clients.

Assign Roles

Use this dialog box to configure the list of roles on the DS-System.

Role List	List of Roles defined on the DS-System. • Icon - identifies if the role is for a user or group • User/Group Name • From - Server where DS-System will validate the user or group credentials • Roles - role(s) assigned to the User/Group
Add	Adds a new role. Opens the Add / Edit Role dialog box.
Edit	Edits the selected role. Opens the Add / Edit Role dialog box.
Remove	Deletes the selected role.

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 List	
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	Shows details of the modification that occurred.
Select By Section	
From	Type the earliest date and time of the modifications you want to examine. (The default is to leave this field blank and search for all modifications.)
To	Type the latest date and time of the modifications you want to examine. By default, this field is set to the current date and time.
Operation	Select the type of operation you wish to examine from this list box. The default selection is <All>.
User	If you want to view the activities of a particular user, type the user's User Name in this field.
Table	Select the table whose modifications you wish to examine from this list box. The default selection is <All>.
Find	Updates the audit trail display based on the search parameters specified in the Select By section.

Autonomic Healing Manager

Autonomic Healing Manager allows you to monitor the process(es) at the backup set level. You can select one or group backup sets to have higher priority for the autonomic healing process from this dialog box.

Backup Set List	
Icon	Indicates the backup set status: • Processing • Errors reported • Warnings reported
Backup Set	Backup set name, including computer name and user name.
Set ID	Internal ID assigned for the backup set. The backup set files are in this directory.
Set Type	The backup set type for the corresponding backup set.
Options	Options for the backup set that will apply during the next autonomic healing process. This is set in the Set Options (Autonomic Healing) dialog box.
Priority	Priority of the backup set for the autonomic healing process. This is set in the Set Priority dialog box.

Current Priority	The priority of the backup set in the current session. The autonomic healing process may adjust this from the default, depending on the previous healing status.
Processing Order	The estimated processing order, based on the current status.
Account	Account number and Customer company name associated with the corresponding backup set.
DS-Client	DS-Client number
Last start	Last start time for the autonomic healing process for the corresponding backup set.
Last end	Last end time for the autonomic healing process for the corresponding backup set.
Last completed (Current View only)	Last time the autonomic healing process successfully completed for the corresponding backup set.
Errors	Number of errors from last autonomic healing process for the corresponding backup set.
Warnings	Number of warnings from last autonomic healing process for the corresponding backup set.
Fixed	Number of problems fixed from last autonomic healing process for the corresponding backup set.
Checked files	Number of files checked from the last autonomic healing process for the corresponding backup set.
Checked protected size	Protected size of data checked from the last autonomic healing process for the corresponding backup set.
Checked stored size	Stored size of data checked from the last autonomic healing process for the corresponding backup set.
Total files	
Total protected size	
Total stored size	
Last status	The last healing status of the autonomic healing process for the corresponding backup set.
View by • Switches the Autonomic Healing Manager's view between the current backup set list and a historical list of processes.	
Select by section	
Selected Backup Set (Current View only)	Searches for backup sets flagged with as "Selected" in the Option column.
From Time / To Time (Show History only)	Limits the display to the time period specified.
Customer	Searches for a specific Customer's backup sets.
DS-Client	Searches for a specific DS-Client's backup sets.
Account # / DS-Client #	This field name reflects the enabled option. Click [...] to access the customer or DS-Client list and make a selection. By default, this field is empty, which displays activities for all customers and DS-Clients.
Set Type	Allows you to filter by backup set type. Click [...] to open the Select Backup Set Type and make a selection. By default, all backup set types will be selected.

Errors / Warnings	Narrow the display to backup sets with the following conditions: • All • With error • With error or warning
Event Log	Click to open the event log for the selected item in the backup set list.
Set Options (Current View only)	Opens the Set Options (Autonomic Healing) dialog box to allow you to set the options for the selected items from the Backup Set List.
Set Priority (Current View only)	Opens the Set Priority dialog box to allow you to set the priority for the selected items from the Backup Set List.
Refresh	Click to update the display (based on the filters made in the Select by section). You must refresh the display any time you change those selections.
Close	

Available DS-Client(s) (System Validation)

This dialog box allows you to select the DS-Client(s) you want to validate in a scheduled System Validation task.

DS-Client List • Customer Name • DS-Client #	
Select	Click to choose the selected DS-Client(s).
Select All	Selects all DS-Clients in the list.
Unselect All	Removes the selection from all DS-Client in the list.

Backup/Restore

Use this dialog box to print or preview the Backup/Restore report.

From Date	Specify a start date for the Report period.
To Date	Specify an end date for the Report period.
Select the scope of the report: • All Customers • A specific Customer • A specific DS-Client	
Account # / DS-Client #	Allows you to specify a particular Customer or DS-Client. Click the [...] button to open the Select Customer or Select DS-Client dialog box, to view a list of available Customers or DS-Clients.
Company Name (Customer Only)	The corresponding customer's company name.

Branding	When you print a report on demand, you can select the branding picture that appears in the report header (or <None> if you want to leave it blank). • The list of branding definitions comes from the Edit DS-System Branding dialog box (Setup Menu > Branding).

Backup Set Report

Customer	Show all backup sets of a specific customer.
DS-Client	Show all backup sets of a specific DS-Client.
Account # / DS-Client #	You must select a customer account number or DS-Client number.
Branding	When you print a report on demand, you can select the branding picture that appears in the report header (or <None> if you want to leave it blank). • The list of branding definitions comes from the Edit DS-System Branding dialog box (Setup Menu > Branding).

Backup Set Selection (System Validation)

This dialog box allows you to select the backup set(s) from a single DS-Client that you want to validate in a scheduled System Validation task.

All Backup Sets	Clear this check box to choose specific backup sets from the Backup Set list.
Backup Set list • Icon: Indicates the backup set type. • Backup Set Name	
Select	Click to choose the selected backup set(s).

Backup Status Report

From Time	Select the start time for the report. • The reporting period will be from this time to the moment you click View or Export.
All Customers / Customer / DS-Client	
Account # / DS-Client #	Select a customer account number or DS-Client number, if required.
Branding	When you print a report on demand, you can select the branding picture that appears in the report header (or <None> if you want to leave it blank). • The list of branding definitions comes from the Edit DS-System Branding dialog box (Setup Menu > Branding).

Show DS-Client Backup Status	Select this check box to show each individual DS-Client's backup status. This selection can be turned off for "All Customers" if you want a shorter report. • Include deactivated DS-Clients • Include unregistered DS-Clients
Show DS-Client Backup Sets	Select this check box to list the backup sets under a DS-Client. The check boxes underneath allow you to limit the backup sets shown to those with DS-Client backup activities: • **that did not run**: backup set did not run any backup activities during the report period. • **that were incomplete**: backup set ran at least once during the report period, but did not finish. • **that finished with errors**: backup set ran at least once during the report period and finished with errors. • **that finished with warnings**: backup set ran at least once during the report period and finished with warnings. • **that are currently running**: a backup is currently running on the backup set as of the time the report was generated. • **that finished successfully**: backup set ran at least once during the report period and completed successfully.

Bandwidth Throttle

You may set a maximum bandwidth for each DS-Client (both **To DS-System** and **From DS-System**). This is useful if you want to control the bandwidth usage for DS-Clients from a particular customer (or for all customers).

DS-Client list	Lists all DS-Clients and the bandwidth setting. • Select the check box beside each DS-Client in the list you want.
Select All	Click to select all the DS-Clients in the list.
Unselect All	Click to clear the selection of all DS-Clients in the list.
Invert Selection	Click to switch the current selection. Whatever is selected will become cleared, and whatever is cleared will become selected.
Select by	Search for a specific customer account number or DS-Client number. • Click [...] to open the Select Customer dialog box or Find DS-Client dialog box.
Find	Click to find customers and DS-Clients, based on the Select by parameters.
Bandwidth throttle	
To DS-System	If set, the DS-Client's backup bandwidth is limited to the specified amount. • **Unlimited** • **Limited to** ([...] Kilobytes per second) • **Scheduled**: Select a schedule that can have varying throttle levels. Click [...] to open the Select Bandwidth Throttle Schedule dialog box.

From DS-System	If set, the DS-Client's restore bandwidth is limited to the specified amount. • The options are the same as for 'To DS-System' above.
Apply	Click to set all selected DS-Clients to the bandwidth throttle specifications.

Billing Registration

Use this dialog box to allow the DS-System to be registered with a specific DS-Billing Server. You (the DS-System administrator) must permit registration before it can be completed from the DS-Billing GUI.

Billing Server Info	
IP	The IP address of the target DS-Billing Server. • Only one DS-Billing Server can be specified at a time. • The DS-Billing Server at this address will be permitted to connect with the DS-System.
Status	Shows if the registration has been completed from the DS-Billing Server side.
Unregister	Allows you to remove the existing registration. • Once you unregister, no more connections to the DS-System will be allowed from that DS-Billing server.

BLM Archiving Wizard - Review Selection page

Current Selection List	Shows the path of the item(s) selected for BLM Archive.
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.
Session Label	Each archive package is automatically time-stamped. To make searching archive packages easier, you can add your own label (alphanumeric string).
Generations to include	• All generations - Creates a BLM Archive containing all the (online) generations of all items selected. • Latest generation - Creates a BLM Archive containing the latest generation of all items selected.

Close active package	Select to use a new archive package. Otherwise, the 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 may 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.
Use 3rd Party Snapshot	WARNING: You must have the third-party software installed and functioning properly, otherwise the backup set will remain locked until you delete the BLM Request. • If not selected, DS-System locks a backup set for the duration of the BLM Archiving activity. • If selected, you instruct DS-System to use a third-party snapshot for the BLM copy requests (to unlock a backup set as quickly as possible). DS-System integrates with third-party software to create a snapshot of the required directories. Once the snapshot is created, DS-System unlocks the backup set. The BLM Request will be performed from the snapshot data.

BLM Archiving Wizard - Select Items for Archiving page

Select Items List	Select the item(s) to include in the archive package.

BLM Destruction Certificate

This dialog box prints the certificates for the selected period.

Period	Select the Year and Month of the report you wish to view.
Select by	Select the column on which you wish to sort the report: • Customer • DS-Client
Branding	When you print a report on demand, you can select the branding picture that appears in the report header (or <None> if you want to leave it blank). • The list of branding definitions comes from the Edit DS-System Branding dialog box (Setup Menu > Branding).

BLM Registration Wizard

This page allows you to register the DS-System with a BLM Archiver.

Address	The IP address of the BLM Archiver you want to register the DS-System with.
Port	Normally, you should leave this at its default setting.
Protocol	Select the communication protocol: • Encrypted: All communications between the DS-System service and BLM Archiver 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.
Assistant threads	The number of additional file processing threads that DS-System will use for each BLM Archiving activity. The default is 2 (valid values: 0-10).
Bandwidth Throttle	If set, the DS-System's bandwidth to the BLM Archiver is limited to the specified amount. This throttle only applies to BLM Archiving processes. • **Unlimited** • **Limited to** ([...] Kilobytes per second) • **Scheduled**: Select a schedule that can have varying throttle levels. Click [...] to open the Select Bandwidth Throttle Schedule dialog box.
Available Accounts List The available accounts are defined on the BLM Archiver. An account is displayed if the DS-System's IP address matches or fits in the IP Range specified for the account on the BLM Archiver. • You must select an account before clicking 'Finish'. • Refresh: Click to update the list of account(s) you can use.	

BLM Status

This dialog box allows you to view and change the settings for the BLM Archiver the DS-System is currently using.

Status	Shows if the DS-System is registered.
IP/DNS	Shows the IP address of the BLM Archiver the DS-System is registered with.
Port	The port used by DS-System to connect with the BLM Archiver. • Do not change this setting unless you have a specific requirement to do so.
Protocol	Select the communication protocol: • Encrypted: All communications between the DS-System service and BLM Archiver 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.
Assistant threads	The number of additional file processing threads that DS-System will use for each BLM Archiving activity. The default is 2 (valid values: 0-10).

Bandwidth Throttle	If set, the DS-System's bandwidth to the BLM Archiver is limited to the specified amount. This throttle only applies to BLM Archiving processes. • **Unlimited** • **Limited to** ([...] Kilobytes per second) • **Scheduled**: Select a schedule that can have varying throttle levels. Click [...] to open the Select Bandwidth Throttle Schedule dialog box.
Unregister	Click to unregister the DS-System from the BLM Archiver.

Change Password

Use this dialog box to change your password.This feature is not supported for N+1 DS-Systems.

Old Password	Type your current password in the Old Password field.
New Password	Type your new password in the New Password field. **Note**: Windows Passwords are cAsE SensiTiVE
Verify new Password	Type your new password again in the Verify new Password field.

Check Replications

This dialog box allows you to run “Check Replication” multiple DS-Clients at once.

Customer List	Each line corresponds to a DS-Client. • Account ID • Client ID • DS-Client # • Account # • Customer Name
Check	Starts the “Check Replication” for the selected DS-Clients. • You can view the Replication Request Queue from the System Status dialog box Replication Requests tab.

Clean DS-Client Logs

Use this dialog box to remove older DS-Client Logs from the DS-System database.

Older than	Select the month of the oldest log you want to keep.
Delete	Click to delete all DS-Client logs older than the selected date.
Keep DS-Client logs for [...] months	Select the number of months you wish to keep DS-Client logs in the DS-System database.

Configure plugin

Use this dialog box to configure the selected plugin. Configurable feature will depend on the plugin selected.

Connect to DS-System Service

Use this dialog box to connect to the DS-System. This dialog is launched when you select a DS-System from the list at the left of the DS-Operator main window.

Connection Properties	
Server	Shows the selected DS-System computer.
Protocol	• Encrypted: All communications between the DS-Operator GUI and DS-System 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-System computer that is either an Administrator, or a user with equivalent rights.
Password	Type your password.
From	Select the domain or server on which the username and password will be verified. (i.e. DS-System validates supplied credentials with this domain or server.)
Remember Credentials	Select to have the DS-Operator reuse the supplied credentials on each login during the current session. This is reset once the DS-Operator application is closed.

Critical Errors Monitoring - Administrative Processes Tab

Use this dialog box to configure the DS-System Administrative Processes that will be stopped (to prevent them from deleting data) if DS-System is in “Critical Status”.

Administrative processes to be managed Processes in this list will be stopped and prevented from starting when the DS-System is in “Critical Status”. • Icon • ID • Activity Type	
Add	Add more processes to the monitoring list. • Opens the “Critical Errors Monitoring - Please select administrative process” dialog box.
Remove	Remove the selected process from the monitoring list.

Critical Errors Monitoring - Configuration Tab

Use this dialog box to enable and configure DS-System Critical Errors Monitoring.

Enable DS-System Critical Errors Monitor	• Select to enable. • Clear this check box to turn this feature off.

Current DS-System Status • Critical: Red • Normal: Green • **Reset**: Click to reset the DS-System's status to "Normal".	
Set DS-System to Critical Status when errors limit reached	Specify the number of errors at which "Critical Status" applies.
Time Period	Select a period from the dropdown list. • DS-System will be in "Critical Status" if the error limit is reached within this time period. • For example, if the error limit is 100 and the time period is 1 minute, the DS-System will enter Critical Status if more than 100 of the monitored errors occur within 1 minute.

Critical Errors Monitoring - Monitored Errors Tab

Use this dialog box to configure the errors that are counted during Critical Errors Monitoring.

Monitored Errors List This is the list of errors that DS-System counts toward "Critical Status" when the Critical Errors Monitoring is enabled. Each line corresponds to one specific type of error. • Icon (event type) • Event # • Category • Description	
Add / Modify	Add a new event or select and modify an existing event in the list. • Opens the "Critical Errors Monitoring - Please input the monitored event information" dialog box.
Select	Opens the "Event Log Viewer" dialog box where you can search for a specific error that has occurred on the DS-System. • When you select the error you want, you are automatically returned to this dialog box with that error added to the Monitored Errors List.
Remove	Remove the selected event from the Monitored Errors List.

Critical Errors Monitoring - Please input the monitored event information

Use this dialog box to add or modify information about a specific monitored event.

Event #	This is the unique number assigned for the specific event, and it is the number which is used for monitoring purposes. • If adding, you must know this number. • Once set, you cannot change this field.
Category	This is the corresponding Event Log category for this Event number. • If adding, you must know what category the event belongs to. • Once set, you cannot change this field.
Type	Error, Warning or Information.

Description	Text that appears in the description column for this monitored event.

Critical Errors Monitoring - Please select administrative process

Use this dialog box to select from the available Administrative Processes. If none are available, it means you have already selected them all for inclusion in the Critical Errors Monitoring.

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 page to choose the data set name.

Save data set settings	Saves the selections (except for Data Filters) in this DS-Operator installation's "oper.ini" file. You can then access the same Data Set from the first Wizard page.
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 page 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 this DS-Operator's oper.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 page 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 page. • 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 / 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 - Set Data Filters

Use this page to select any filters for the Data Set.

NOTE: If you are exporting a very big log and only want the structure to create a custom report template, you may want to filter (e.g. exporting all activity logs may 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 page. • Select the item you want to filter. The bottom of the page 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 page 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 page 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	Shows the internal Query you 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 page to filter the Customer Report for specific data. Note that you do not need to make any selections in this page.

Filter Column	A list of all fields appears. Select 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 page.

Deactivate DS-Client

This dialog is used to terminate service to the selected DS-Client. It will create a final invoice, covering the period from the last billing date to the deactivation date.

DS-Client #	Type the DS-Client number in this field.
Deactivate	Deactivates the specified DS-Client. A confirmation dialog will appear.
Note	
1	There should only be two circumstances where you need to deactivate a DS-Client: • a) You have received a written request from the customer, asking that the DS-Client's services be terminated. (You should have the written request from the customer in hand). - or - • b) You have sent the customer a written warning that their service will be terminated.

Delete Logs

Use this dialog box to selectively delete older entries from the DS-System database logs. Clearing older entries helps to conserve space. Any logs you clear from the DS-System database are automatically archived by month to text file(s) in "<Backup Root>\logs\yyyymm\table_name.txt".

Activity log	Select the check box beside a log name to clear its entries, and then type how old the logs must be.
Event log	
Client Event log	
Load summary	
Storage summary	
Audit log	
Healing history	
N+1 log (N+1 DS-Systems only)	
Storage History	
Delete	Click to delete the selected log entries.

Delta Chain Configuration

This dialog box allows you to configure various Delta Chain Optimization configurations that can be performed on the DS-System's backup sets.

Configuration This section allows you to create different configuration settings for specific requirements.	
New	Click to create a new Delta Chain Configuration. • Opens the New / Modify Delta Chain Configuration dialog box.
Modify	Click to change the name of the selected Delta Chain Configuration.
Delete	Click to delete the selected Delta Chain Configuration.
Configuration Details For each Configuration, you can add a detail for one or several backup set types. • Each Detail sets the delta chain length for data from the corresponding backup set type. • Data from DS-Clients assigned to this Delta Chain Configuration will have their delta chains maintained at the lengths specified in this list. • If a backup set type is not defined, the default global setting ("Default delta chain length") will apply.	
New	Click to create a new Detail for the selected Configuration. • Opens the New / Modify Delta Chain Detail dialog box.
Modify	Click to change a Detail for the selected Configuration.
Delete	Click to delete the selected Detail from the selected Configuration.

Customers assigned to this delta chain configuration: '...' This section allows you to assign customers to a specific Configurations. • Each line represents a different customer assigned to the selected Delta Chain Configuration. • Each customer can only be assigned to one Configuration at a time. • All of a customer's DS-Clients will use this Configuration unless they are assigned to another one at the DS-Client level.	
Assign	Click to assign a customer to the selected Delta Chain Configuration. • Opens the Assign Customer to delta chain configuration [...] dialog box.
Remove	Click to remove a customer from the selected Delta Chain Configuration.
DS-Clients assigned to this delta chain configuration: '...' This section allows you to assign a DS-Client to a specific Configuration. • Each line represents a different DS-Client assigned to the selected Delta Chain Configuration. • Each DS-Client can only be assigned to one Configuration at a time. • Any customer level configurations that are not overridden by a DS-Client level configuration will continue to apply. • DS-Clients that are not assigned to a Configuration will use either the Customer assignment or the default global setting ("Default delta chain length").	
Assign	Click to assign a DS-Client to the selected Delta Chain Configuration. • Opens the Assign DS-Client to delta chain configuration [...] dialog box.
Remove	Click to remove a DS-Client from the selected Delta Chain Configuration.
Default delta chain length • This is the default global maximum delta chain. Any DS-Client not assigned to a Delta Chain Configuration will use this number. This is the maximum number of consecutive deltas for a file, before a master must be created: • Range 3-99, default is 9.	

Delta Chain Length Information

This dialog box shows the current Delta-Chain Length that applies for a backup set or a DS-Client. For DS-Clients, a list of all the backup set types appears with the current Delta Chain Length that applies.

Disc / Tape Billing Information

This dialog appears when you attempt to mark a Disc/Tape request as 'Mailed'.

Issued Date	This is the date that the Disc/Tape was written.
Number of Copies	Select the number of complete sets of the media you require. (e.g. if there are 10 discs in the set, selecting "2" will send a total of 20 discs.)
Note	
1	Once you click OK in this dialog, the files in the buffer will be deleted.

Disc / Tape Mailing Information

Use this dialog to generate a disc/tape for the selected backup set.

Name	Name of the contact person to whom the media will be addressed and shipped.
Phone	Phone number of the contact.
Address	Mailing Address.
Media	Drop down list allows you to select from the available media options (configured in the Disc / Tape Media dialog).
Options	This section is grayed out. Only the Snapshot option is available from the DS-System side.

Disc / Tape Media

Dialog lets you manage the different media options available to customers for Restore or Snapshots.

Media Name	Name of the media option.
Type	Type of media.
Capacity (MB)	The maximum capacity of the media unit (or “unlimited”). Multiple units will be supplied for Disc/Tape orders that exceed this capacity.
Guard Size (MB)	This is a buffer amount that is subtracted from the maximum Capacity of the media unit for the purposes of calculating how many units are required. This is necessary, since calculations of the backup size are only estimates.
Block Size (Bytes)	Size of the blocks. Use the default as it will likely be the most efficient.
Per Unit Price	Price charged for each media unit.
Service Charge	Flat price charged for the service (in addition to the total price for all media units).
Add	Adds a new media type. This opens the Add New Media dialog.
Delete	Deletes the selected item.
Modify	Opens the Edit Media dialog, allowing you to modify the media item.

Disc / Tape Meta-data Encryption

This dialog box allows you to specify if encryption is used on the Meta-data for the data written to the Disc / Tape buffer.

Encryption Key Type	Select an encryption method. • **NONE**: The meta-data (the descriptive files used to manage the Disc / Tape data) will not be encrypted. • **CLIENT**: The meta-data (and Disc / Tape data) will be encrypted with a key based on the DS-Client’s signature. The data will only be restorable from the same DS-Client that is registered with the DS-System. • **USER-DEFINED**: Type (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.

Meta-data Encryption Key	This field activates if USER-DEFINED encryption is selected. Type 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.

Disc / Tape Order Details

Shows additional information about the backup set.

User Name	Shows the User Name of the owner of the backup set.
Account ID	Shows the Customer's Account ID number on the DS-System
DS-Client ID	Shows the DS-Client ID number (automatically generated by the system when the DS-Client is created).
Backup ID	Shows the ID number for the backup set (used by the DS-System to specify the backup directory).
Time Mailed	The time the Disc / Tape Order was marked as 'Mailed' by the DS-Operator.
File Size (MB)	Shows the total size of the files generated to the buffer.
Contact Person	Name of the customer account contact.
Telephone	Phone number of the customer account contact.
Mailing Address	Mailing address where the Discs/Tapes will be shipped.

Disc / Tape Orders

This dialog shows a list of all the orders for Discs/Tapes received from DS-Clients on the DS-System.

Orders List Columns	
ID	Unique number assigned to each request.
DS-Client #	The DS-Client that made the request.
Backup Set	The relevant backup set.
Time Issued	The time the request was issued from the DS-Client
Status	The status of the request process, from the DS-Client's perspective: • **Requesting** - Disc/Tape is being requested. • **Purchased** - Customer has initiated an order for the specified backup set. • **Finished** - Write to Buffer has finished. • **Writing to buffer** - Data is being written to buffer. • **Mailed** - Disc/Tape has been mailed.
Media	The number of media discs required to fulfill the request.
Type	Name of the media type (defined on the DS-System).
Options	Shows if selected for Disc / Tape Restore, or for Snapshot.
Files	Shows the number of files processed by the DS-System during the request.

Files Failed	Shows the number of files that failed to be processed (if any).
Write to Buffer	Shows the location where the files have been written.
More Info	Brings up the Disc / Tape Order Details dialog, with more details on that specific request.
Write to Buffer	Instructs DS-System to generate the actual files to the specified directory. Use these as the source from which you will burn the discs or write to tape. This can only be done for requests that have been PURCHASED. • Opens the Generate Files to Buffer dialog box.
Mark Mailed	Marks the request as having been mailed. This brings up the Disc/Tape Billing Information dialog. This can only be done for requests that have been FINISHED (written to buffer). This removes the data from the Buffer Directory. Take care not to click this setting until AFTER the data has been copied to Disc/Tape media.
Delete	Deletes the request from the list.
Select By Section	
From Time	Type the earliest date you want to display in this field. No orders earlier than this time will be displayed.
To Time	Type the latest date you want to display in this field. No orders newer than this date and time will be displayed.
Customer	Searches for a specific Customer's activities.
DS-Client	Searches for a specific DS-Client's activities.
Account # / DS-Client #	This field name reflects the enabled option. Click [...] to select the customer account number or DS-Client number you want to view.
Refresh	Updates the list.

DR Drill Requests

This dialog box allows you to view and configure the list of all disaster recovery drills configured for the DS-System.

DR Drill Request List

- ID: Unique internally assigned number for each drill request.
- DS-Client #:
- Backup Set:
- Status: Shows the current status of the DR Drill.
- Registered Time: Shows the date this DR Drill was registered on the DS-System.
- Scheduled Time: Shows the date this DR Drill was scheduled with the DS-License Server. Once a DR Drill is scheduled, the requested Quota is deducted from the DR Drill amount allocated to the DS-System. Once a DR Drill is scheduled, it cannot be edited.
- Active Time: Shows the date when this DR Drill will actually become active. When a DR Drill is active, recovery activities (Restore, Generate files to Disc/Tape buffer) performed on the backup set will ask the user if they want to count the activity as a DR Drill.
- Closed Time: Shows the end date for this DR Drill. Closed DR Drills are no longer active.
- Quota: Maximum amount that can be restored during the DR Drill period and classified as a DR Drill for recovery billing purposes.
- Used: Shows how much quota was actually used during the DR Drill.

Add	Add a new DR Drill to the schedule. • Opens the "New / Update DR Drill Request" dialog box.
Edit	Edit the selected DR Drill from the list. • Opens the "New / Update DR Drill Request" dialog box.
Delete	Delete the selected DR Drill from the list. • Only DR Drills that have not run (are in "Pending" status) can be canceled.
Select by Section	
From	Select the earliest date and time you want to display. No activities earlier than this time will be displayed. By default, this will be set to the start of the current day.
To	Select the latest date you want to display. No activities newer than this date and time will be displayed. By default, this is set to the end of the current day.
Show DR Drill history	Displays DR Drills with 'closed' status.
Customer	Searches for a specific customer's recovery activities.
DS-Client	Searches for a specific DS-Client's recovery activities.
Account # / DS-Client #	This field name reflects the enabled option. Click [...] to access the customer or DS-Client list. By default, this field is empty, which displays recovery activities for all customers and DS-Clients.
Refresh	Updates the list based on the parameters in the "Select by" section.

DS-Client - Advanced Tab

Use this dialog box to configure a DS-Client's advanced settings.

DS-Client Report	
Show "stored size" in Backup Sets report	Select this check box to activate this option. Users on DS-Client side will see additional information about "stored size" in some reports.
Storage History Setting	
History Interval	Choose the default interval at which DS-System will record storage history information for the DS-Client. • This information is used in the Storage Trend (Reports > Charts > Storage Trend). • More frequent intervals (like 5 or 10 minutes) require more space in the DS-System database, however they provide more precise trend information.
Storage Group • Select the Storage Group where data from the DS-Client will reside. • Click [...] to bring up the Storage Groups screen. • If you are creating a new DS-Client, the DS-Client library will be created in this Storage Group.	
Enable two-factor authentication	Select this check box to enable this feature for the DS-Client. If you disable this feature, you must type your current DS-Operator log on password before you can apply the change.

Password	If this box appears, you must type your current DS-Operator user log on password to proceed.
Email Address	Type the email where notifications for this DS-Client will be sent.
Description	Type a descriptive phrase if you wish to have it appear in the Customers tab tree to the right of the DS-Client number.
Mass Deployment	
Auto-registration counter	Make this a “Template DS-Client” for mass deployment. Choose the number of DS-Clients that can automatically register using this template: • You can generate one .CRI file from this “Template DS-Client” and use it for all the DS-Clients you want to mass deploy. Each auto-registered DS-Client will have identical configurations, except for a unique, sequential DS-Client number. • Each new DS-Client installation that connects to this DS-System and tries to register as this “Template DS-Client” will be automatically assigned another sequential DS-Client number (with the exception of the note below). • The counter will drop by one as each DS-Client registers. When it reaches 1, no new DS-Clients will be created (unless you increase the counter). To allow registration of the template DS-Client, clear this option. • Note: If this “Template DS-Client” has the “Requires Registration” option selected (in the Connection tab), each time a new DS-Client request is received the DS-System will check the hardware ‘cookie’ it receives with those of all existing DS-Clients under this same customer account. If a matching cookie is found (meaning an existing hardware installation is trying to re-install a DS-Client), DS-System will re-assign the existing DS-Client number corresponding to the matching cookie. [This also means that if the “Requires Registration” option is off, a new DS-Client number is generated every time a new DS-Client installation is requested from this “Template DS-Client”.]
Fill up description with DS-Client computer name	If selected, each DS-Client that registers using this “Template DS-Client” will have its computer name automatically written into the “Description” field of this screen. • This allows easier sorting of the DS-Clients when browsing the Customers Tree in the DS-Operator GUI.
DS-Client Backup Policy Select to enable the Centrally Managed Backup Policy Tool. This means the DS-System will assume control of the DS-Client.	
Use Customer’s default Backup Policy	Indicates if the DS-Client is using the default Backup Policy (defined in the Edit Customer Profile - Profile Tab).
Define a Backup Policy for this DS-Client	Select to assign a specific backup policy to the DS-Client. • **Edit**: Click to open the Edit DS-Client Backup Policy screen. This allows you to define a specific Backup Policy.

DS-Client - Connection Tab

Use this dialog box to add or update a DS-Client's connection information.

Allow any IP (New DS-Client Wizard only)	Click to permit connection from any IP address (e.g. 1.1.1.1-255.255.255.255).
Specific IP Address(es)	The DS-Client will connect to the DS-System with the specified IP address(es) in this list. If the DS-Client connects from a different address, DS-System will refuse the connection. • **Add**: Click to add a new connection entry. Opens the "New / Modify DS-Client IP address" dialog box. • **Modify**: Click to modify the selected entry in the list. • **Remove**: Click to delete the selected entry from the list.
Requires Registration	Forces the DS-Client to be registered with the DS-System before backups can be made.

DS-Client - DS-Tools Tab

Use this dialog box to select the tools that are enabled for the DS-Client.

DS-Tools Select or type a number to enable the respective DS-Tool for the DS-Client.	
DS-Recovery Tools	Enables a module to allow DS-Client to connect with DS-Recovery Tools installations to backup and restore: • individual email messages from Microsoft Exchange Server and Microsoft Outlook (via DS-MLR service) • Microsoft SharePoint Server (via DS-Recovery Tools service)
Local Storage	Enables a module that keeps the latest generation of a designated backup set's data in local storage at the DS-Client site.
Disc/Tape	Enables a module to copy online backup data to disc/tape media.
Cybersecurity	Enables a module that performs real-time scans of files for malware during backup and restore processes.
Snapshot Manager	Enables the Snapshot Manager tool on the DS-Client (Linux only).
Disable Common Files	Allows DS-Client users to create new backup sets that are excluded from Common File storage reduction. Duplicate files will not be saved as library links, which will likely make the stored size for any such backup sets larger.
Backup Lifecycle Management	Enables the Backup Lifecycle Management (BLM) module for the DS-Client.
Local-Only Capacity	This option allows a designated backup set's data to be kept only in local storage at the DS-Client site. • Select how the capacity will be measured (by Protected Size, Stored Size, or Native Size). • Allocate the capacity (in GB). This is the maximum amount of Local-Only backup set data that the DS-Client can store. Type a number to enable this tool (0 means the tool is disabled). • The total amount you can allocate among all the DS-Clients is limited by the DS-System License (Local-Only License Limit).
Local DS-VDR Count	The total Local DS-VDR count that has been allocated to the DS-Client. • The count allocated to a DS-Client is decreased by 1 for each Virtual Machine that is cloned.

Remote DS-VDR Count	The total Remote DS-VDR count that has been allocated to the DS-Client. • The count allocated to a DS-Client is decreased by 1 for each backup set that is configured to use the Remote DS-VDR.
VM Replication Capacity	Enables the DS-Client to create VM replication sets, up to this amount. • This type of backup set does not send any data to DS-System.
VM Replication Count	Enables the DS-Client to create VM replication sets based on the number of replicated virtual machines.

DS-Client - LDAP Tab

Use this dialog box to view and reset the DS-Client's LDAP settings. If these fields are complete, it means the DS-Client has provided valid credentials to the LDAP server.

LDAP user settings	
LDAP server	Shows the IP address of the LDAP server.
Domain	Shows the domain name where the user account is defined.
User name	Shows the account the DS-Client has configured to validate with the LDAP server.
Reset	Click to clear the saved information.

DS-Client - Parameters Tab

Use this dialog box to add or update a DS-Client's Bandwidth Throttle and Storage Quota.

Bandwidth Throttle	
To DS-System	If set, the DS-Client's backup bandwidth (to DS-System) is limited to the specified amount. • **Unlimited** • **Limited to** ([...] Kilobytes per second) • **Scheduled**: Select a schedule that can have varying throttle levels. Click [...] to open the Select Bandwidth Throttle Schedule dialog box.
From DS-System	If set, the DS-Client's restore bandwidth (from DS-System) is limited to the specified amount. • The options are the same as for 'To DS-System' above.
DS-Client Storage Quota	
Enable DS-Client Quota Management	Select this check box to activate this option.
Quota	Specify if there is a quota, and the amount (number in MB or GB)

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 [...]% over the quota	DS-Client storage amount at which the DS-System will stop all backups for DS-Clients of the customer.
Send E-Mail when the following are reached	• Warning Level 1 • Warning Level 2 • Warning Level 3 • Stop Backup level Note: • Emails will be sent using the SMTP server set in the DS-System Configuration - Notification Tab • Emails will be sent to the address set in the DS-Client - Advanced Tab dialog box (for the corresponding DS-Client).
RLM Trial DS-Client [DS-System using DS-License Server RLM only]	
Trial DS-Client for restore activities	This option can only be enabled when the DS-Client is created. • During the trial, the DS-Client's recovery activities and amounts are classified separately.

DS-Client Event Log Viewer

Use this dialog box to examine each DS-Client's Event Logs. This displays the error, warning and information messages that occurred during DS-Client activities for the period selected. If you select 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 DS-Client or the DS-System User whose account logged the error.
Category	Shows the category of the message. The category can be any of the categories listed in the Error Category drop down list.
Event #	Contains an error ID code.
ID	Contains the Session ID number associated with the event (assigned by the DS-Client).
Text	This field may display the IP connection (if applicable).
Description	Displays a description of the selected event.
Select By Section	
From	Type the earliest date you want to display in this field. No events older than this time forward will be displayed.

To	Type the latest date you want to display in this field. 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	Type a specific user name, if you want to search for only that one user's events.
Category	Select a specific type of error if you want to see only errors of that type. The default selection is <All>.
SysID / ClnID	Type a specific number, to see only those events associated with that activity. You may search by DS-System or DS-Client ID.
Event #	Type 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.

DS-Client Monitoring Settings

This dialog box is read-only. It only displays information if the DS-System or any of its DS-Clients are being monitored by a DS-NOC server. All of this information comes from the DS-NOC and connections are initiated by the DS-NOC to DS-System.

• DS-NOC Address • URL Path • DS-NOC System Name • Connection Frequency • Retry When Failure • Synchronized at • Monitored DS-Clients	
Remove	This removes the selected DS-NOC from the DS-NOC Address dropdown list. (Useful for removing obsolete DS-NOC entries, if they occur.)

DS-Client Version Report

All DS-Clients	Show versions and status of all DS-Clients registered with the DS-System.
Customer	Show versions and status of a specific customer.
DS-Client	Show versions and status of a specific DS-Client.
Account # / DS-Client #	You must select a customer account number or DS-Client account number.
Sorted by	Select a sort method.

Branding	When you print a report on demand, you can select the branding picture that appears in the report header (or <None> if you want to leave it blank). • The list of branding definitions comes from the Edit DS-System Branding dialog box (Setup Menu > Branding).

DS-License Server

The DS-System must validate its license from a DS-License Server. For more information about the License Server, refer to the *DS-License Server User Guide*.

Production License Server	
License Server (IP/ DNS)	IP address or DNS name of the DS-License Server. • The DS-System will validate its license from this DS-License Server. • **IMPORTANT**: The DS-System must always be able to connect to the DS-License Server. You can configure an alternate Emergency License Server to avoid single-point-failures.
TCP Port	This is the port the DS-System will use to communicate with the DS-License Server. • The default is 4417. Do not change this unless you have a specific requirement to do so.
Verification Interval	The DS-System will verify its license with the DS-License Server at the specified interval (in minutes).
Emergency License Server	
License Server (IP/ DNS)	IP address or DNS name of the Emergency DS-License Server. The DS-System will validate its license from this alternate DS-License Server if: • on startup of DS-System server / daemon, the Production License Server is not accessible; or • during operation, the DS-System fails to validate its license with the Production License Server at least once during the “Failover Period”.
TCP Port	Same as above for Production License Server.
Failover Period	The amount of time (in minutes) that must elapse from the first failed verification with the Production License Server, before the DS-System switches to the Emergency License Server to validate its license. • This period must be at least two (2) times the length of the “Verification Interval” to allow at least two attempts to validate from the Production License Server before failover.

DS-Operator Initialization - Connection

(Optional – this dialog box can be left empty. If empty, the GUI will scan the local computer and the local computer’s subnet.) Use these settings to indicate a specific address where DS-Operator will look for a DS-System service. This can speed up your login in larger network environments.

LAN search time '...'	Time (in seconds) DS-Operator will spend scanning the LAN for DS-Systems. • If you set this value to "0" the GUI will not search the LAN. Only the local DS-System will appear in the DS-System(s) Connection List (if it is running).
Additional DS-Systems • By default, addresses in this list will be checked using TCP/IP (unless UDP is specified).	
Add	Add a new DS-System Address to the search list. • Opens the Add / Modify a DS-System Connection.
Modify	Modify the selected DS-System entry.
Remove	Remove the selected DS-System entry.
Additional Subnets	
Add	Add a new subnet to the search list. This GUI will search for any DS-System on the specified subnet(s). • Opens the Add / Modify Subnet dialog box.
Modify	Modify the selected subnet entry.
Remove	Remove the selected subnet entry.

DS-Operator Initialization - Keep Alive

These settings limit the amount of idle time on DS-Operator, after which the connection with DS-System will be terminated.

Keep Alive Settings	
Send "Keep Alive" probes when a connection is idle for [...] seconds	If DS-Operator does not receive data from DS-System for this period of time, DS-Operator will start to send keep alive probes to detect if the DS-System is running.
Send keep alive probes every [...] seconds	Once DS-Operator 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-Operator will terminate the connection with DS-System after it has tried this number of keep alive probes without response.
Refresh Settings	
Automatic refresh	
Refresh after [...] seconds	

DS-Operator Initialization - Look & Feel

Use this dialog box to adjust the appearance of the GUI.

DS-Operator Initialization - Plugins

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

Enabled	Use the check boxes beside each listed plugin to enable or disable that feature.
Description	Short description of the available plugin.
Configure	Click to configure the selected plugin. (Some plugins do not have configuration options.)

DS-Operator Initialization - Regional

(Optional – this dialog box can be left empty) Use these settings to choose the date format and regional settings.

GUI Language	Select a language from the list available. You must exit and restart DS-Operator 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.

DS-Operator Initialization - Units

(Optional – this dialog box can be left empty) Use these settings to choose the units that are displayed in this DS-Operator GUI installation's monitor windows, logs, and reports.

Keep default settings • ON: The default unit display settings will apply for this DS-Operator GUI installation. • OFF: Allows you to select individual display settings for this DS-Operator GUI. For each item, you can choose to override the default settings (for this installation of DS-Operator only) and display in bytes, KB, MB, or GB.	
Monitoring windows unit	These settings affect process monitor windows (e.g. Process Windows and System Backup Summary).
Logs unit	These settings affect logs (e.g.).
Reports unit	These settings affect reports generated by this DS-Operator GUI (from the Reports menu).

DS-Operator Window

Once you have successfully connected to a DS-System, the DS-Operator Window activates. You may access all of the DS-Operator functions from the Menu Bar. Frequently used options are also listed in the Tool Bar as icon buttons.

Window Options	
Title Bar	The title bar displays the DS-System that DS-Operator is working with (this may change depending on the item selected in the Customer tab.
DS-Systems List	At the left of the DS-Operator Window, there is a list of all available DS-Systems on the network. Select the check box beside the DS-System you want. This opens the Connect to DS-System Service dialog box. You may connect to more than one DS-System at a time.
Menu Bar	
Customer	Items in this menu are active, depending on the item selected in the Customer tab. The contents are the same as the right-mouse menu items for the selected items.
DS-Client	Items in this menu are active, depending on the item selected in the Customer tab. The contents are the same as the right-mouse menu items for the selected items.
Business	Items in this menu relate to the Business tab.
Reports	Access the different reports provided by the DS-System, and storage charting tools.
Logs	Access the monitoring logs (activity, event, audit).
Disc/Tape	Access the Disc/Tape setup and creation features (media, buffer, generate).
BLM	Items in the BLM menu relate to BLM functions for DS-Operator.
Setup	Items in the setup menu relate to administrative functions for DS-Operator.
Window	Items in the view menu relate to the format of the DS-Operator Window. You can cascade or tile windows, and auto-Arrange Icons.
Help	Items in the help menu relate to DS-Operator help. You can bring up a help index, access Windows information about help, and DS-Operator version information.
Tool Bar Icon Buttons	
• New Customer • New DS-Client • Activity Log • Event Log • Help	

Monitor	At the bottom of the DS-Operator Window, there is a list of processes on the DS-System. Double click on any process to bring up a Process Monitor Window.

DS-System Auto Search

[System Monitoring tool] Use this dialog to select from the list of DS-Systems that were automatically discovered on the network.

DS-System Name	Shows the name of the DS-System (this can be any name you decide to assign).
IP Address	Shows the IP address of the corresponding DS-System.
Add Selected	Click to add the selected DS-Systems.

DS-System Configuration - Defaults Tab

These settings are optional. They set some defaults for DS-System that are automatically used when creating new customers.

DS-Client Bandwidth Throttle	
New Customers:	
To DS-System	If set, this will be the default throttle setting for each of the customer's new DS-Clients. The backup (to DS-System) bandwidth is limited to the specified amount. • **Unlimited** • **Limited to** ([...] Kilobytes per second) • **Scheduled**: Select a schedule that can have varying throttle levels. Click [...] to open the Select Bandwidth Throttle Schedule dialog box.
From DS-System	If set, this will be the default throttle setting for each of the customer's new DS-Clients. The restore (from DS-System) bandwidth is limited to the specified amount. • The options are the same as for 'To DS-System' above.
Existing Customers:	
Manage DS-Clients Bandwidth	Bandwidth settings for all existing DS-Clients on the DS-System can be adjusted with this option. • Click to open the Bandwidth Throttle dialog box. For your convenience, all DS-Clients belonging to the DS-System will be selected to allow you to manage the bandwidth.

Apply defaults to existing customers	Applies the current defaults for new customers (above) to all existing customer accounts. • This option is useful if you want to change all existing customer default settings for new DS-Clients. (You will not have to 'right-click' each customer account and edit its properties.) • This will affect any new DS-Clients created under those existing customers. • It will **not** affect any existing DS-Clients. Use the "Manage DS-Clients Bandwidth" button (above) for that. • You must select this check box, then click the **Apply** button at the bottom of the Defaults tab to make the changes.
Storage Quota for new Customers	
Customer Quota	Shows if there is a quota, the amount (number in MB or GB), and type (protected or stored or native amount). • Click [...] to edit this section's settings. Opens the Edit Default Customer Storage Quotas dialog box.
Default DS-Client Quota	Shows if there is a quota, the amount (number in MB or GB), and type (protected or stored or native amount).
Storage History Settings for new Customers	
History Interval	Choose the default interval at which DS-System will record Storage History information for the Customer.

DS-System Configuration - DS-Client Setting Tab

These settings are optional.

Limit DS-Client Admin activities	• Select this check box to activate this feature.
Maximum concurrent Admin activities	DS-System will allow the maximum number of concurrent Admin activities you specify. Any amount over this limit will be placed in a queue that checks if the Admin can start every 1-5 minutes.
Maximum Admin waiting time	Queued Admin processes will automatically start after this amount of time. • The "Maximum concurrent Admin activities" limit will no longer apply to processes that have waited this amount of time.

DS-System Configuration - DS-NOC Tab

These settings are optional. They set some defaults for accounts created on the DS-System via the DS-NOC module.

- The options in this tab are similar to those in the DS-System Configuration - Defaults Tab dialog box. The difference is these options only apply to DS-Clients created via the DS-NOC Module.

Bandwidth Throttle for new DS-Clients

To DS-System	If set, this will be the default throttle setting for each new DS-Client created via the DS-NOC. The backup (to DS-System) bandwidth is limited to the specified amount. • **Unlimited** • **Limited to** ([...] Kilobytes per second) • **Scheduled**: Select a schedule that can have varying throttle levels. Click [...] to open the Select Bandwidth Throttle Schedule dialog box.
From DS-System	If set, this will be the default throttle setting for each new DS-Client created via the DS-NOC. The restore (from DS-System) bandwidth is limited to the specified amount. • The options are the same as for 'To DS-System' above.
Storage Quota for new DS-Clients (created using DS-NOC)	
DS-Client Quota	Shows if there is a quota, the amount (number in MB or GB), and type (protected or stored or native amount). • Click [...] to edit this section's settings. Opens the Edit Default Customer Storage Quotas dialog box.
Storage Group for new Customers/DS-Clients (created using DS-NOC)	
Storage Group	Select the storage group where data will reside for each DS-Client created via the DS-NOC. • Click [...] to bring up the Storage Groups dialog box.

DS-System Configuration - DS-Tools Tab

The check boxes show if the corresponding module is enabled for the DS-System. The modules available are based on your DS-System License (validated from a DS-License Server).

DS-Recovery Tools	Shows if this module is enabled for DS-System. Enables a module to backup and restore: • individual email messages from Microsoft Exchange Server and Microsoft Outlook • Microsoft SharePoint Server
Local Storage	Shows if this module is enabled for DS-System. Enables a tool that keeps the latest generation of a designated backup set's online data in local storage at the DS-Client site.
Local-Only Capacity	Shows if this module is enabled for DS-System. Enables a tool that keeps a designated backup set's data in local storage at the DS-Client site. • This module is licensed based on capacity.
Disc / Tape	Shows if this module is enabled for DS-System. Enables a module to copy online backup data to Disc / Tape media.
Snapshot Manager	Shows if this module is enabled for DS-System.
Local DS-VDR	Shows if this module is enabled for DS-System.
Remote DS-VDR	Shows if this module is enabled for DS-System.
Cybersecurity	Shows if this module is enabled for DS-System.
Autonomic Healing	Shows if this module is enabled for DS-System. This applies to the DS-System only.

Backup Lifecycle Management	Shows if this module is enabled for DS-System. Backup Lifecycle Management (BLM) is a solution that works with DS-Client, DS-System, and a BLM Archiver to extend the options for customers' backed up data.
DS-Billing Module	Shows if this module is enabled for DS-System. This applies to the DS-System only. Enables a module that integrates with the DS-System to collect billing information and prepare billing reports (invoices, etc.).
Replication	Shows if this module is enabled for DS-System. This applies to the DS-System only.
DS-NOC	Shows if this module is enabled for DS-System. Allows DS-System to work with the DS-NOC module.
GEO Location	Shows if this module is enabled for DS-System. • This can only be enabled from a DS-License Server RLM. • This enables both the GEO Location and the Remote Wipe features on DS-NOC for the DS-System's DS-Clients.
VM Replication Capacity	Shows if VM replication based on the total capacity of virtual machines has been enabled on DS-System. Note: This type of backup set does not send any data to DS-System.
VM Replication Count	Shows if VM replication based on the number of replicated virtual machines has been enabled on DS-System.

DS-System Configuration - Encryption Keys Tab

These settings are optional.

Enable DS-Client Encryption Key Management • Select this check box to activate this feature.	
Mandatory Encryption Key Management	DS-System forces all DS-Clients to enable this feature from the first connection. No activities will be allowed until it is enabled on the DS-Client side.
Forward DS-Client Encryption Keys to BLM Archiver	DS-System also forwards a copy of the key(s) to the BLM Archiver database. They will be stored or removed in parallel with the copy in the DS-System database. (This is mainly a double-redundancy feature.)
Clear All Existing DS-Client Encryption Keys	If you turn off the "Enable DS-Client Encryption Key Management" option, you can choose to clear all existing DS-Client Encryption Keys from the DS-System database. • This will take effect immediately when you click **OK** or **Apply**.

DS-System Configuration - Notification Tab

These settings are optional. They configure the DS-System to send email notifications. These settings are used for storage quota notifications for Customers and DS-Clients.

Send E-Mail Notification	Select this check box to activate this option.
SMTP Server	

SMTP Server	Address of the SMTP server where DS-System sends notifications. Click [...] to open the SMTP settings dialog box.
Send E-Mail From	This address will be used as the email sender for email notifications.
Administrator Notification Settings	
E-Mail Address	Email address of the notification recipient.
Test	Click this button to test the notification configuration. DS-System will send a notification to the specified email recipients. Check the email accounts to verify the configuration works.
Notification Settings	Opens the Administrator Notification Settings dialog box.

DS-System Configuration - SNMP Tab

The SNMP dialog allows you configure DS-System 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).

Community	Name of the community for which the Destination host list applies.
Add to list	Click to add the Community in the list box to the Destination host list.
Remove	Click to remove the Community from the list box
Destination host list	List of destination hosts for the Community selected.
Add	Add an item to the Destination host list. Brings up the Add / Modify host name or IP address.
Edit	Edit the selected item from the Destination host list
Remove	Remove the selected item from the Destination host list
Events Settings	Select the events that will be monitored and the notification frequency. Brings up the SNMP Event Settings dialog box.
Note	
1	You will require the **asigra.mib** file (from the DS-System Installation path). Load this file with your SNMP software to receive the traps sent by DS-System.

DS-System Configuration - SOAP Integration Tab

These settings are optional.

Integration Enabled	Select this check box to enable this option on DS-System. • All DS-Client connections will also send a SOAP verification to the third-party Web server specified. • DS-Client activities will only be allowed if the third-party Web Service does not return an error message.
SOAP Integration Settings:	
URL	Address of the third party Web Service.

Namespace	Namespace defined in the third-party Web Service. The DS-System Operator must be told this setting by the creator of the Web Service.
SOAP Action	SOAP function to run when DS-System passes the DS-Client connection data (and optional cookie).
Timeout (sec)	Length of time DS-System will wait for a response from the Web Service. If a timeout occurs, the DS-Client will fail to connect to DS-System.
Qualify Parameters	• Select this check box if the Web Service (SOAP server) requires qualified namespaces for parameters (e.g. .NET). • Clear this check box if the SOAP server does not require qualified namespaces for parameters (for example: Java Web Services).
HTTP Authentication	Select this check box to specify credentials to the Web Service: • User Name • Password
Test	Click to Test the SOAP Integration settings. Opens the Test SOAP Integration dialog box.

DS-System Connection Entry

Use this dialog box to select the address(es) to the DS-System.

DS-System address list	A list of all valid IP or DNS addresses to the DS-System.
Add	Click to add a new IP or DNS address to the list.
Modify	Click to modify the selected item from the DS-System address list.

DS-System Uptime Statistics

These statistics are presented in Time (min.) and Percent for the period in the Select by section.

Period	
Running Time	Time the DS-System was running.
Reboot Time	Time the DS-System computer was restarting.
Not Running Time	Time the DS-System was not running.
Total Time	Sum of Running, Reboot, and Not Running Times.
Number of Errors	Number of Errors.
Select by	
From	Type the start date for the statistics.
To	Type the end date for the statistics.
Refresh	Click to update the dialog box.

DS-System Version Info

This dialog box shows additional information about the DS-System 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-System: \\Server\Backup_Set_Name

Use this dialog to browse through a backup set's directories. This dialog is divided into two sections. On the left is a directories list for the backup set. On the right is a contents list that will display the files in the selected directory.

Left Side - Backup Set Folders	Browse through the directories in the backup set. Click the right mouse button on any directory, to access the available commands.
Right Mouse Options	
Show Files	Displays the files (file names only) contained in the selected directory in the Contents List, on the right side of the dialog.
Statistics	Opens the Statistics dialog box, with specific information regarding the selected directory (and any subdirectories).
Right Side - Contents List	This section shows the files contained in the selected directory. Double click on a file listed on this side to bring up the Storage Info for: [...] dialog box for the selected file.

DS-VDR Usage Report

Use this dialog box to print the DS-VDR Usage Report for all DS-Clients from the DS-System.

Sorted by	Select the sort key from this drop-down list. You may select: • DS-Client # • Customer Name • Local DS-VDR Last Validation • Local DS-VDR Count • Local DS-VDR Used • Remote DS-VDR Count • Remote DS-VDR Used
Branding	When you print a report on demand, you can select the branding picture that appears in the report header (or <None> if you want to leave it blank). • The list of branding definitions comes from the Edit DS-System Branding dialog box (Setup Menu > Branding).

Edit Customer Profile - Defaults Tab

See Enter defaults for new DS-Clients

Edit Customer Profile - LDAP Tab

Use this dialog box to configure the LDAP server settings for this customer.

Enable LDAP integration	Select this check box to activate this option for all DS-Clients belonging to this customer. • When enabled, all DS-Clients must be configured with LDAP User Validation (see the *DS-Client User Guide*).
LDAP server	Select the LDAP server this customer will use. • Click **[...]** to open the Select LDAP Server dialog box.

Edit Customer Profile - Profile Tab

See Enter Customer Profile Info

Edit Customer Profile - Storage Quota Tab

See Enter customer storage quota

Edit Default Customer Storage Quotas

Use this dialog box to set the Defaults in the “Storage Quota for new Customers” section of the DS-System Configuration - Defaults Tab dialog box.

Customer Storage Quota	
Quota	Specify the amount (number in MB or GB)
Calculation method	• Based on Protected Size (Size of the files as they were 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 [...]% over the quota	Customer storage amount at which the DS-System will stop all backups for this customer.
Send E-Mail when the following are reached	• Warning Level 1 • Warning Level 2 • Warning Level 3 • Stop Backup level Note: • Emails will be sent using the SMTP server set in the DS-System Configuration - Notification Tab • Emails will be sent to the address set in the Enter Customer Profile Info dialog box (for the corresponding customer account).

Default DS-Client Storage Quota	
Quota	Specify if there is a quota, and the amount (number in MB or GB)
Calculation method	• Based on Protected Size (Size of the files as they were 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 [...]% over the quota	DS-Client storage amount at which the DS-System will stop all backups for DS-Clients of this customer.
Send E-Mail when the following are reached	• Warning Level 1 • Warning Level 2 • Warning Level 3 • Stop Backup level Note: • Emails will be sent using the SMTP server set in the DS-System Configuration - Notification Tab • Emails will be sent to the address set in the DS-Client - Advanced Tab dialog box (for the corresponding DS-Client).

Edit DS-Client Backup Policy

[Centrally Managed Backup Policy Tool]

This dialog box is initially blank (unless a default policy was created at the customer-level). Type the XML format configuration instructions into this dialog box by:

- typing the text
- cutting-and-pasting the text from an existing file
- clicking the **Import** button and browsing for a valid XML file

You can export the existing text by clicking the **Export** button.

When this option is enabled, the DS-System will assume control of the management of the DS-Client the next time it makes a connection.

- **(Regular) DS-Clients**: You must fill this dialog box with the text from a valid **config-update.xml** file for the corresponding DS-Client type (Linux / Mac / Windows). For more information see the *DS-Client Mass Deployment Guide*.
- **DS-Mobile Clients**: You must fill this dialog box with the text from a valid **config-update.xml** file. For more information see the *DS-Mobile Client User Guide*.
- **DS-Notebook Clients**: You must fill this dialog box with the text from a valid **config-update.xml** file. For more information see the *DS-Notebook Client User Guide*.

For more information, see the Knowledge Base Article: Centrally managed backup policy tool.

Edit DS-Client Storage Quota

[DS-NOC Tool]

Separate defaults can be set for DS-Clients created using the DS-NOC Tool. All DS-Clients created via DS-NOC will have these defaults (you can change them individually after).

Quota	Specify if there is a quota, and the amount (number in MB or GB)
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 [...]% over the quota	DS-Client 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 Notes: • Emails will be sent using the SMTP server set in the DS-System Configuration - Notification Tab • Emails will be sent to the address set in the DS-Client - Advanced Tab dialog box (for the corresponding DS-Client).

Edit DS-System Branding

Configuration of these settings is optional. If this dialog box is empty, then no branding will apply.

NOTE: If the branding is being 'pushed' from DS-Billing, the DS-System will receive an updated list (including the default branding) each time it is synchronized with the DS-Billing Server. This will overwrite any modifications that have been made through DS-Operator.

Defined Report Branding • **Description** • **Default**: Indicates which branding is the default. This is either selected by the DS-System Administrator or 'pushed' from the DS-Billing Server (if configured with "Synchronize DS-System Report Branding").	
Add	Add a new branding image to the list. • This opens the Add / Modify Branding dialog box.
Modify	Edit the selected branding. • This opens the Add / Modify Branding dialog box for the selected item.
Remove	Delete the selected branding.

Edit Storage Quota for Selected Customers

Use this dialog box to edit the storage quota for the customers selected in the Storage Quota dialog box.

Enable Customer Quota management • Select to enable this feature or clear to disable this feature.	
Quota	Specify the amount (number in MB or GB)
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 [...]% over the quota	Customer storage amount at which the DS-System will stop all backups for this customer.
Send E-Mail when the following are reached	• Warning Level 1 • Warning Level 2 • Warning Level 3 • Stop Backup level Note: • Emails will be sent using the SMTP server set in the DS-System Configuration - Notification Tab • Emails will be sent to the address set in the Enter Customer Profile Info dialog box (for the corresponding customer account).
Default DS-Client Storage Quota	
Quota	Specify if there is a quota, and the amount (number in MB or GB)
Calculation method	• Based on Protected Size (Same as above.) • Based on Stored Size (Same as above.) • Based on Native Size (Same as above.)
Stop Backup level [...]% over the quota	DS-Client storage amount at which the DS-System will stop all backups for DS-Clients of this customer.
Send E-Mail when the following are reached	• Warning Level 1 • Warning Level 2 • Warning Level 3 • Stop Backup level Note: • Emails will be sent using the SMTP server set in the DS-System Configuration - Notification Tab • Emails will be sent to the address set in the DS-Client - Advanced Tab dialog box (for the corresponding DS-Client).

Edit Storage Quota for Selected DS-Client(s)

Use this dialog box to edit the storage quota for the DS-Clients selected in the Storage Quota dialog box.

Default DS-Client Storage Quota • Select to enable this feature or clear to disable this feature.	
Quota	Specify if there is a quota, and the amount (number in MB or GB)
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 [...]% over the quota	DS-Client storage amount at which the DS-System will stop all backups for DS-Clients of this customer.
Send E-Mail when the following are reached	• Warning Level 1 • Warning Level 2 • Warning Level 3 • Stop Backup level Note: • Emails will be sent using the SMTP server set in the DS-System Configuration - Notification Tab • Emails will be sent to the address set in the DS-Client - Advanced Tab dialog box (for the corresponding DS-Client).

Empty Trash

Use this dialog box to empty the files in an extensible storage location's trash folder.

Remove files older than this number of days	Specifies how many days must have passed before data in the trash is permanently deleted. Files are time stamped with the date and time that they were originally deleted. • Range: 0-99 • Default: 7 Note: If you specify a value of 0, the data will not be permanently deleted until midnight the following day.
Additional empty trash threads	The Empty Trash process will use this many additional process threads. • Valid values 0-99, default is 3. Note: this can have a significant impact on DS-System performance.

Enabled Tools Report

All DS-Clients	Show tools for all DS-Clients, ordered by DS-Client or customer name.
Customer	Show tools for a specific customer.
DS-Client	Show tools for a specific DS-Client.

Sorted by / Account # / DS-Client #	Sort order for All DS-Clients can be by DS-Client number, or customer name. You must select a customer account number or DS-Client account number.
Branding	When you print a report on demand, you can select the branding picture that appears in the report header (or <None> if you want to leave it blank). • The list of branding definitions comes from the Edit DS-System Branding dialog box (Setup Menu > Branding).

Enter Customer Profile Info

Use the profile tab to create or change customer information.

Account #	Displays the customer's account ID number.
Company	You may modify the name of the company, if any changes are required.
Contact	You may modify the name of the contact person at the customer's main location.
E-Mail Address	Type the address where notifications for this customer will be sent.
Storage Group	Click [...] to bring up the Select Storage Group dialog box. Select the default Storage Group for this Customer. New DS-Clients will automatically use this Storage Group (but it can be changed). The customer library will be created in this Storage Group.
Show "Stored Size"	Select this check box to activate this option. • Users on DS-Client side will see additional information about "stored size" in some reports.
DS-Client Backup Policy Select to enable the Centrally Managed Backup Policy Tool. This means the DS-System will assume control of any DS-Clients with this option enabled. • **Edit**: Click to open the Edit DS-Client Backup Policy dialog box. This allows you to define a default backup policy that can (optionally) be used for the customer's DS-Clients. • The default XML file you specify at the customer-level can (optionally) be used when configuring the customers' individual DS-Clients. • This option also allows you to specify a generic template that can be edited for each DS-Client since the XML configuration definition will probably be quite long.	

Enter customer storage quota

Specify a storage quota for the customer. This applies to the total of all DS-Clients belonging to the customer.

Enter defaults for new DS-Clients

Specify the default storage quota for the customer's new DS-Clients.

Default DS-Client Bandwidth Throttle	
To DS-System	If set, this will be the default throttle setting for each of the customer's new DS-Clients. The backup (to DS-System) bandwidth is limited to the specified amount. • **Unlimited** • **Limited to** ([...] Kilobytes per second) • **Scheduled**: Select a schedule that can have varying throttle levels. Click [...] to open the Select Bandwidth Throttle Schedule dialog box.
From DS-System	If set, this will be the default throttle setting for each of the customer's new DS-Clients. The restore (from DS-System) bandwidth is limited to the specified amount. • The options are the same as for 'To DS-System' above.
Manage DS-Clients Bandwidth	Bandwidth settings for all existing DS-Clients of the customer can be adjusted with this option. • Click to open the Bandwidth Throttle dialog box. For your convenience, all other DS-Clients belonging to this customer will be selected to allow you to manage the bandwidth.
Default DS-Client Storage Quota	
Quota	Specify if there is a quota, and the amount (number in MB or GB)
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 [...]% over the quota	DS-Client storage amount at which the DS-System will stop all backups for DS-Clients of this customer.
Send E-Mail when the following are reached	• Warning Level 1 • Warning Level 2 • Warning Level 3 • Stop Backup level Note: • Emails will be sent using the SMTP server set in the DS-System Configuration - Notification Tab • Emails will be sent to the address set in the DS-Client - Advanced Tab dialog box (for the corresponding DS-Client).
Storage History Settings for new DS-Clients	
History Interval	Choose the default interval at which DS-System will record Storage History information for the customer's DS-Clients.

Enter Message

Use this dialog box to type a message to be sent to specified users connected to the DS-System.

Send Message	Type the text of your message in this field.
Send	Click to send the message text to the specified user(s).

Enter New Registration Info

After migrating, this dialog box allows you to inform each DS-Client of the new DS-System address and DS-Client number. The customer will see this when trying to connect to the old DS-System.

Account #	Type the new DS-System account number.
DS-Client #	Type the new DS-Client number.
DS-System address	Type the new DS-System address.

Event Log (Process)

This dialog box shows the Event Log for the Process Windows. This displays the error, warning and information messages that occurred. If you select an event, the full text from 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.
Category	Shows the category of the message. The category can be any of the categories listed in the Error Category drop down list.
Event Time	Shows the date and time that the event occurred.
Event #	Contains an error ID code.
Description	Displays a description of the selected event.

Event Log Viewer

Use this dialog box to examine the Event Logs. This displays the error, warning and information messages that occurred during DS-System activities for the period selected. If you select 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 DS-Client or the DS-System User whose account logged the error.
Category	Shows the category of the message. The category can be any of the categories listed in the Error Category drop down list.
Event #	Contains an error ID code.
ID	Contains the Session ID number associated with the event.

Text	This field may display the IP connection (if applicable).
Description	Displays a description of the selected event.
Select By Section	
From	Type the earliest date you want to display in this field. No events older than this time forward will be displayed.
To	Type the latest date you want to display in this field. 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	Type the name a particular user, if you want to search for only that one person's events.
Category	Select a specific type of error if you want to see only errors of that type. The default selection is <All>.
ID	Type a specific ID, to see only those events associated with that ID.
Event #	Type 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.
Convert	Opens the Storage Path Converter dialog box. You can convert any physical path to identify the customer name, account number, DS-Client, backup set, share, directory, and file name.
Select	[This button only appears if you open the Event Log Viewer from the Critical Errors Monitoring dialog box.] Search and select the event (error) you want from the list and click Select. • Once clicked, returns you to the "Critical Errors Monitoring - Monitored Errors Tab" with the selected event added to that monitoring list.

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 session (they are reset once you close the dialog box).

Event #	You can manually type an event number in this field. • All events that you exclude appear in the exclude list underneath this field. • 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 Event # field to the exclude list.
Remove	Click to remove the selected 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.

Expiring DS-Clients

This dialog box pops up on connection with the DS-System. It selects all DS-Clients whose accounts are scheduled to expire this month. You should take action to inform the customer and/or renew the account to provide uninterrupted service.

Expiry Date	Shows the day the DS-Client's service period expires.
DS-Client #	Shows the DS-Client number.
Customer Name	Shows the customer associated with the DS-Client.

Export Customer / DS-Client [...]

Processes to start [...]	The number of threads you want to use to write data to the buffer. You can select from 1 to 99 threads (the default is 3). All threads execute parallel to shorten the generation time.
Export to	The path where you want to export the customer data (Export Customer / DS-Client). • For Windows, the path must be in the form: \\computer_name\share_path • For UNIX, the path must be in the form: /export_path

Export DS-Client

Use this dialog box to select the DS-Client(s) and the information columns to include in the export file.

DS-Client	Select the DS-Client(s) to include in the export file.
Include DS-Clients with no data	Select whether to include this type of DS-Client.
Storage size for previous month	• If this check box is selected, the data will be from the previous month. • If this check box is cleared, the data will be the current size.
Sorted by	Select the column that will be used for the sort order.
Column Selection	Select the columns you would like to include.
Export	Click to export.

Export DS-Client Registration Info

Use this dialog box to export the DS-Client Registration information to a .CRI file. You may distribute this file to the customer so they may browse for it during DS-Client Installation.

Customer Name	
Account Number	
DS-Client Number	

DS-System Address	Displays the IP address(es) for the DS-System that will be written to the .CRI file. The default content depends on the DS-System's configuration file (dssys.cfg): • If the value "External IP Addr" does not exist, all available IP addresses will be displayed. • If "External IP Addr" exists, its value is displayed. Click [...] to modify the address that is displayed. This opens the DS-System Connection Entry dialog box.
Export DS-Client Encryption Key(s)	Select to include the key(s) in the .CRI file. They will be in an encrypted format that is only usable by the DS-Client installation program. • **WARNING**: This means whoever has the .CRI file can recreate a functioning copy of that DS-Client installation.
Save As	A default file name is suggested. You may change the name, as required.

Export history for [...]

Path	The path where you want to copy the customer history. • For Windows, the path must be in the form: \\computer_name\share_path • For UNIX, the path must be in the form: /export_path

Extensible Storage Locations

This dialog box shows the storage locations defined for the DS-System. Once you have defined the Fill Levels, you may add as many Storage Locations and the DS-System will automatically balance its storage across the available space (files in a storage location's trash folder are included when the DS-System calculates the storage fill levels).

Storage Location List	
Group	Storage Group to which the corresponding Extensible Storage Location belongs. • If <RETIRED> the Storage Location no longer accepts backup data. • If <DELETED> the Storage Location is flagged to be removed from this list next time DS-System starts.
ID	Automatic ID assigned by DS-System
Path	Path of the storage location

Size (Used)	This amount is the Logical Size configured for each storage location from the New / Edit Storage Location dialog box. • The left side of the column shows a red bar indicating the percentage of the Maximum Size amount that has been used. The blue lines indicate the fill levels. The actual used size percentage is listed on the right side of the column. • DS-System will continue to back up to this (or redirect to other) locations as long as there is physical disk space left to write on that location. • Fill levels determine when DS-System redirects backup data to other storage locations (in the same Storage Group).
Entries (Used)	Shows the amount of files as a percentage of the Maximum Files set for the corresponding storage location.
Disk Space	Shows the current amount of physical disk space left on the corresponding storage location. • If physical disk space is low on an Extensible Storage Location, the DS-System will behave according to the parameters “OLEmerLevel” and “OLStopLevel” set in the DS-System Advanced Configurations dialog box.
Size (Trash)	This amount is the Native Size of the files in this storage location’s “Trash” folder.
Files (Trash)	This is the total number of files in this storage location’s “Trash” folder. • Note: Some internal files are not moved to trash (e.g. library link files), therefore the numbers before and after a delete might not correspond exactly.
Add	Click to add a new storage location for the DS-System. Opens the New / Edit Storage Location dialog box.
Edit	Click to edit a storage location for the DS-System. Opens the New / Edit Storage Location dialog box.
Retire	Click to retire the selected storage location. • This will stop all further backups to this storage location. The DS-System will be locked until it has generated a list of all the files in this location.
Delete	Click to delete the selected storage location. • This location must already be retired (i.e. the Group must be <RETIRED>).
Scan	Click to re-scan the selected storage location. This will update the statistics for Used Size and Used Entries.
Empty Trash	Click to empty the trash from the selected storage location. Opens the Empty Trash dialog box.
Fill Levels	Click to edit the Storage Fill Levels for the DS-System. Opens the Update Storage Fill Levels dialog box.

File Restore

This dialog box allows you to type the encryption key(s) required to restore a specific file generation. (Note: For Unicode encryption keys, you must cut-and-paste the keys from an editor like Notepad.)

Private Key Type	Select the Private encryption key type. • This is displayed in the Storage Info for: [...] dialog box's "Encryption" column.
Private Key	You must know the exact string to type for the Private encryption key.
Account Key Type	Select the Account encryption key type. • You must know if the key is set for this DS-Client.
Account Key	You must know the exact string to type for the account encryption key.
Restore Reason	You must supply a reason for this restore request by selecting one from the drop-down list.
Restore Classification This section only appears if this backup set is currently in a scheduled "Recovery Drill" period. • For more information see Section 10.5, "DR Drill requests". • Once you successfully restore the requested file, the DR Drill capacity that was used is immediately deducted from the quota for this DR Drill Request.	
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 fields 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.
Restore	Click to attempt to restore with the supplied key(s). • If the keys are valid, a "Save As" window appears for you to choose the restore destination for the file. • Note that some files may not be readable or may require further manual processing. For more information, see Section 6.1.3, "Restoring a file generation (without involving DS-Client)", on page 133.

Find Customer

This dialog box allows you to search and select from the available customer accounts on the DS-System.

Customer Name	Shows the name of the customer.
Account #	Shows the customer's account ID number.
Select	Click to close this dialog and select the selected customer in the DS-System Tree.
Customer Name	Type the name of the customer you wish to search for. You can also type a pattern of characters to search for.
Find	Click to refresh the spreadsheet fields, and search based on the parameters in the Select By section.

Find DS-Client

Use this dialog box to find and/or select a DS-Client from the list.

DS-Client List	
DS-Client #	Shows the available DS-Clients.
Customer Name	Shows the corresponding customer name.
Account #	Shows the account
Description	Shows the description (if any) from the DS-Client - Advanced Tab.
Location Name	For DS-Clients with billing information, this shows the physical location of the DS-Client as defined in the “Location” field of the DS-Billing System’s “DS-Client - Profile tab”.
Computer Name	Shows the Computer Name (if any) of the DS-Client.
Select By Section You may type all or part of a name, or wildcard combination for the following: • Customer Name • Account # • Description • Location Name • Computer Name	
Find	Updates the DS-Client List based on the parameters in the Select By section.
Column Selection Select or clear these check boxes to display the corresponding column in the DS-Client List: • Customer Name • Account # • Description • Location Name • Computer Name	
Select	Click to select the selected DS-Client.

Generate Files to Buffer

This dialog box allows you to confirm generation of the Disc/Tape Request data to buffer.

Processes to start (Disk media only)	The number of threads you want to use to write data to the buffer. You can select from 1 to 99 threads (the default is 3). All threads execute parallel to shorten the generation time.
Path	The path on the DS-System where disc / tape files will be written. • Type in the path or click [...] to browse for a directory.
Restore Reason	You must supply a reason for this restore request by selecting one from the drop-down list.

Restore Classification This section only appears if this backup set is currently in a scheduled “Recovery Drill” period. • For more information see Section 10.5, “DR Drill requests”. • Once you successfully write the Disc/Tape files to buffer, the DR Drill capacity that was used is immediately deducted from the quota for this DR Drill Request.	
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 fields 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.

Global List of Customers

Use this dialog box to print the Global List of Customers.

Sorted by	Select the sort key from this drop-down list. You may select: • DS-Client # • Company Name • Protected Size • Stored Size • Native Size (only appears if configured from DS-System) • DS-Client Creation Date
Branding	When you print a report on demand, you can select the branding picture that appears in the report header (or <None> if you want to leave it blank). • The list of branding definitions comes from the Edit DS-System Branding dialog box (Setup Menu > Branding).
Include DS-Clients with no data	When selected, the report will include DS-Clients with no backup data. Clear this check box to show only DS-Clients with data stored online.

Hardware Registration

This option only applies to DS-Clients with the “Requires Registration” option selected (see the DS-Client Connection tab).

You must coordinate this process with the DS-Client Administrator. Once you click “OK”, DS-System:

- Requires that the DS-Client perform the manual “Register Now” activity before any other connections with DS-System are allowed.

Register with DS-Client Hardware Reset	Resets the DS-Client's hardware profile with the information provided when the DS-Client Administrator “Registers” (from DS-User > Setup menu > Configuration: “Register Now”). • VERIFY WITH THE CUSTOMER BEFORE PERFOMING THIS OPTION.
Registration Timer	This is the amount of time after clicking “OK” that DS-System will allow for the DS-Client to complete the manual re-registration. • The default period is configured with the “DefaultHardwareResetTimer” Advanced Parameter.

Hotfix Directory

Use this dialog box to configure the hotfix directory used by DS-Clients on the DS-System.

The selected radio button determine what is displayed in the Hotfix Directory List. • Show Customers • Show DS-Clients • Show All	
Hotfix Directory List Each line represents a specific Customer or DS-Client. • Account # • Customer Name • DS-Client # • **Hotfix Directory**: This displays the current configured hotfix directory for each item in this list. (Note that <DEFAULT> can represent different paths: If a customer is configured with a hotfix directory, all its DS-Clients with <DEFAULT> will use that setting. If no specific hotfix directory is set for a DS-Client or inherited from its customer account setting, the <DEFAULT> will be the DS-System’s main AutoUpgrade folder.)	
Select All / Unselect All	Selects all or removes the selection in the Hotfix Directory List.
Reset	Resets the hotfix directory to <DEFAULT> for the selected items.
Select by Allows you to limit the items displayed in the Hotfix Directory List. • Account # - Only display items from the specified customer. • DS-Client # - Only display the specified DS-Client. • **[...]** - Opens the Select Customer dialog box or the Find DS-Client dialog box. • **Find** - Click to filter for the selected item(s).	
Hotfix Directory • **[...]** - Opens the Select Hotfix Directory dialog box. This only browses the DS-System’s configured Autoupgrade folder. • **Apply** - Click to apply the selected directory to the items selected in the Hotfix Directory List. Changes take effect immediately.	

Import Customer / DS-Client

Import from	The source path from which to copy the customer data (Import Customer / DS-Client). • For Windows, the path must be in the form: \\computer_name\share_path\customer_name • For UNIX, the path must be in the form: /import_path

Info for DS-Client

This dialog box shows information on a selected DS-Client (if available).

DS-Client Grid Node (Grid DS-Clients only)	Allows you to select the node whose information you wish to view.
• Computer Name • Operating System • Database Build • DS-Client Build • DBMS • Instance • DS-Client Version: This will appear RED if older than (and incompatible with) the DS-System. • Installation • Info Received	
Encryption Key	
Private Encryption Key Available	Indicates the DS-Client's private encryption key has been saved to the DS-System database. • You will have the option to include the key (in encrypted format) in any .CRI file you create for this DS-Client.
Account Encryption Key Available	Indicates the DS-Client's account encryption key has been saved to the DS-System database. • You will have the option to include the key (in encrypted format) in any .CRI file you create for this DS-Client.
Encryption Keys Received at	Date and time the encryption keys were received by the DS-System (if applicable).

Initial Backup Import

In cases where the first backup is of a large disk capacity, it may be more efficient to back up data directly to a local drive on the DS-Client or via a LAN connection. This avoids the potential of a long and extended backup period, especially if the communication bandwidth is not very wide.

This dialog is used to transfer the initial backup from the Initial Backup Buffer, to the DS-System.

Import initial backup from	Browse or type the path where DS-System can read the Initial Backup Buffer. • For **Windows**: The path must be in the form `<local_drive>:\initial_backup_dir` or `\\server\share\initial_backup_dir` (for example `\\MEDIA\drv$d\buf`) • For **UNIX**: The path must be in the form `/initial_backup_directory` • For **N+1 DS-Systems**: The initial backup is performed by the selected node. Make sure that the initial backup buffer is either directly attached to the selected node, or is specified as a UNC path (if attached to a different computer) and that node has rights to access it.
OK	Click this button once you have specified the Initial Backup buffer location. This will open the Select Initial Backup Sets dialog box.

Initial Backup Import Options

When importing data, the DS-System features configurable multi-threaded options to make the process as fast as possible.

Select import method • If the import process finds space on the same storage volume, this section activates.	
Move	[Unencrypted buffer data only - if any meta-data encryption was used, the Move option is disabled.] This method can be much faster. It will rename the existing data at the storage location to complete the Import.
Copy	The imported data will be distributed evenly to all available storage locations.
Options	
Concurrent import activities	Each import activity represents a different backup set that is processed in parallel.
Additional threads for each import activity	Number of additional processing threads to run for each import activity.

Initial Backup Meta-data Encryption

Use this dialog box to specify the Meta-data encryption key (USER-DEFINED).

Meta-data Encryption Key	This dialog box appears if USER-DEFINED encryption was used on the Initial Backup data. Type the corresponding key.
Import	• You can import from any valid file containing an exported key string.
Export	• You can export the key that has been typed into this field to a text file for distribution, if necessary. The key is stored in encrypted format.

Initiate System Shutdown

Use this dialog box to shut down the DS-System computer.

Shutdown in [...] Seconds	Type the time window you wish to allow before shutting down the system.
Send Message	Type any message you wish to send to all connected users.
Reboot System	Restarts the DS-System computer after shutdown.
Shutdown	Click Shutdown to proceed with the shutdown according to the specifications of this dialog box.

Item Statistics

This dialog box show a summary of information about the files stored in the selected directory.

Row headings	• **Library**: Refers to the DS-Library common files. • **Regular**: Refers to non-common files that do not have Master or Delta attributes. • **Master**: Refers to the first backup of a DS-Delta file. This is a full-size backup. • **Delta**: Refers to a subsequent backup of a file using the DS-Delta savings technology. • **Total**: Shows the Total for all file types.
Column headings	• **Size (KB)**: Refers to the original backup size of the respective files. • **DS Size (KB)**: Refers to the size of the files, which they actually occupy on the DS-System. • **Files #**: Refers to the number of files.
Last Backup	Shows the date/time the backup set was last backed up.
Calculated On	Shows the date/time the statistics presented were calculated. The statistics are calculated during the System Admin process.

Java Runtime Environment Properties

This dialog box shows additional information about the computer where this instance of the DS-Operator GUI 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.).

Libraries

Use this dialog box to search for and view library files. You may search by DS-Client, Customer, Public Library, Library ID and those library files that may no longer be used. You may select the number of files to view, and whether to view files with the largest/smallest count (of links), or of the largest/smallest size.

Library Files List	
Public Tab **Customer Tab** **DS-Client Tab**	• **ID**: Shows the DS-System ID of the file. • **File Size**: Shows the library file size. • **Files**: Shows the total number of files using this library file. • **Date**: Shows the date that this library file was created. • **Total Size**: Shows the total logical storage that this library file represents (Files multiplied by File Size). • **Valid**: Indicates whether or not this is a valid library file. An invalid file will be overwritten by the next backup containing that common file.
Not Used Tab **Library ID Tab**	• **ID**: Shows the DS-System ID of the file. • **Account**: Shows the customer account associated with this file. • **Client**: Shows the DS-Client associated with this file. • **Date**: Shows either the date that this library file was created or the date this file was marked as an 'orphaned library'. • **Valid**: Indicates whether or not this is a valid library file (a check for valid or an 'X' for invalid). An orphaned library is indicated with a "Clean Libraries" icon.
Select	Click to bring up the Usage for the Library File [...] dialog box for the selected file.
Invalidate	Click to change the status of the selected file from valid to invalid. • Invalidated libraries are marked with an 'X' icon. An invalid library file will be overwritten by the next backup containing that common file.
Show Header	Click to view the header information of the selected library file. This brings up the Storage Info for: [...] dialog box.
Public Tab Select this tab to search files from the Public library. • **Show first [...] files**: (Default is 10) Use this field to select how many files to display. • **with [biggest / smallest count / size]**: Select one of the available options.	
Customer Tab Select this tab to search files from the specified customer library. • **Account #**: You may leave this field blank to search for all customer libraries. Click the [...] button to open the Select Customer dialog box to specify a customer account. • **Show first [...] files**: (Default is 10) Use this field to select how many files to display. • **With [biggest / smallest count / size]**: Select one of the available options.	
DS-Client Tab Select this tab to search files from the specified DS-Client library. • **DS-Client #**: You may leave this field blank to search for all DS-Client libraries. Click the [...] button to open the Select DS-Client dialog box to specify a DS-Client number. • **Show first [...] files**: (Default is 10) Use this field to select how many files to display. • **With [biggest / smallest count / size]**: Select one of the available options.	
Not Used Tab Select this tab to search from the library files that currently have no association (links) to backup files (because of file deletions).	
Library ID Tab Select this tab to search for a specific library file. • **ID**: Type the DS-System file ID number you wish to find.	

Find	This will update the Library Files List based on the specifications in the selected tab.

Library Statistics

The Library Statistics dialog box displays information on each of the appropriate Libraries, where common files are stored. A similar dialog appears for the Public Library, Customer Library, and DS-Client Library.

# of Files	Displays the number of files that exist in the selected library.
Total Size	Displays the total (original) size of the files that exist in the selected library. This includes files not in use.
DS Size	Displays the total (stored) size of the files that exist in the selected library. This includes files not in use.
Note	
1	The figures shown in this dialog include library files that may no longer be in use (due to file deletions).

Listening Ports

This dialog box shows the default port used by the listed software component.

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-System for a selected period of time.

Use the Tool Bar at the top of this dialog to modify the appearance of the graph.

Chart Type	Select from a Line or Bar graph of the load summary for the time period specified in the Select By section.
Graph Points	Represents the corresponding statistic. Place the cursor over a point to view a balloon popup of the data represented by that point.
Horizontal X-Axis (Time Axis)	The time axis is based on the period and interval specified in the Select By and Interval sections.
Vertical Y-Axis (Value Axis)	The value axis displays the values for the series counters.
Select By Section	

From date	Click to select the date where you wish to begin viewing load summary information. By default, this is set to seven (7) days prior to the current date.
To date	Click to select the last day for which you wish to view load summary information. By default this is set to the current date.
Interval	Use this list box to select the interval on the horizontal axis of the load summary graph. You may specify an interval of 5, 10, 15, or 30 minutes, 1 hour or 1 day. The default is 1 day.
N + 1 ID (only with N + 1 configuration)	Select which N + 1 DS-System to display.
Refresh	Updates the display to reflect the date(s) selected.
Series	Click to change the information displayed in the load summary. This 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 peak (highest) data throughput sent from the DS-System in KB.
Receive	The peak (highest) data throughput received through the DS-System in KB.
Send & Receive	The sum of both Send and Receive amounts (in KB) for the period.
CPU Load	The peak (highest) CPU load (for the entire DS-System computer) for the selected period.
Memory Load	The peak (highest) Memory load/usage (for the entire DS-System computer) for the selected period.
Memory Commit	Memory allocated to programs and/or the system on the DS-System computer. Because of virtual memory, Commit Peak memory may exceed the maximum physical memory.
Activities	The peak (highest) number of activities running on the DS-System computer.

Local-Only Capacity Report

Use this dialog box to print the Local-Only Capacity Report for all DS-Clients from the DS-System.

Sorted by	Select the sort key from this drop-down list. You may select: • DS-Client # • Customer Name • Last Validation • Quota • Used

Branding	When you print a report on demand, you can select the branding picture that appears in the report header (or <None> if you want to leave it blank). • The list of branding definitions comes from the Edit DS-System Branding dialog box (Setup Menu > Branding).

Log Warning (Activity, Event, etc.)

This dialog box appears if the search returns a large number of logs.

All	Display all logs.
First [...]	Type a number. Only this number of logs will be displayed from the start of the list.

Maintenance Notification

This dialog allows you to view and set new notifications for your DS-Clients. It lets you inform your customers (via a message on the DS-Client) of pending DS-System downtime.

Message	Shows message displayed to the DS-Clients.
Date	Shows the date the message will stop being displayed on DS-Client(s) DS-User screens.
Interval	If the message is a notification for DS-System downtime, the number here represents the hour(s) the DS-System will be unavailable.
New	Opens the New Notification dialog box.
Delete	Removes the selected message from the list.

Modify DS-System address

This dialog box allows you to modify an existing DS-System address entry (from an N+1 list).

Monitor

At the bottom of the DS-Operator Window, there is a list of activities that are running.

Spreadsheet Fields	
Type	Shows the type of connection.
User Name	Shows the DS-Client associated with the activity.
Start	Shows the start time of the connection.

Description	Provides additional information about the connection: In KB/Sec - Shows rate that data is being received to indicate the throughput on the DS-System. - Out KB/Sec - Shows rate that data is being received to indicate the throughput on the DS-System. - Activities - Shows the number of activities currently listed in the graphical section.
Right Mouse Click Menu Items	
Monitor	Click to open the Process Window for the selected activity. Only activities that contain the appropriate detailed information will open a process window (e.g. backups, system admin.'s).
Stop	Click to stop the selected activities.

Mount-point Monitoring

[DS-System running on Linux]

Select the check box to instruct DS-System to monitor the mounted file system's status.

If DS-System detects any of the monitored file systems are not accessible, the DS-System will stop all current activities and interrupt all connections to the DS-System Storage. DS-System will remain in this frozen state, and will check if the storage locations are accessible every 2 minutes. When all storage locations are accessible, DS-System will automatically revert to its normal state.

All mounted file systems should be monitored.

N + 1 Log

[DS-System with N+1 license]

The N + 1 Log displays all events specific to the N + 1 configuration.

Event List	Icon - Shows the severity of the corresponding event. Time - Shows the date and time of the corresponding event. System ID - Shows the N + 1 ID of the DS-System for the corresponding event. IP Address - Shows the IP address of the DS-System 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 field. No events older than this time will be displayed. To - Type the latest date you want to display in this field. 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>.

N + 1 Status

[DS-System with N+1 license]

The N+1 Status dialog box gives you a visual display of the N+1 configuration.

This dialog box can display the following views: • Graph View • List View	
N + 1 Formation	When the nodes of an N+1 DS-System start, they will first try to join or create an N+1 formation. This is a group of interconnected nodes, which are synchronized (activities running on them will not conflict). The N+1 nodes require synchronization to prevent activities that are running on separate nodes from touching the same data at the same time. To achieve this, the nodes will vote for one of them to be the "synchronization point" (DS-Director). Once the N+1 formation is synchronized, it will consist of one DS-Director and several nodes (leafs) connected to the DS-Director.
DS-Director	The DS-Director handles all synchronization requests from nodes. In case a node loses connection to the DS-Director, it will cease all activities and try to rejoin the N+1 formation. The DS-Director handles all user authentication (incoming DS-Client connections) for the entire cluster. It is also the only one that listens for incoming DS-Operator connections. A DS-Director can provide backup and restore services to DS-Clients (default), or act as a dedicated DS-Director (configurable from the Advanced Configurations dialog box.)
Leaf (Node)	A node provides backup and restore services to DS-Clients. It does not listen for incoming DS-Operator connections. A node always maintains an open connection to the DS-Director.

Graph View	Graph view shows a visual representation of the N+1 status. • **Graph Layout**: Select the layout for the graph (Linear or Star).
List View	List view shows information from the System Backup Summary sorted by node. • **ID**: ID of the corresponding DS-System node. • **Address**: IP address of the corresponding DS-System node. • **Status**: Shows if the node is the DS-Director, a DS-System node (Leaf), or if it is not connected (Searching). • **Start Time**: Time the node's System Backup Summary Process started. • In KB/Sec • Out KB/Sec • Activities • Library Files • Library Size (KB) • Delta Files • Delta Size (KB) • Regular Files • Regular Size (KB) • Total Files • Total Size (KB) • Physical Size (KB) • New Library Files • New Library Size (KB)

Stop Node (List View)	Allows you to stop the selected node in the list. • Opens the Stop N + 1 Node dialog box.
Add Node (List View)	Allows you to add a node to the N+1 formation without having to shut down the N+1 DS-System. • Opens the Add N+1 Node dialog box. • This will add the new node to the DS-System's N+1 configuration file. You must ensure that the software on that node is installed and configured to work with this N+1 formation.
Delete Node (List View)	Deletes the selected node from the list. This effectively removes that node from the entire N+1. • You can only delete the last item from the node list, and only if that node is currently shut down. • A confirmation dialog box will appear.
Options	**Refresh every [...] seconds**: The graph or list is automatically updated at this interval.

N + 1 to Perform Activity

[N+1 DS-Systems Only]

N + 1 to Perform Activity	Select from the available N+1 DS-Systems to perform this activity.

New / Edit Bandwidth Throttle Schedule Detail

This dialog box allows you to add or modify Details for a Bandwidth Throttle Schedule.

Week Days	Select which weekday(s) to include with this detail.
Starting at	Select the time when this Detail will apply.
Bandwidth Throttle	Select the amount of throttling to apply with this detail: • **Unlimited** • **Limited to** ([...] Kilobytes per second)

New / Edit Storage

This dialog box allows you to configure access to a specific storage device.

Type	Select from the available list of Storage Vendors: • NetApp • NetApp Cluster • Huawei OceanStore • EMC VNX • FreeBSD ZFS • Oracle ZFS • Generic

NetApp DS-System uses NetApp's APIs to create snapshots on its NAS storage volumes. • **IP/DNS**: Type the IP address or DNS of the NAS Storage. • **Username**: Type the username to access the NAS Storage. • **Password**: Type the password for this NAS Storage user. • **Port**: Type the port DS-System will use to connect to this NAS Storage (HTTP is normally 80, HTTPS is normally 443). • **Use HTTPS protocol**: Select if the NAS Storage requires HTTPS connection. Clear this check box to use HTTP.
NetApp Cluster DS-System uses NetApp's APIs to create snapshots on its NAS storage volumes. • The fields are the same as for NetApp (above).
Huawei OceanStore DS-System uses the SSH protocol and commands in pre-defined scripts to create snapshots on a Huawei NAS storage volume. • **IP/DNS**: Type the IP address or DNS of the NAS Storage. • **Username**: Type the username to access the NAS Storage. • **Snapshot Create**: Type the path to the Asigra-provided script that generates the snapshot. (You must configure this script to your own environment before it will work.) • **Snapshot Destroy**: Type the path to the Asigra-provided script that destroys (removes) the generated snapshot. (You must configure this script to your own environment before it will work.)
EMC VNX DS-System uses EMC's APIs to create snapshots on its NAS storage volumes. • **IP/DNS**: Type the IP address or DNS of the NAS Storage. • **Username**: Type the username to access the NAS Storage. • **Password**: Type the password for this NAS Storage user. • **Port**: Type the port DS-System will use to connect to this NAS Storage (HTTP is normally 80, HTTPS is normally 443). • **Use HTTPS protocol**: Select if the NAS Storage requires HTTPS connection. Clear this check box to use HTTP.
FreeBSD ZFS DS-System uses the SSH protocol and commands to create snapshots of a FreeBSD ZFS storage volume. • **IP/DNS**: Type the IP address of the FreeBSD ZFS storage. • **Username**: Type the username for the FreeBSD host. • **Password**: Type the password for the FreeBSD host.
Oracle ZFS DS-System uses Oracle's APIs to create snapshots of its NAS storage volumes. • **IP/DNS**: Type the IP address or DNS of the NAS Storage. • **Username**: Type the username to access the NAS Storage. • **Password**: Type the password for this NAS Storage user.
Generic This option is provided in the event you want to try to perform a snapshot using a generic storage vendor and the Asigra-provided snapshot scripts. • **IP/DNS**: Type the IP address or DNS of the Storage Volume. • **Snapshot Create**: Type the path to the Asigra-provided script that generates the snapshot. (You must configure this script to your own environment before it will work.) • **Snapshot Destroy**: Type the path to the Asigra-provided script that destroys (removes) the generated snapshot. (You must configure this script to your own environment before it will work.)

New / Edit Storage Group

You can add as many Storage Groups as are required. A Storage Group helps you to organize data on the DS-System, because all customers and DS-Clients must be associated with one. Once you have added a Storage Group to this list, you can associate it with Extensible Storage Location(s) in the Extensible Storage Locations dialog box.

Storage Group List	Click in the cell to edit the text: • Name: • Description
Add	Click to add a row to the Storage Group List.
Delete	Click to delete the selected row from the Storage Group List.

New / Edit Storage Location

Use this dialog box to add or edit storage locations to the Extensible Storage Locations dialog box.

Path	Shows the path of the storage location. This must be a valid path visible to the DS-System computer. • The DS-System service must have full read/write permissions to this location.
Total Size	Select the total size (MB / GB / TB) available at the corresponding path.
Guard Size	Select a reserve amount (MB / GB / TB) to keep as a free space buffer for the corresponding path (for allocation tables).
Maximum Size	This field is calculated automatically, based on the entries in Total Size and Guard Size fields.
Maximum Files	Select the maximum number of individual files that should normally be stored on that location. This number should be based on the recommendations for the storage location's file system. This number is used to balance the data between different Extensible Storage locations (of the same Storage Group). • Note: Even if this number is reached, the DS-System will continue to save data on that specific storage location.
Storage Group	Select the Storage Group that is assigned to this Extensible Storage Location. Data will only come from customers and DS-Clients that are configured to use this Storage Group. • Click [...] to open the Storage Groups dialog box. • If you change the Storage Group after data has been saved to this Extensible Storage Location, that data will not be affected.
Storage Volume	The default selection is <None>. • Do not make any selections in this field unless you are integrating this DS-System Extensible Storage Location with a specific storage vendor's storage volume (separate purchase and configuration required). • The purpose of this option is to take advantage of the Storage Volume's capability to take snapshots of its storage.

New / Edit Storage Volume

This dialog box allows you to define the information required by DS-System from a Storage Volume.

Storage	Shows the IP/DNS of the Storage Volume (and in brackets, the Storage ID and Storage Type). • Click [...] to open the Storages dialog box.
Volume Name	Volume Name, as defined from the corresponding Storage Volume. • Click [...] to open the Select Volume dialog box.
Volume Path	Path (mount point or UNC path) DS-System will use to the selected NAS Storage Volume. • Click [...] to open the Select Directory dialog box. This path must be visible to the DS-System computer, and you must select it by browsing this dialog box.
Snapshot Path	Snapshot Path: Path (mount point or UNC path) DS-System will use to the Snapshots created for this NAS Storage Volume. • Click [...] to open the “Select Directory” dialog box. This path must be visible to the DS-System computer, and you must select it by browsing this dialog box. • This is not required for EMC VNX volumes.

New / Modify Activity Priority

This dialog box allows you to add or modify items in the Activity Priority list.

Activity Type	• If you are adding an activity, this field is a drop-down list that displays the activities available. (You can only add an activity to the list once.) • If you are editing an activity, this field is read-only with that activity name.
Priority	Select the priority level. • Lower numbers have increased priority over higher numbers (e.g. “1” is higher priority than 2, 3, ... etc.).

New / Modify Activity Priority Schedule

In this dialog box you can type or modify the name.

New / Modify Delta Chain Configuration

This dialog box allows you to give a unique name to different Delta Chain Configurations.

Delta Chain Configuration	Give a unique name for each Delta Chain Configuration that is created. A descriptive name is useful if this list becomes very long.

New / Modify Delta Chain Detail

This dialog box allows you to add or modify individual Delta Chain Details.

Backup Set Type	The backup set type covered by this detail. You can only select this when creating a new Detail.
Delta Chain Length	Set the delta chain length for this backup set type. • Range 3-99, default is 9.

New / Modify DS-Client IP address

Use this dialog box to add or update a DS-Client's IP address.

Single IP	Type or modify a specific IP address from which the DS-Client will connect to DS-System.
IP Range	Type or modify the range of IP addresses (e.g. between 11.22.33.40 and 11.22.33.49).

New / Modify DS-System Address (DS-System Group)

This dialog box allows you to add or modify entries for a DS-System group (used for multi-directional replication).

DS-System Address	
DS-System Type	• Single DS-System • N+1 DS-System
Address	You must type a valid IP address (e.g. 10.11.12.123). • **Single DS-System**: Type the IP address. • **N+1 DS-System**: Type the IP address of each DS-System node in the N+1.
Local DS-System	The DS-System that this DS-Operator is currently connected with. • When first configuring a DS-System Group, you should start with the “Local DS-System”, then type the other DS-Systems in the group.
Bandwidth Throttle	
To DS-System	If set, the DS-System's replication bandwidth (to this DS-System) is limited to the specified amount. This throttle only applies to replication processes. • **Unlimited** • **Limited to** ([...] Kilobytes per second) • **Scheduled**: Select a schedule that can have varying throttle levels. Click [...] to open the Select Bandwidth Throttle Schedule dialog box.

New / Modify Schedule Detail

This dialog box allows you to specify when a Schedule Detail applies in a 24-hour / 7-day week.

Week Days	Select the day(s) when this Detail will apply.
Starting at	Start time on the day(s) selected.
Ending at	End time on the day(s) selected.
Notes: • A time window from 00:00 to 23:59 covers the entire day. • If any details overlap (start at the same time on the same day), DS-System will select the one that ends sooner (closer to the current time on DS-System). If two details start and end at the same time on the same day, the latest (bottom / lowest) one in the Schedule Detail list will apply.	

New / Update DR Drill Request

This dialog box allows you to add or edit a DR Drill to the schedule list.

Account #	Once a backup set has been selected, these read-only fields are automatically filled with the corresponding information.
DS-Client #	
Backup Set Name	Once selected, this field shows the full backup set name and owner.
Backup Set	DR Drills are scheduled per backup set. • If you can click [...] to open the Select Backup Set dialog box, then you can browse to select a backup set. • Once a backup set is selected, this field shows the full backup set path.
Scheduled Start Date	Date when you wish to permit this backup set to perform the DR Drill.
Quota	You must assign a quota, which is the maximum amount that can be restored for this backup set during the DR Drill. • Select the amount and unit (MB / GB / TB).

New DS-System address

(N+1 DS-Systems only) This dialog box allows you to add node addresses for an N+1 DS-System.

Host name or an IP address	Use this field to type a specific DNS host name or IP address.
IP Range	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 Notification

This dialog allows you to create new notifications for your DS-Clients.

Send the following	Drop down list allows you to select a maintenance notification, or a text message.
Message	Type the text of any message you wish to send.

Expire On / On	If this is a maintenance notification, you need to set the date / time the downtime will occur. If this is a text message, you need to specify a date when the message will expire.

New Schedule Wizard - Select Schedule Type

This page allows you to select the kind of task to schedule.

Schedule Type list
- Autonomic Healing
- Validation
- System Admin
- E-Mail Report
- Disk Report
- Clean Libraries
- Empty Trash
- Delta Chain Optimization

Optimize Storage Space Configuration

The Optimize Storage Space section is only active if the DS-System has been configured to recycle deltas. This increases the speed of backups, but it also increases DS-System storage size until Master reconstruction or optimization.

These options apply for every System Admin process that runs on the DS-System.

Optimize Storage Space	
Optimize files with at least [...] recycled generations.	Select this check box to enable at the specified number of generations. If this number is “0”, all recycled generations are cleaned.
Optimize files with at least [...] KB recycled generations.	Select this check box to enable at the specified size of generations. If this number is “0”, all recycled generations are cleaned.
Optimize files if last generation older than [...] days.	Select this check box to enable at the specified age of last generation. If this number is “0”, all recycled generations are cleaned.
Optimize files with cumulative delta size at least [...]% of master size.	Select this check box to have DS-System reconstruct delta files only if all the corresponding negative delta generation(s) plus the first positive one (the one that will become master) are bigger than the specified percentage of the negative master generation. (This reduces situations that require high disk I/O with relatively low space gains.)

Overwrite Option

This dialog box appears if you are retrying the “Write to Buffer” process for a Disc/Tape request or the “Export Customer” process. DS-System has detected that usable data exists in the export location. This can happen if the previous process was stopped (by the user, because of DS-System shutdown, because connection to Disc/Tape buffer was lost, etc.).

Delete the existing data first	Delete the data from the buffer, and start a new Write to Buffer process (overwrite all data in the buffer directory).
Resume in the directory	Try to resume the process with the data that already exists in the export location. This may save you some time if a large amount has already been written.
Resume from before first error (Export Customer only)	This option appears if the previous “Export Customer” process encountered errors. Select to resume the process with the data that already exists in the export location. This may save you some time if a large amount has already been written. • The process will resume from the point before the first error was encountered.

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 Section	• All - Select to print all of the rows of the spreadsheet. • Selection - Select to print only a range of rows, as defined in the From Row and To Row fields.
Print Row Nums	Prints row numbers on the printout.
Print Colors	Prints the spreadsheet in color or shades of gray, depending on your printer.
From Row	Type the first row you want to print. Leave this field blank to print all the rows.
To Row	Type the last row you want to print. Leave this field blank to print all the rows.

Process Windows

These windows show the progress of processes that are currently running on the DS-System (e.g. backups, restores, System Admin, etc.). A Process Window is opened by right-clicking an activity in the Current Activity Monitor (bottom section) of the DS-Operator GUI and selecting **Monitor**.

Working On Section This section displays both the source path and the DS-System storage path.	
Dir	This field show the current share\directory that is currently being processed.
Set	This field shows the computer\backup set\owner associated with the directory that is currently being processed.
Stop	If this button is available, you can click it to try and stop the process.
Progress Section The progress amounts for Library, Delta, Regular and Total show two columns: one for the size (in bytes, KB, MB, or GB) and the other for the number of files.	
Library	Shows the (original) size and number of files stored using the DS-Library storage scheme.
Delta	Shows the (original) size and number of files stored using the DS-Delta storage scheme.
Regular	Shows the (original) size and number of files stored as regular (non-Delta, non-Library) files.
Total	Shows the total (original) size and number of files stored for the process.
Time	Shows the time that has elapsed since the beginning of the process.
Errors	Shows the number of errors that occurred during the process (if any).
Warnings	Shows the number of warnings that occurred during the process (if any).
Events	Opens the Event Log Viewer for the process.
Physical	Shows the physical amount of file space taken up by the files on the DS-System's storage.
Status	Shows any relevant status comments about the process.

NOTE: The numbers that appear for an autonomic healing process might be much larger than the storage available on the DS-System. This is because autonomic healing can repeatedly scan the DS-System storage.

Reactivate - Select Service End Date

This dialog box appears when you reactivate a DS-Client.

Service Ends	Select to specify a Service End Date. This date is only important if you are using DS-Billing (DS-Client activities with DS-System will not be allowed after that date). • If you configure a date, you will only be able to edit it from the DS-Billing GUI (DS-Client - Profile tab). • Clear this check box if you do not want to specify an end date.

Recovery Log

Use this dialog box to view the DS-System Recovery Log. To narrow your search, you can specify search parameters in the “Filter” section at the bottom.

Activities List	
Account #	Shows the customer's account associated with the corresponding activity.
DS-Client #	Shows the DS-Client associated with the activity.
Backup Set	Shows the specific backup set associated with the activity.
Type	Shows the type of restore that was performed that counts as a recovery activity.
Date	Shows the date and time the activity was started.
Size	Total size of the corresponding recovery activity.
Session ID	Shows the ID number of the corresponding activity.
Set ID	Shows the Backup Set ID number of the corresponding activity.
DR Drill	Shows if this recovery activity counts as a DR Drill.
Filter Section	
From	Select the earliest date and time you want to display. No activities earlier than this time will be displayed. By default, this will be set to the start of the current day.
To	Select the latest date you want to display. No activities newer than this date and time will be displayed. By default, this is set to the end of the current day.
Customer	Searches for a specific customer's recovery activities.
DS-Client	Searches for a specific DS-Client's recovery activities.
Account # / DS-Client #	This field name reflects the enabled option. Click [...] to access the customer or DS-Client list. By default, this field is empty, which displays recovery activities for all customers and DS-Clients.
Restore Type	To view specific recovery activities, choose one from the activity list. The default is <All>.
Backup Set	Type the Backup Set ID number you want to view in this field. To browse for a backup set, click [...]. This brings up the Select Backup Set dialog box. By default, this field is empty, which displays recovery activities for all Backup Sets.
Find	Updates the Recovery Log based on the parameters in the “Filter” section.

Recovery Report

Use this dialog box to print or preview the Recovery Report.

From Date	Specify a start date for the report period.
To Date	Specify an end date for the report period.
Select the scope of the report: • All Customers • A specific Customer • A specific DS-Client	
Account # / DS-Client #	Allows you to specify a particular customer or DS-Client. Click the [...] button to open the Select Customer or Select DS-Client dialog box, to view a list of available customers or DS-Clients.

Company Name (Customer Only)	The corresponding customer's company name.
Category	Select the recovery category to display. • <All>: Show the combined total of all recovery categories. • Regular Recovery (default): Show only regular recoveries that count for RLM purposes. • DR Drill Recovery: Show only recoveries that were performed using scheduled DR Drill quota. • Trial Recovery: Show only recoveries that were performed by DS-Clients under an “RLM Trial” period.
Branding	When you print a report on demand, you can select the branding picture that appears in the report header (or <None> if you want to leave it blank). • The list of branding definitions comes from the Edit DS-System Branding dialog box (Setup Menu > Branding).

Remote DS-VDR Configuration - Select Location

This wizard allows you to configure an eligible backup set for Remote DS-VDR. On this page, you can configure the virtual machines with a restore location for when the Remote DS-VDR restore is performed.

Global You must define these settings, which will apply to all virtual machines in the list, unless overridden. • **Host**: (VMware VADP only) You must select a target host where the corresponding virtual machine will be restored. • **Folder**: You must select the target folder on the vCenter or Hyper-V server where the corresponding virtual machine will be restored. • **Datastore**: (VMware VADP only) You must select a datastore of the host, where the restored virtual machine will belong. • **Clear Overrides**: This resets all virtual machines to use the global settings.	
Virtual Machine List This section contains the list of backed up virtual machines for this backup set. Each line represents a different virtual machine, which can be configured for Remote DS-VDR. • By default, the <Global> settings apply to all virtual machines. • Optionally, you can override an individual virtual machine’s restore destination settings by clicking in the corresponding cell(s) and editing the destination.	
Check box	If selected, this virtual machine will be restored to the configured destination when the Remote DS-VDR Restore is run on this backup set.
Name	Shows the backed up Virtual Machine’s source path and name.
Host (VMware VADP only)	• By default, the <Global> Host setting applies. You can click in this cell to override the default and make another selection.
Folder	• By default, the <Global> Folder setting applies. You can click in this cell to override the default and make another selection.
Datastore Setting (VMware VADP only)	• By default, the <Global> Datastore setting applies. You can click in this cell to override the default and make another selection.

Remote DS-VDR Configuration - Select Remote DS-VDR Options

This wizard allows you to configure an eligible backup set for Remote DS-VDR. On this page, you can configure additional options specific to the virtual machine.

Set Restoration Time • The **One Time**, **Daily**, **Weekly**, and **Monthly** options are essentially the same as those found in the Schedule (Setup menu > Schedule: Add | Edit). See Schedule - Select Schedule Time if you require more details on those options.	
None	If selected, remote DS-VDR restores of this backup set will only be performed on demand.
One Time	Type the day and time when you want to schedule the Remote DS-VDR restore.
Daily	Displays the daily schedule options.
Weekly	Displays the weekly schedule options.
Monthly	Displays the monthly schedule options.
Trigger after backup	[Default] If selected, DS-System will automatically trigger a Remote DS-VDR restore process each time a backup is successfully performed. • Note: If the backup set is scheduled, the trigger will wait until after the **Perform Backup**, **Enforce Retention** and **Perform Validation** tasks have completed.
Options Each virtual machine selected for Remote DS-VDR restore is listed here. • **Name**: Backed up virtual machine name. • **Use SAN with all disk types**: (VMware VADP only) If this is selected and the configuration supports this option, the Remote DS-VDR will try to restore the virtual machine using SAN Transport mode. • **Power On**: Select this check box to start the virtual machine after a successful restore to the Remote DS-VDR target location. If you select this option, a full restore is always performed. • **Priority Order**: If there are multiple virtual machines in this list, you can power the selected ones on together (default) or stagger the start order (from lowest to highest) using this option.	
Power on delay between priority levels (seconds)	Wait this amount of time before starting virtual machine(s) from the next level in the **Priority Order**.

Remote DS-VDR Configuration - Select Method and Tools

This wizard allows you to configure an eligible backup set for Remote DS-VDR. On this page, you can configure the Remote DS-VDR Tool that will be used and the destination restore target.

Restore Type You must select how the restores of this backup set will be performed. • **Full**: Each time a restore is performed of this Remote DS-VDR backup set, the target virtual machine will be recreated, then the disk(s) will be recreated, and then the full data will be restored. • **Incremental**: After the first (initial) restore, this will restore only the incremental changes to the target virtual machine. This can be significantly faster than full restores.
Remote DS-VDR You must select the specific Remote DS-VDR Tool installation that will perform the restore. • (The DS-VDR must be running.) Items in this list are configured from DS-VDR menu > Remote DS-VDR Servers. • For Hyper-V, you must select a DS-VDR server running on Windows.
vCenter / Host / Datacenter (VMware VADP only) This is the section of the target Host/Datacenter where you want this backup set's virtual machine(s) to be restored. Items in this list are configured from DS-VDR menu > Virtualization Servers. • **vCenter/Host/Datacenter**: Select the Datacenter on the target vCenter/Host.
Virtualization Server (Hyper-V only) This is the target Hyper-V server where you want this backup set's virtual machine(s) to be restored. Items in this list are configured from DS-VDR menu > Virtualization Servers.

Remote DS-VDR Global

Use this dialog box to view and configure backup sets for Remote DS-VDR. You can also perform on-demand restores from this dialog box.

Backup Set List • Each row in this list is an eligible virtual machine backup set (VMware VADP or Hyper-V) that can be configured for Remote DS-VDR. • To perform Remote DS-VDR, the **Licensed** check box must be selected for the corresponding backup set. Each selection subtracts one count from the DS-System's Remote DS-VDR Count.	
Configure	Click to edit the Remote DS-VDR configuration of the selected backup set. • Opens the Remote DS-VDR Configuration - Select Method and Tools page.
Restore	Click to perform an on-demand Remote DS-VDR restore of the selected backup set.
Filter The default is to show all backup sets that qualify for Remote DS-VDR configuration. If you select any options, the list will automatically update.	
Customer	Search for a specific customer's backup sets.
DS-Client	Search for a specific DS-Client's backup sets.
Account # / DS-Client #	The box name reflects the selected option. Click [...] to select a specific customer or DS-Client. By default, this field is empty.
Backup Type	Searches for a specific type of backup set. The default selection is <All>.

Remote DS-VDR Restore

This dialog box appears once you have selected a backup set for on-demand Remote DS-VDR restore.

Virtual machine restore options	
Generation	Select from the available online generations. By default, the latest generation is selected.
All virtual machines	Select to restore all virtual machines, including virtual machines that might not contain all their virtual disks or have virtual disks with errors. If a machine is restored with a disk count that does not match the original configuration, the event log will display a warning.
Only valid virtual machines	Select to restore only virtual machines that have all their virtual disks without any errors. If a machine is not restored, the event log will explain the reason for it not being restored.

[DS-System N+1 Only].

N+1 ID to Perform Activity	Select from the available N+1 DS-Systems to perform this activity.

Remote DS-VDR Servers

Use this dialog box to set up the remote DS-VDR servers that can be used by the DS-System.

Remote DS-VDR List Each line in this dialog box represents a different Remote DS-VDR Tool. The tool is a service program constantly running on the specified machine. • DS-System sends the native backup set data (compressed and encrypted) to the Remote DS-VDR Tool, which will take over the task of decompressing and decrypting the data to the configured target restore Virtualization server.	
Add	Click to add a Remote DS-VDR Tool to this list. • Opens the Add / Modify DS-VDR Server Info dialog box.
Modify	Click to edit the selected Remote DS-VDR Tool from this list. • Opens the Add / Modify DS-VDR Server Info dialog box.
Remove	Click to delete a Remote DS-VDR Tool from this list.

Remove DS-Client

This is the confirmation dialog box when you select to remove a DS-Client from the DS-System.

Archive all DS-Client data to BLM before deletion	A copy of all data deleted from DS-System will be moved to BLM (Backup Lifecycle Management). This option only appears if the BLM Module is enabled.

Force new BLM Archive package	Select to use a new archive package. Otherwise, the archive request will be added to the current archive package on the BLM Archiver (if applicable).
Use back-references	Select to allow the archive package to contain references to older packages. This may 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.
Password	You must type your current DS-Operator user login password to proceed.
Remove	Deletes the selected DS-Client's data (moves it to the respective "Trash" folder) and removes the DS-Client from the DS-System Tree.

Rename customer account number

This dialog box allows you to rename a customer account number. Since each customer must have a unique account number, you may need to rename an account if you are using a DS-System group (used for multi-directional replication).

Account #	Shows the existing customer account number.
New Account #	Type a new, unique account number. • Once this is changed, all DS-Clients for this customer will receive an error message indicating they must change the DS-Client configuration to the new account.

Replication - DS-System Group Configuration

This dialog box allows you to manage the DS-System group (used for multi-directional replication).

DS-System Group List	Each line represents a different DS-System that is part of the multi-directional replication 'DS-System Group'. • **ID**: Internal ID of the DS-System in the DS-System Group. • **Local**: 'Yes' indicates which DS-System you are currently connected to. • **Address**: IP address(es) of each DS-System. • **Bandwidth Throttle**: Shows the bandwidth throttle to the DS-System for replication processes.
New	Click to add a new DS-System to the DS-System Group. • Opens the New / Modify DS-System Address (DS-System Group) dialog box.
Modify	Click to edit the selected entry from the DS-System Group List. • Opens the New / Modify DS-System Address (DS-System Group) dialog box.
Apply	Click to apply the settings as they appear in the DS-System Group List.

Replication Status

This dialog box allows you to view the replication status of backup sets from multiple DS-Clients at once.

DS-Client List	Each line corresponds to a DS-Client. • Account ID: • Client ID • DS-Client # • Account # • Customer Name
Check	Displays the Replication Status (DS-Clients) dialog box with the backup sets of the selected DS-Clients.

Replication Status (DS-Clients)

This dialog box shows a snapshot of the replication status of backup sets on the DS-System for all the DS-Clients you selected.

Backup Set List	Each line corresponds to a backup set. • Icon: shows if the local DS-System is sending (Up Arrow) or receiving (Down Arrow) replication data. • System ID • DS-Client # • Backup Set • Last Backup • Status: See color coding (below)
Color coding	The color indicates the replication status of the backup set. • **Black**: Status is “Synchronized”. This means the local and replication DS-Systems have the same backup set content. • **Blue**: Status is “Newer”. This means the local DS-System has the newer backup set. • Grey: Status is “Older”. This means the local DS-System has an older version of this backup set. • **Red**: Status is “Error”. This means the local DS-System cannot get the backup status because of network or other service problems.

Report Setup - Font Tab

This dialog box allows you to select a specific font to use in the PDF reports generated from this installation of DS-Operator GUI.

PDF File Font	
Select	Opens a dialog box to browse for a specific Font file. • Font must be “True Type”, ending in .ttf or .ttc and preferably UNICODE. • This only applies to the local DS-Operator GUI installation.

Restart Archive Requests

This dialog box allows you to restart an Archive Request that has been interrupted.

Session Label	Each archive package is automatically time-stamped. To make searching archive packages easier, you can add your own label (alphanumeric string).
Force to reuse the original archive package	This is useful if the original archive package where the data was to be written is no longer “Open for Staging”. • Instruct the BLM Archiver to try to add the Archive Request data to the original archive package on the BLM where it was destined. • If this fails, it will add the Archive Request data to the current “Open for Staging” archive package.
Do not force to reuse the original archive package	Add the Archive Request data to the current “Open for Staging” archive package. • Create new archive package: Select to use a new archive package. Otherwise, the archive request will be added to the current archive package on the BLM Archiver.
Create new archive package	(Do not force to reuse the original archive package only) • Select to use a new archive package. Otherwise, the archive request will be added to the current archive package on the BLM Archiver.
Ignore file send errors and continue	By default, file send errors will cause an Archive Request to fail. • Select to allow the Archive Request to continue, even if any errors occur. This will let the Archive Request complete.

Restore Activities Report

Use this dialog box to print or preview the restore activities provided by the DS-System over a specific period of time.

From Date	Specify a start date for the Report period.
To Date	Specify an end date for the Report period.
Select the scope of the report: • All Customers • A specific Customer • A specific DS-Client	
Account # / DS-Client #	Allows you to specify a particular customer or DS-Client. Click the [...] button to open the Select Customer or Select DS-Client dialog box, to view a list of available customers or DS-Clients.
Company Name (Customer Only)	The corresponding customer's company name.
Sorted by	Select a sort method.
Branding	When you print a report on demand, you can select the branding picture that appears in the report header (or <None> if you want to leave it blank). • The list of branding definitions comes from the Edit DS-System Branding dialog box (Setup Menu > Branding).

Retire Storage

Use this dialog box to select the number of simultaneous processing threads to use. One thread is used per backup set.

Start [...] processes	This many simultaneous Retire Storage Processes will be started. • The default is 3.

Retire Storage Monitor

This dialog box allows you to monitor the retirement of a Storage Location.

Retirement request list	This list shows the remaining Retirement Request processes. When a request is finished, it disappears from this list. Most items are backup sets, but the list also contains library folders and the root directories (which are usually processed last): • Storage ID: Unique Internal DS-System ID number for the corresponding Extensible Storage Location that is being retired. • Account ID • Client ID • Set ID • Status: Empty (waiting to move), Processing (currently moving), or Last time processed (if retirement was stopped or interrupted). • Files: Number of files moved from the Retired Storage Location. • Size: Size of files moved from the Retired Storage Location.
Start / Stop	Click Start to begin moving backup items to the other Storage Location(s) in the same Storage Group. • Click Stop if you want to stop moving backup items. You can restart at any time.
Remaining	Shows how many Retirement Requests are left. The Process is finished when this number is 0.
Storage Location list	This is the same list as in the Extensible Storage Locations dialog box. It gives you a real-time view of where data is moving. • Hover the cursor over a column to view numerical information.

RLM Trial Client Report

Use this dialog box to print or preview the RLM Trial Client Report.

Select the scope of the report: • All Customers • A specific Customer • A specific DS-Client	
Account # / DS-Client #	Allows you to specify a particular customer or DS-Client. Click the [...] button to open the Select Customer or Select DS-Client dialog box, to view a list of available customers accounts or DS-Client accounts.
Sorted by	Select a sort method.

Branding	When you print a report on demand, you can select the branding picture that appears in the report header (or <None> if you want to leave it blank). • The list of branding definitions comes from the Edit DS-System Branding dialog box (Setup Menu > Branding).

Rolling Upgrade

Use this dialog box to define the rolling upgrade parameters for DS-Clients.

Account/DS-Client	Displays the customer account and associated DS-Clients.
Description	Displays a brief description of the customer account or DS-Client.
Version	Displays the existing version of DS-Client.
Compatibility	Indicates if the DS-Client is compatible for rolling upgrades.
Last Upgrade	Specifies the last time the DS-Client was upgraded.
Upgrade Status	Displays the status of the last upgrade.
Priority	Displays the specified priority level.
Add the default upgrade priority for all new DS-Clients added to the DS-System	Applies the specified priority level to any new DS-Clients added to the DS-System.
Select priority level	Specifies the priority level (1 - 9) of the selected DS-Clients.
Apply Priority	Applies the selected priority to the selected DS-Clients.
Rolling upgrade period from ... To...	Specifies the dates between which the rolling upgrades should be applied to the selected DS-Clients.
Define time difference between 2 priority levels	Specifies the interval (number of days) between the execution of rolling upgrades for two selected DS-Clients with two different priority levels.
Save	Saves the rolling upgrade configuration.

Run System Admin

Use this dialog box to select the type of System Admin to run:

Perform Regular Scan to Update Statistical Info	• Full: Force the System Admin to scan all directories and files (this may be slow). • Regular (faster process): System Admin will skip directories checked by a previous System Admin, and scan only new or modified directories.
Perform Full Scan to Update Stored Size Invoice Info	Checks only the stored size, no file consistency check performed.

[DS-System N+1 Only].

N+1 ID to Perform Activity	Select from the available N+1 DS-Systems to perform this activity.

Scan Storage

Use this dialog box to select the options for the scan storage process.

Additional scan threads: [...]	The number of additional threads you want to use to perform the scan. • You can select from 0 to 99 additional threads (the default is 3). • All threads execute in parallel to shorten the scan time.
Require Storage Lock	The storage scan process has the lowest priority on the DS-System. This option is useful, depending on the level of accuracy you require from the scan. • **Off**: [Default] The storage scan process will run and finish, even if other activities modify the online storage at the same time. • **On**: Select if you require a 100% accurate scan result. The storage scan will only start if no other activity is using the storage, and it will only complete successfully if the scan is uninterrupted.

Schedule - Report Settings (E-Mail Reports)

This dialog box allows you to set the reports that will be generated and emailed by this task.

Report Settings (Reports)	Shows the reports that will be generated and emailed.
Add / Edit	Add a new Scheduled Report, or edit the selected item from the list. • Opens the Add / Modify Scheduled Report dialog box.
Delete	Deletes the selected item from the Scheduled Report list.

Schedule - Report Settings (Write-to-Disk Reports)

This dialog box allows you to set the Reports that will be generated to a disk location by this task.

Report Settings (Reports)	Shows the Reports that will be generated to a disk file.
Add / Edit	Add a new Scheduled Report, or edit the selected item from the list. • Opens the Add / Modify Scheduled Report (Disk Report) dialog box.
Delete	Deletes the selected item from the Scheduled Report list.

Schedule - Options (Delta Chain Optimization)

This dialog box allows you to select Delta Chain Optimization options that will be performed by this task.

Optimization selection	• **Modified Directories**: (Default) The delta chain optimization task will only process directories the DS-System has flagged as 'modified' since the last optimization task was run. • **All Backup Sets**: The optimization task will run on all backup sets on the DS-System. • **Modified Backup Sets**: The optimization task will only run on modified backup sets. It will process all the backup set's directories.
Concurrent optimization processes	The number of Delta Chain Optimization processes that will run concurrently for this task, if required. • Each process handles one backup set.

Schedule - Options (Empty Trash)

This dialog box allows you to select options when running a scheduled Empty Trash task. A scheduled Empty Trash task runs on all Extensible Storage Locations.

Remove files older than this number of days	Specifies how many days must have passed before data in the trash is permanently deleted. Files are time stamped with the date and time that they were originally deleted. • Range: 0-99 • Default: 7 Note: If you specify a value of 0, the data will not be permanently deleted until midnight the following day.
Concurrent empty trash processes	A separate, concurrent Empty Trash process runs per Extensible Storage Location. • Valid values 1-99, default is 3.
Additional empty trash threads	Each Empty Trash process will use this many additional process threads. • Valid values 0-99, default is 3. Note: this can have a significant impact on DS-System performance.

Schedule - Options (System Validation)

This dialog box allows you to select validation options that will be performed by this task.

Options • These are the same options as those in the System Validation dialog box. • NOTE: The DS-Client's encryption keys must be forwarded to the DS-System for this activity to work.	
Generations to validate	• **Latest**: validates only the latest generation of the backup set data. • **All**: validates all generations of the backup set data.
Concurrent validation processes	The number of validation processes that can run at the same time. A separate validation process runs for each backup set. • You can select from 1 to 99 processes (the default is 3).

Additional validation threads	The number of additional threads you want to use to perform each validation process. Each validation process will be able to use this number of additional threads. • You can select from 0 to 99 threads (the default is 0). All threads execute parallel to shorten the validation time.

Schedule - Select Options (System Admin)

This dialog box allows you to select the type of scan(s) that will be performed by this task.

Scan Options (System Admin)	These are the same options as those in the Run System Admin dialog box.
Perform Regular Scan to Update Statistical Info	• Full: Force the System Admin to scan all directories and files (this may be slow). • Regular (faster process): System Admin will skip directories checked by a previous System Admin, and scan only new or modified directories.
Perform Full Scan to Update Stored Size Invoice Info	Checks only the stored size, no file consistency check performed.

Schedule - Select Schedule Time

This dialog box allows you to set the time(s) when a task will run.

Detail Type	
Daily	Displays the Daily tab. To specify a daily schedule, type the frequency of the Detail in the number field. (For example: if you type “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, type the frequency of the Detail in the number field. (For example: if you type “2”, it means the schedule will run every second week. The intervals are based on the Start Date of this detail.) You may also select the day(s) during the week that this schedule will run, by selecting or clearing the check boxes for 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 run the Detail. • **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 run the Detail (For example “the last Friday of every 3 months”).
One Time (Not available for Autonomic Healing or System Admin)	Type the day to run the schedule.

Start with DS-System (Autonomic Healing only)	Starts autonomic healing when the DS-System service starts. No other details can be used in combination with this one.
Detail Frequency	
Start at	Indicates the start time for this Detail. All schedules must have a start time.
End at	(Optional) You can specify an end time to create a time window. If a scheduled process is still running by the "End at" time, it will be stopped. (If you do not enable this option, any process started by this schedule will continue until it finishes.) • **after "..." day(s) from start day**: If you select an "End at" time, you can also specify a number of days (from 0-99) for the schedule's time window.

Schedule - Selection (System Validation)

This dialog box allows you to select the DS-Client(s) and backup set(s) you want to validate in this System Validation task.

Validation Selections list • Icon: Indicates if DS-System has the DS-Client's forwarded encryption key(s). • Customer Name • DS-Client # • Backup Set: <All> or <Selective> (Selective means only specific backup sets from the DS-Client will be validated.)	
Add	**Click to add DS-Clients.** • Opens the Available DS-Client(s) (System Validation) dialog box.
Edit	**Click to edit the selected DS-Client.** • Opens the Backup Set Selection (System Validation) dialog box.
Delete	Click to delete the selected DS-Client(s) from the Validation Selections list.

Schedule - Speed Control (Autonomic Healing)

This dialog box allows you to configure the speed control for this autonomic healing task.

Start time	Speed control window's start time.
End time	Speed control window's end time.
Speed %	The percentage of the maximum number of files that autonomic healing can process (this number is calculated every minute by the DS-System).
Add / Delete	You can vary the Speed Control at different times during the day (from 00:00 to 23:59) by adding time window(s). • If no window is set, the default Speed is 50% from 00:00-23:59.
Run Autonomic Healing once on every backup set and stop	Runs the autonomic healing task once on every backup set and then stops processing.

Schedules

This dialog box lists all the scheduled tasks that have been configured on the DS-System.

Task List • Task Icon • Task • Schedule Type • Last Start Time • Next Schedule Time • Scheduled On - a description of when the task will run	
Task Description • Displays a description for the selected item from the Task List.	
Add	Click to create a new scheduled task. Opens the New Schedule Wizard - Select Schedule Type dialog box.
Edit	Click to edit the selected task. Opens the Schedule - Select Schedule Time dialog box.
Delete	Delete the selected task from the list.

Select Backup Set

This dialog box allows you to select a specific backup set from those saved on the DS-System.

Backup Set List	Sets are grouped by Customer > DS-Client > Backup Set.
Find DS-Client	If the DS-System has many customers, you can narrow your search to a specific DS-Client. This opens the Find DS-Client dialog box. • After you select a DS-Client, this dialog box returns with that DS-Client selected in the list.
OK	Once you have selected the set you want, press OK.

Select Backup Set Type

This dialog box allows you to filter by backup set type. The Autonomic Healing Manager will only display the selected backup set type(s). This is useful since some backup set types develop recycled generations more frequently.

Select Backup Set Types • A list of all backup set types is provided. • Select the check box beside the type(s) you want to select for the filter.	
Select All	Selects all check boxes.
Deselect All	Clears all check box selections.
Invert Selection	Inverts the check box selections.

Select Bandwidth Throttle Schedule

This dialog box allows you to select a Bandwidth Throttle Schedule to apply. Schedules allow you to alter the amount of “throttling” based on day and time. You can also add, edit, or delete different Bandwidth Throttle Schedules from this dialog box.

LEFT-SIDE PANEL	**Schedule List**
New	Click to add a new Bandwidth Throttle Schedule to the list. • Once clicked, the Right Side of the dialog box activates, allowing you to define the Schedule Details.
Edit	Click to edit the selected Bandwidth Throttle Schedule from the list. • Once clicked, the Right Side of the dialog box activates, allowing you to edit the Schedule Details.
Delete	Click to delete the selected Bandwidth Throttle Schedule from the list. • A confirmation popup appears.
RIGHT-SIDE PANEL	Schedule Details • Active (New / Edit): Only the Details list appears, and the buttons activate. • Browse (Calendar Display): A calendar appears giving you a visual display of the throttling for the selected Schedule. You can change the display interval from the corresponding drop down list (1 hour - 5 minutes).
Bandwidth Throttle Schedule	Type or edit the name of this schedule.
New Detail(s)	Click to add a new Detail to this schedule. A Detail is valid from its start day \ time until the next Detail supersedes it. • Opens the New / Edit Bandwidth Throttle Schedule Detail dialog box.
Edit Detail(s)	Click to edit the selected Schedule Detail(s). Use the Select group button to edit multiple Details (from different days) if they have the same start time and limit. • Opens the New / Edit Bandwidth Throttle Schedule Detail dialog box.
Delete Detail(s)	Click to delete the selected Schedule Detail(s).
Select Group	Select one Detail from the list. Click this button to select all the other common details (with the same start time and limit).
Add Schedule Update Schedule	Click to create a new schedule or update the existing schedule.
Select	Click to select the selected schedule.

Select Country & Province

Use this dialog box to select or specify your country (and local details if applicable).

Select Customer

Use this dialog box to select a customer from the list.

Customer List	
Customer Name	Shows the name of the Customers available for selection.
Account #	Shows the account.
Select By Section	
Customer	Type the name of the Customer you wish to search for. You may also type a pattern of characters to search for.
Account #	Type the account number of the Customer you wish to search for.
Find	Updates the Customer List based on the parameters in the Select By section.
Find Deleted (Print Invoice Dialog only)	This button only appears if you are searching for a Customer from the Print Invoice dialog box. Click to update the List with deleted Customers, based on the parameters in the Select By section.
Select	Click to select the selected customer.

Select Directory

Use this dialog box to browse through the tree and select the share\directory path you want to use.

Computer (Windows Only)	This field contains your browsed selection. • You can type the computer name or IP address (if known) and click “Find” to add it to the browse tree. If its shares are visible, you will be able to browse and select.
Shares and Directories Tree	Shows the available shares and directories.
Select	Click to select the selected directory.

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.
Descripti on	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 selected event(s) from the exclude list.

Select Hotfix Directory

Use this dialog box to select from the available folders to use as the hotfix upgrade directory.

Select Initial Backup Sets

This dialog box allows you to choose which backup sets in the selected Initial Backup Buffer you would like to import to the DS-System.

Available Backup Set(s) (Left-Side)	
[>>>]	Click this button to select the selected backup set(s) for import. It will move to the Right-Side column: “Selected Backup Set(s) for Import”. • If necessary, you will be prompted to type the USER-DEFINED encryption key for the backup set. • Backup sets encrypted with the DS-Client key signature must be imported to that specific account on the DS-System, otherwise an error will appear.
OK	Click this button once you have selected the backup sets to import.

Select Import Method

This dialog box appears if the customer or DS-Client data you are importing is on the same volume as a DS-System Storage Location.

Select import method • If the import process finds space on the same storage volume, this section activates.	
Move	This method can be much faster. It will rename the existing data at the storage location to complete the Import.
Copy	The imported data will be distributed evenly to all available storage locations.

Select LDAP Server

Use this dialog box to select the LDAP server to use with this customer.

LDAP server list • Each line represents one LDAP server that can be used by the DS-System.	
Select	Click to chose the LDAP server that is selected in the list.
Add	Click to configure a new LDAP server. • This opens the Add / Modify LDAP Server dialog box.
Modify	Click to edit the LDAP server selected in the list. • This opens the Add / Modify LDAP Server dialog box.
Delete	Click to delete the LDAP server selected in the list.

Select Output Method

Use this dialog box to generate and print a list of the backup sets for the selected DS-Client.

To Printer	Prints the list of backup sets.
To Text File	Generates a text file containing the list of backup sets.
File	Specify the name of the file.

Select Storage Group

Use this dialog box to select from the defined Storage Group(s). If none are defined, a default group appears. Data from the customer or DS-Client will be sent to this Storage Group's Extensible Storage Location(s).

NOTE: If you change a Storage Group after backups have been performed, it will not affect that data. Only new backup data will go to the new Storage Group.

Select User

Select from a list of all available users.

User Name	Shows the User Name of the selected user.
Name	Shows the name of the selected user.
Select	Click to select the selected user and close the dialog box.

Select VM Directory or Datastore

This dialog box allows you to select a folder from a vCenter or a Datastore from a VM host. Select the item you want and click "Select".

Select Volume

This dialog box allows you to select a Storage Volume by its name, as defined from the NAS Storage Device itself. Select a Volume name from the list and click “Select”.

Service Provider Info / ASIGRA Inc. Info

Use this dialog box to view or update your service provider mailing information, which appears in all reports generated by DS-System.

Company	Displays the name of the service provider.
Address 1	Shows the address of the company location.
Address 2	If the previous field can not contain all the address information, type the rest here.
City	Shows the city of the company location
Prov/State	Select the appropriate province or state from the drop-down list box.
Postal/ZIP	Update the postal or zip code.
Country	This field changes to reflect the selection of Province or State (Canada/United States)
Phone	Shows the phone number at the company location.
Fax	Shows the fax number at the company location.
Contact	Shows the contact person at the company location.
System ID (Update Provider only)	This field is set during the system installation (the default is XXXX). When generating new DS-Clients, the System ID is concatenated with the prefix “DSC”, and a sequentially generated DS-Client number to create a unique DS-Client ID (for example: DSCnnnn00001, where nnnn is the System ID).
E-Mail	Shows the email of the appropriate contact person.

Set Options (Autonomic Healing)

This dialog box allows you to apply the selected option(s) to individual backup sets. They will apply the next time an autonomic healing process runs on the backup set’s files.

Select	This option flags the backup set for a special (one-time) autonomic healing process. It applies the next time autonomic healing is run on demand with the “Process selected backup sets only” option. • This option applies only once. After autonomic healing processes the corresponding backup set, the option flag is removed.
Promote	This option increases the backup set’s priority in the autonomic healing processing order. It will be put at the top of the list for processing (Processing Order column). • This option applies only once. After autonomic healing processes the corresponding backup set, the option flag is removed.

Force DR scan	This option flags the backup set to have the autonomic healing process run a DR scan on it. A DR scan will verify all storage links in the Extensible Storage Locations. (Note this may significantly increase the processing time.) • This option applies only once. After autonomic healing processes the corresponding backup set, the option flag is removed.
Full Speed	This option removes any autonomic healing speed control settings, so the corresponding backup set is processed at 100% (i.e. as fast as possible). • This option applies only once. After autonomic healing processes the corresponding backup set, the option flag is removed.

Set Priority

This dialog box allows you to set the Autonomic Healing Priority for the selected backup sets.

Priority	By default, backup sets have “Low” priority, and processing is assigned by the autonomic healing process. • Normally you would only increase priority to a specific backup set or group of backup sets for troubleshooting purposes. • Higher priority sets will be processed first during the session’s first pass through the backup sets. Afterward, higher priority sets will be processed more often. • The autonomic healing process may adjust the priority of a backup set, depending on the results of the previous pass.

Share Customers

This dialog box allows you to share multiple customers at once.

Customer List	Each line corresponds to a customer account. • Account ID • Account # • Customer Name
Share	Shares the selected customers.

Share DS-Clients

This dialog box allows you to share multiple DS-Clients at once.

DS-Client List	Each line corresponds to a DS-Client. • Account ID • Client ID • DS-Client # • Account # • Customer Name
Share	**Shares the selected DS-Clients.**

SMTP settings

This dialog box allows you to configure the SMTP notification settings.

SMTP Server settings	
SMTP Server	Type the name or IP address of the SMTP server.
Port	Indicates the SMTP port to use (this is usually 25, and should not be changed unless you have a specific requirement).
Server requires authentication	Select if the SMTP server requires authentication. Type the following: • Account Name • Password • Confirm: Retype the password

SNMP Event Settings

This dialog box allows you specify the events to be monitored, and the notification frequency for SNMP destinations

Events to be monitored	
DS-Client had Errors during backup	
DS-Client requested a Disc/Tape	
DS-System is running on low memory	Free memory is at this percentage or lower.
DS-System Storage drive capacity low	Monitors the following: • When the Physical Size of any Storage Location reaches 90% capacity. • Physical space is represented by the “Disk Space” column in the Extensible Storage Locations dialog box (Setup Menu > Storage > Extensible Storage).
DS-System found invalid file(s) on storage drive	
Customer / DS-Client storage quota reached	
License will expire in [...] days	
DS-System has reached [..]% of the license’s storage capacity limit.	
Connection between Director and Leaf was Lost	(N+1 DS-Systems only.)
N+1 formation process succeeded	(N+1 DS-Systems only.)
Storage Lock for Snapshot.	“AllowStorageLock” parameter must be set in DS-System Advanced Configurations (Setup Menu > Advanced Configurations).
DS-System is in “Critical Status”.	Monitor must be enabled (Setup Menu > Critical Errors Monitoring).
Notification frequency	

Keep sending traps if problem continues	
Once every [...] minutes	Set an interval
Send a trap as a heartbeat every [...]	Set an interval
Notes	

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

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.

Start Autonomic Healing

This dialog box allows you to start autonomic healing on-demand.

Process all backup sets (continuously in background)	(Default) Starts this autonomic healing session to run (in the background) and repeatedly process all the backup sets (until the session is stopped).
Process selected sets (only once)	Limits this autonomic healing session to process the selected backup sets (i.e. ones with the “Selected” flag in the options column of the Autonomic Healing Manager. • Selected backup sets are processed (once), then their option flags are cleared.
Processes to start	Select how many simultaneous autonomic healing processes to start. (Note: if the Speed Control takes effect, the total healing speed might be limited.)
Start	Click to start the on-demand autonomic healing.

Statistics - BLM Statistics Tab

The BLM Statistics tab shows the current statistics at the Customer, DS-Client, or Backup Set level.

Row headings	**BLM Protected Size**: Shows the Protected Size (Original size of the files that were backed up). **BLM Stored Size**: Actual size occupied on BLM Archiver storage.
Column headings	• **Current** • **Average**: [DS-Client level statistics only] The average size for the DS-Client, calculated from the beginning of the month. • **Peak**: [DS-Client level statistics only] The peak (maximum) size for the DS-Client measured since the beginning of the month.
Update	Click to update the statistics with the latest information from the BLM Archiver. (DS-System will connect to BLM to retrieve these statistics.)
Last Backup Set Update Time	Shows the date/time of the last backup.
Unit	Select the display units (Bytes, KB, MB, GB). • Default is MB

Statistics - Real-time Statistics Tab

The Real-time Statistics tab shows the current statistics at the Customer, DS-Client, or Backup Set level.

Row headings	• **Protected Size**: Shows the Protected Size (Original size of the files on the source computer for all restorable generations backed up on the DS-System storage). • **Stored Size**: DS-Size + the logical size of libraries. Logical size of libraries is calculated as the percentage of the total links to the library used by the backup set / DS-Client. For example: If a backup set has 3 links to the same library file and that library file has a total of 10 links to it, then the logical library file size used for this backup set is (3/10) x (library file size). • **DS-Size**: Actual size of the files and generations saved on DS-System Online Storage (includes restorable generations and recycled master generations). Recycled delta generations are only included in the calculation if the DS-System is configured with “ExcludeRecycleDelta” OFF (Advanced Configurations). (This does not include the “DS-Size” of the corresponding library files. To see the DS-Size of the libraries, right-click on a DS-System, customer or DS-Client and select “Library Statistics”.) • **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.
Column headings	• **Current** • **Average**: [DS-Client level statistics only] The average size for the DS-Client, calculated from the beginning of the month. • **Peak**: [DS-Client level statistics only] The peak (maximum) size for the DS-Client measured since the beginning of the month.
Update	Click to update the statistics with the latest database information.

Last Backup Set Update Time	• Shows the date/time of the last backup.
Unit	Select the display units (Bytes, KB, MB, GB). • Default is MB

Statistics - System Admin Statistics Tab

The System Admin Statistics tab shows a summary of information gathered during the last System Admin for the files at the Customer, DS-Client, or Backup Set level.

Row headings	• **Library**: Refers to the DS-Library common files. • **Regular**: Refers to non-common files that do not have Master or Delta attributes. • **Master**: Refers to the first backup of a DS-Delta file. This is a full-size backup. • **Delta**: Refers to a subsequent backup of a file using the DS-Delta savings technology. • **Archive**: Refers to archive stubs for files that have been “pushed” to Archive (BLM Time Push). These files are only available from the BLM Archiver. • **Total**: Shows the Total for all file types.
Column headings	• **Size**: Refers to the original backup size of the respective files. • **DS Size**: Refers to the size of the files, which they actually occupy on the DS-System. • **Files #**: Refers to the number of files.
Calculated On	Shows the date/time the statistics presented were calculated. The statistics are calculated during the System Admin process.
Update	Click to update the statistics with the latest database information.
Last Backup Set Update Time	Shows the date/time of the last backup.
Unit	Select the display units (Bytes, KB, MB, GB). • Default is MB

Stop Autonomic Healing Processes

This dialog box allows you to stop any running autonomic healing processes.

Stop All Autonomic Healing	All autonomic healing processes will be stopped.
Stop Selected Autonomic Healing	Only selected (on-demand) autonomic healing processes will be stopped. • Any scheduled or background autonomic healing processes will continue.
Stop Scheduled Autonomic Healing	Only scheduled autonomic healing processes will be stopped. • Any on-demand or background autonomic healing processes will continue.

Stop Background Autonomic Healing	Only background autonomic healing processes will be stopped. These are autonomic healing processes started with the option: “Process all backup sets (continuously in background)”. • Any on-demand or scheduled autonomic healing processes will continue.
OK	Proceed with stopping the selected type(s) of autonomic healing process.

Stop N + 1 Node

[DS-System with N+1 license]

This dialog box allows you to stop the selected N+1 Node. This stops the DS-System service on that node.

• **Wait for all running activities to complete**: Stops the DS-System 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-System 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.	
OK	Proceed with stopping the node.

Storage Groups

You can add as many Storage Groups as are required. A Storage Group helps you to organize data on the DS-System, because all customers and DS-Clients must be associated with one. Once you have added a Storage Group to this list, you can associate it with Extensible Storage Location(s) in the Extensible Storage Locations dialog box.

Storage Group List	• ID: Internal DS-System ID for the Storage Group. • Name • Description
Add	Click to add a Storage Group. • Opens the New / Edit Storage Group dialog box.
Edit	Click to edit the selected item in the Storage Group List. • Opens the New / Edit Storage Group dialog box.
Delete	Click to delete the selected row from the Storage Group List.

Storage Info for: [...]

This dialog box shows the storage properties of individual files on the DS-System.

File List

Gen (Excluding Library File Headers)	Shows the corresponding file generation.
Backup Time	Shows the time that the file was backed up.
Last Modified	Shows the time that the file was last edited.
File Type	Shows the DS-System online file type of file that was backed up. • Regular • Master • Delta • Public Library • Customer Library • Client Library • Archived: Means the corresponding generation has been 'pushed' to the BLM Archiver, and only a small (~1K) stub remains online.
Link ID (Excluding Library File Headers)	Two types of links may be shown: • Master/Delta File: If 0, no other generation depends on this one. If a number appears, it is the Generation ID of the next generation in the (delta) chain. • Library File: This is the ID of the DS-Library file.
Flags	Shows the corresponding backup options that have been applied to this particular file. These options correspond to the following key: P = Permissions S = Backup Streams G = Digital Signature M = Master File D = Delta E = Extended Attributes (NetWare) B = Bindery (NetWare) N = NDS (NetWare) R = Registry (Windows) X = POSIX
Attr	Shows the attributes of the backed up file. R = Read Only H = Hidden S = System A = Archive C = Compressed D = Directory
Size (Bytes)	Shows the original size of the file.
DS Size (Bytes)	Shows the actual size of the file, as stored on the DS-System.
Stream Size (Bytes)	Shows the full transmission size of the file (including file security, permissions, streams, etc.).
Encryption	Shows the type of encryption being used on the file (if any) and any extended information. • Encryption type: type and strength of the encryption (e.g. DES56, AES128, AES192, AES256)
Compression	Shows the type of compression being used on the file.
Archive ID	Shows the corresponding archive package number for the generation.

Archive Time	Time when the corresponding generation was “pushed” to BLM from online. If there is a date in this field, this generation has been Archived (it cannot be restored from DS-System, only from a BLM Restorable Image).
Verify Link (Excluding Library File Headers)	Click to verify the link of the selected generation from the list. This confirms that DS-System can find the backup data required by the selected generation: • If it is a Library, check that the library exists. • If it is a Delta, check that the required blocks in previous generation file(s) exist. • If it is a Master or Regular file, check that the source file exists.
Optimize (Master generations only)	Click to optimize the selected Master in the File Generation List: • DS-System will try to optimize the Master at the block-level (it may achieve slightly better de-duplication than the DS-Client). • If the preceding generation is also a Master, DS-System will convert the Master you are optimizing into a Delta that depends on it.
Restore	Click to try to restore the selected generation in the File Generation List: • Opens the File Restore dialog box.

Storage Path Converter

Use this dialog box to convert a physical path to identify the customer account, DS-Client, backup set, share, directory, and file.

Physical Path	Type the physical path on the DS-System storage location, starting with a backslash ‘\’ on Windows or a forward slash ‘/’ on Linux. You can type up to 8 levels of depth. For example, a file located at `F:\<folder>\data\1\1\106\1\1\1\1\8409.1270090846` where `<folder>` specifies the path to the storage location, can be resolved by entering the following numbers: • first number: “`F:\<folder>\data\1`”, the text before the first slash and number is ignored. This first number actually represents the ExtraCustID (an internal, DS-System assigned number). • second number: “\1” represents the customer account number • third number: “\106” represents the DS-Client number • fourth number: “\1” represents the backup set ID number • fifth number: “\1” represents the backup share folder (application ID number) • sixth number: “\1” represents the ExtraDirID (an internal, DS-System assigned number). • seventh number: “\1” represents the backup directory folder • eighth number: “8409.1270090846” represents the file generation (FileID.Generation-Timestamp).
Resolve	Click to convert the physical path information.

The following information is displayed (some fields may not appear, depending on the length of the path supplied): • Customer Name • Account # • DS-Client # • Backup Set • Share • Directory • File Name

Storage Quotas - Customer Quota Tab

Use this dialog box to edit the storage quota for the customers on the DS-System.

Customer List	A check box appears at the beginning of this list. • Company Name • Account # • Quota • Calculation • Used • Used (%)
Edit	Opens the Edit Storage Quota for Selected Customers dialog box for the selected customer(s).
Select All	Select all items in the customer list.
Unselect All	De-select all items in the customer list.
Find	Click to find the selected customer account number and display it in the Customer List.
Account#	Click [...] to open the Select Customer dialog box. (Leave this field blank to search for all customers on the DS-System.)

Storage Quotas - DS-Client Quota Tab

Use this dialog box to edit the storage quota for DS-Clients on the DS-System.

DS-Client List	A check box appears at the beginning of this list. • DS-Client # • Account # • Quota • Calculation • Used • Used (%)
Edit	Opens the Edit Storage Quota for Selected DS-Client(s) dialog box for the selected DS-Client(s).
Select All	Select all items in the DS-Client list.
Unselect All	Deselect all items in the DS-Client list.
Find	Click to find the selected customer account number or DS-Client number and display it in the DS-Client List.
Account # / DS-Client #	Click [...] to open the Select Customer dialog box. (Leave this field blank to search for all DS-Clients on the DS-System.)

Storage Quotas Report

• All Customers • Customer • DS-Client	
Account # / DS-Client #	Select a customer account or DS-Client number, if required.
Branding	When you print a report on demand, you can select the branding picture that appears in the report header (or <None> if you want to leave it blank). • The list of branding definitions comes from the Edit DS-System Branding dialog box (Setup Menu > Branding).
Show Only	Select to show only those customer accounts or DS-Client accounts that have reached the Stop Backup Level of their storage quota.

Storage Summary

The Storage Summary can help administrators analyze the trends for On Line amount, number of files and backup time. These figures are collected by the System Admin process, therefore you must schedule System Admin to run with the “Perform Regular Scan to Update Statistical Info” option selected (from DS-Operator > Setup > Schedules).These figures are collected during the weekly System Admin. performed on each DS-Client account.

Chart / List Section	
Chart View	• Chart Type: Select from Line or Bar Graph of the storage summary for the time period specified in the Select By section. • Graph Points: Place the mouse over any point to view a balloon popup of the data represented by that point. • X-Axis (Horizontal): The time axis is based on the period and interval specified in the Select By section. • Y-Axis (Vertical): The value axis displays the values for the series counters.
List View	The columns list the selections from the Storage Summary Series.
Select By Section	
Interval	Choose from one of the following radio buttons: Daily, Weekly, or Monthly.
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.
Customer / DS-Client	Choose the radio button to search for a specific customer account or DS-Client account. In the field below, click the [...] button to bring up the Select Customer or Select DS-Client dialog box.

Scales Section (Chart only)	The factor displayed in each dropdown list allows you to adjust the placement of the corresponding chart on the graph (for example: if one chart is too small, while the remaining charts represent high figures). The value bar will continue to show the actual value, not the scaled value. • Amount: Scales the Online amount chart. • Time: Scales the Average Backup Time chart. • Files: Scales the Files chart.
View Section	
Chart	[Default] Displays the information as a chart (Line or Bar).
List	Displays the information as figures in a spreadsheet table. (It is easier to use this format if you are viewing more than 3 series units).
Detailed List	All the System Admin data used to calculate Storage Summary.
Refresh	Updates the display every time you change a parameter in the Select By section.
Series	Click to change the information displayed in the storage summary. This opens the Storage Summary Series dialog box.

Storage Summary Series

This dialog box allows you to change the information that is displayed in the Storage Summary. All size amounts will be displayed in bytes.

Backup Time Section	
Actual Time	Shows the actual backup time duration of both Scheduled and Demand Backups, for the selected period.
Files Section	
Total Files	The total number of files stored Online (including all generations, less any file deletions).
Inc Files	Increment of Total Files: This figure is derived by subtracting the Total Files at the previous time interval from the current Total Files figure (i.e. day, week, or month).
New Files	Shows the total number of new files backed up (i.e.: not including files with previous generations).
Backup Files	Shows the total number of files backed up for the selected interval.
Inc Backup Files	Increment of Backup Files: This figure is derived by subtracting the previous interval selected from the current Backup figure (daily/weekly/monthly).
Amount Section	
Total Online	Shows the corresponding amount, for the Total Online files figure.
Inc Online	Increment of Total Online Amount: This figure is derived by subtracting the previous interval time period from the current Online Amount selected (daily/weekly/monthly).
Transmitted	Shows the actual amount, for the files transmitted to Online (including compression/encryption, etc.).

Inc Transmitted	Increment of Transmitted amount: This figure is derived by subtracting the previous interval time period from the current Transmitted amount selected (daily/weekly/monthly).
New Online	Shows the corresponding amount, for the New Online files figure.
DS-Size	The total amount of physical data stored for the selected period, displayed in terms of the size on the DS-System (including compression, encryption, DS-Libraries and DS-Delta)
Online Backup	Shows the corresponding amount, for the Backup Files figure.
Inc Online Backup	Increment of Online Backup Amount: This figure is derived by subtracting the previous interval time period from the current Online Backup figure amount selected (daily/weekly/monthly).

Storage Trend

This dialog box presents a visual summary of the Storage Trend. It displays information collected per DS-Client, based on the DS-Client's Storage History Setting.

By default, this information is kept in the DS-System database for the period specified by the **CleanStorageHistory** advanced configuration parameter (see: Section 3.4, "Configuring the advanced settings"), unless a manual delete of the logs has been performed (see: Section 3.13.2, "Deleting the DS-System logs").

Storage Chart / List	Displays the storage over time, separated by the History Interval specified for the DS-Client: • Chart - Displays the storage in a chart. • List - Displays the storage in table format, for each history interval.
Select by	• From - Start date for Storage Trend. • To - End date for Storage Trend. • DS-Client - Select DS-Client to display. • Interval - Split the trend into this time interval (works best with "List View").
View	• Chart (Default) • List
Zoom	(Chart only) Use to scale the Storage Chart up or down.
Refresh	Click to update the dialog box.
Series	Click to open the Storage Trend Series dialog box. • Allows you to choose what trends to display.

Storage Trend Series

This dialog box allows you to choose the items to display in the Storage Trend Report. All size amounts will be displayed in bytes.

Protected Size	Shows the Protected size (size backed up from DS-Client).
Protected Size (Average)	Shows the average Protected size since the start of the month.

Protected Size (Peak)	Shows the peak (highest) Protected size recorded since the start of the month.
Stored Size	Shows the Stored Size (size on DS-System).
Stored Size (Average)	Shows the average Stored size since the start of the month.
Stored Size (Peak)	Shows the peak (highest) Stored size recorded since the start of the month.
Native Size	Shows the Native size (original size of the latest generation of all data that the DS-Client has backed up to the DS-System).
Native Size (Average)	Shows the average Native size since the start of the month.
Native Size (Peak)	Shows the peak (highest) Native size recorded since the start of the month.
BLM Protected Size	Same as above, but refers to the data stored on BLM.
BLM Protected Size (Average)	
BLM Protected Size (Peak)	
BLM Stored Size	
BLM Stored Size (Average)	
BLM Stored Size (Peak)	

Storage Usage Report

Use this dialog box to print or preview Storage Usage report for the DS-System as it is currently.

Select the scope of the report: • All Customers • A specific Customer • A specific DS-Client	
Sorted by	Select a sort method.
Branding	When you print a report on demand, you can select the branding picture that appears in the report header (or <None> if you want to leave it blank). • The list of branding definitions comes from the Edit DS-System Branding dialog box (Setup Menu > Branding).
Column selection	Select which columns to include in the report: • Include Customer's subtotal • Include DS-Client's storage size • Show DS-Client Description Each of the following types of storage can be displayed (actual, average, or peak): • Protected Size • Stored Size • Native Size • BLM Protected Size • BLM Stored Size

Storage Volumes

This dialog box allows you define a list of NAS Storage Volumes that can be mapped to a DS-System Extensible Storage Location.

Storage Volume List • VolumeID: Internal DS-System assigned number for the specific Storage Volume. • Storage ID: Internal DS-System assigned number for the corresponding NAS Storage. • Volume Name: Volume Name, as defined from the corresponding NAS Storage. • Volume Path: Path (mount point or UNC path) DS-System will use to the selected NAS Storage Volume. • Snapshot Path: Path (mount point or UNC path) DS-System will use to the Snapshots created for this NAS Storage Volume.	
Add	Create a new item in the Storage Volume List. • Opens the New / Edit Storage Volume dialog box.
Edit	Edit the selected item in the Storage Volume List. • Opens the New / Edit Storage Volume dialog box.
Delete	Delete the selected item in the Storage Volume List.

Storages

This dialog box allows you to define the list of available NAS Storage devices.

Storages List • Storage ID: Internal DS-System assigned number for the corresponding NAS Storage. • Storage Type: Specific Vendor of the NAS Storage. • Address: IP/DNS to the NAS Storage.	
Add	Create a new item in the Storages List. • Opens the New / Edit Storage dialog box.
Edit	Edit the selected item in the Storages List. • Opens the New / Edit Storage dialog box.
Delete	Delete the selected item in the Storages List.

System Activities Administration

Use this dialog box to perform high-level administrative tasks (e.g: system shutdown, disable system activities, etc.).

Enable / Disable (System Activities)	Indicates whether the DS-System activities are disabled (no new DS-Client connections, no scheduled System Admin processes). Click the Disable/Enable button to toggle between the two options.
Initiate / Abort (System Shutdown) [Standalone DS-Systems only]	This button is either Initiate or Abort, depending on the status of the System Shutdown check box. Click to toggle between the two options. If your choice was to initiate, the Initiate System Shutdown dialog box will appear.
Clear (Delete DS-System Logs)	Clears entries from the DS-System's Logs. Click to open the Delete Logs dialog box.

Clean (Libraries)	Runs the “Clean Libraries” process to remove orphaned library files (that were deleted by the customer from online storage). This saves some storage space. This process performs the following tasks: • It scans for, and marks any discovered orphaned library files with a timestamp. • It will delete any orphaned library files that have been in that state for at least 30 days. • If the “CleanLibLink” parameter is 1 (ON) in the DS-System Advanced Configurations dialog box (Setup Menu > Advanced Configuration), this process will also clean (scan and delete) any orphaned library links from the DS-System’s database.
Lock / Unlock online storage for snapshot	This only appears if the parameter “AllowStorageLock” is set to TRUE (1) in the DS-System Advanced Configurations dialog box. • **Lock**: all attempts to change the online storage will be paused • **Unlock**: instructs DS-System to release the online storage for normal operation
System	Opens the System Status dialog box.

System Backup Summary

This window shows a summary of the backup activities accumulated since the DS-System service was started.

Progress Section	The following headings show both the Size and number of files for each respective heading.
Library	Shows the (original) size and number of files stored using the DS-Library storage scheme.
Delta	Shows the (original) size and number of files stored using the DS-Delta storage scheme.
Regular	Shows the (original) size and number of files stored as regular (non-Delta, non-Library) files.
Total	Shows the total (original) size and number of files stored for the process.
Time	Shows the time elapsed since the DS-System service was started.
Errors	Shows the number of backup activity errors that occurred (if any).
Events	Opens the Event Log dialog box (for the System Backup Summary process).
Physical	Shows the physical amount of file space occupied by the files on the DS-System's storage.
New Library	Shows the (original) size and number of files that were added to the DS-Library.
Status	Shows any current status messages.

System ID (N+1 DS-Systems)	Allows you to select the node.

System Compression

This dialog box allows you to compress any uncompressed backup data (i.e. if the backup set is configured with “NONE” as a compression type).

Options • NOTE: The DS-Client’s encryption keys must be forwarded to the DS-System for this activity to work.	
Additional compression threads	The number of additional threads you want to use to perform the compression process. • You can select from 0 to 99 threads (the default is 3). All threads execute parallel to shorten the compression time

[DS-System N+1 Only].

N+1 ID to Perform Activity	Select from the available N+1 DS-Systems to perform this activity.

System Status

The System Status dialog box allows administrators to view detailed information about Network and Database connections, threads, and backup set locks. You can also send messages to users on the DS-System, as well as disconnect users from the DS-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.

DS-System N + 1 ID (N + 1 configuration only)	Select which DS-System in the N + 1 configuration to view.
Tabs	This dialog box contains the following tabs: • Network Connections Tab • Database Connections Tab • Threads Tab • Backup Set Locks Tab • Managers Tab • Replication Requests Tab
Network Connections Tab	
Type	Shows the type of connection that has been established (ex: Backup, Restore, User).
Name	Shows the name of the user associated with the network connection.
In Queue	Shows the position where the connection stands in the receive message queue (if applicable).

Out Queue	Shows the position where the connection stands in the send message queue (if applicable).
Create Time	Shows the time when the connection was established.
Description	Shows more detailed information about the connection, such as backup destination (if applicable).
Message	Click to bring up the Enter Message dialog box. A message will be sent to the selected user(s).
Disconnect	Click to disconnect the selected user(s).
Database Connections Tab	
In Queue	Shows the place where the process stands in the receive message queue (if applicable).
Process Start	Shows the time when the process began.
Name	Shows the name of the process in the message queue.
Description	Shows more detailed information about the connection, such as backup destination (if applicable).
Threads Tab	
Thread ID	Shows the unique thread ID.
Description	Shows details of the process.
Backup Set Locks Tab This tab shows all locked backup sets on the DS-System.	
ID	Shows the ID number (if applicable).
Name	Shows the type of lock applied to the corresponding backup set.
Description	Shows details of the process.
Managers Tab This tab shows all current connections TO and FROM the DS-System (or node for N+1).	
ID	Shows the ID number (if applicable).
Description	Shows details of the process in the following format: • <Thread_ID>/<action_time> ACTION, ...
Replication Requests Tab This tab shows all current replication requests. It only appears if **DSSysGroup** is enabled in the Advanced Configurations.	
Order	Shows the processing order.
Account ID	Shows the customer account number.
Client ID	Shows the DS-Client number.
Set ID	Shows the backup set ID number.
Group ID	Shows the ID of the DS-System in the DS-System Group that corresponds to this request.
Status	Shows what type of request is being made.
COMMON FIELDS These fields appear at the bottom of the dialog box, regardless which tab is selected.	
In KB/Sec	Shows rate that data is being received to indicate the throughput on the DS-System.
Out KB/Sec	Shows rate that data is being sent to indicate the throughput on the DS-System.

Cached Buffers	Shows the number of cached buffers.
Refresh	Updates the display.

System Uptime

The DS-System Uptime dialog box allows you to see a visual display of errors and unavailability of the DS-System.

System Validation

This dialog box allows you to specify the System Validation options for the backup set you have selected for on-demand validation via DS-Operator.

Options • NOTE: The DS-Client's encryption keys must be forwarded to the DS-System for this activity to work.	
Generations to validate	DS-Operator initiated validations can check the following data from a backup set: • **Latest**: validates only the latest generation of the backup set data. • **All**: validates all generations of the backup set data.
Additional validation threads	The number of additional threads you want to use to perform the validation process. • You can select from 0 to 99 threads (the default is 3). All threads execute parallel to shorten the validation time
N+1 ID to Perform Activity (DS-System N+1 only)	Select from the available N+1 DS-Systems to perform this activity.

Test SOAP Integration

This dialog box allows you to test the SOAP integration.

DS-Client Number	Send this string to the third-party Web Service.
Account Number	Send this string to the third-party Web Service.
Cookie	Send this string to the third-party Web Service. • Click [...] to select a file. If a file name is entered, the content of the file is sent.
Test	Click to test the SOAP integration between DS-System and the configured Web Server (URL). • DS-System will pass the test strings to the Web Service. The test is successful if the Web Service does not return an error.

Unshare Customers

This dialog box allows you to unshare multiple customers at once.

Customer List	Each line corresponds to a customer account. • Account ID • Account # • Customer Name
Unshare	Unshares the selected customers.

Unshare DS-Clients

This dialog box allows you to unshare multiple DS-Clients at once.

DS-Client List	Each line corresponds to a DS-Client. • Account ID • Client ID • DS-Client # • Account # • Customer Name
Unshare	Unshares the selected DS-Clients.

Update Storage Fill Levels

Use this dialog box to set the DS-System's Storage Fill Levels for Extensible Storage. These are the levels at which DS-System will automatically start redirecting storage to other Storage Locations, until all locations have an equal fill level.

Level Limit	Each limit is a percentage of total storage available that will be applied for each Storage Location.
Add	Click to add a fill level limit. A new entry will appear in the Level Limit list, after which you must type the percentage fill level to apply.
Delete	Click to delete the selected item from the Level Limit list.

Usage for the Library File [...]

This dialog box shows the usage of a library file (DS-Clients using the file).

Library Files List	
Account	Shows the name of the account with the corresponding library file.
Client	Shows the name of the DS-Client with the corresponding library file.
Path	Shows the original file path (on the customer's backup set). This only appears if you double-click on the file name, or click on the File Info button.
File Info	Displays information about the selected file in the File Information Section, and the file path in the path column.

File Information Section Computer, Set and Backup Date information appears by clicking File Info.	
DS-System Path	Shows the selected file's physical path on the DS-System.
Computer	Shows the source computer and share.
Set	Shows the backup set name and user using this library file.
Backup Date	Shows the date the source file was backed up.

Virtualization Servers

Use this dialog box to configure virtualization servers that can be used as targets for Remote DS-VDR.

Virtualization Server List Each line in this dialog box represents a different virtualization server that can be used as a restore target for Remote DS-VDR. • You must configure at least one target restore virtualization server before you can configure a backup set for Remote DS-VDR.	
Add	Click to add a virtualization server to this list. • Opens the Add / Modify Virtualization Server dialog box.
Modify	Click to edit the selected virtualization server from this list. • Opens the Add / Modify Virtualization Server dialog box.
Remove	Click to delete a virtualization server from this list.

VM Replication Groups

This dialog box allows you to view and configure the list of all VM replication groups for the DS-System.

VM replication group list • Group ID - Unique internally assigned number for each Source-Destination DS-Client mapping. • Account ID - Unique internally assigned number for the corresponding customer account. • Account # - The customer account number. • Source DS-Client #:Port - The source DS-Client number and port. • Destination DS-Client IP Address:Port - The destination DS-Client IP address and port.	
Add	Add a new VM replication group. • Opens the “Add / Edit VM Replication Group” dialog box.
Edit	Edit the selected VM replication group. • Opens the “Add / Edit VM Replication Group” dialog box.
Export	Export a VM replication group configuration to an XML file.
Import	Import a VM replication group configuration from an XML file.
Delete	Delete the selected VM replication group.

Write to Buffer

This is the process window that appears when generating a disc/tape image.

Progress Section	
Written	Size and number of files, and elapsed time since process started.
Total	Size and number of files.
Progress	A percentage bar shows the progress of the write to buffer process. • The “Remaining” time is an estimate for the remainder of the process.
Errors	Number of errors (if any).
Events	Click to open the Event Log for this “Write to Buffer” process.
Stop	Click to stop this “Write to Buffer” process.
Status	Lists any status messages for this “Write to Buffer” process.