

HP Data Protector MoM Configuration and Troubleshooting Guide

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Data Protector Manager-of-Managers concept

Using multiple Cell Managers

Data Protector Cell Managers are split into multiple cells for various reasons:

- Geographical grouping of systems
- Logical grouping of systems, for example, by department
- Slow network connection between some systems
- Performance considerations
- Separate administrative control

Data Protector provides the Manager-of-Managers (MoM) feature to centrally manage large environments with multiple cells. MoM allows you to group multiple cells into a larger unit, called a MoM environment that can be managed from a single point. MoM enables virtually unlimited growth of your backup environment. New cells can be added or existing ones split.

A MoM environment does not require a reliable network connection from Data Protector cells to the central MoM cell, because only the controls are sent over the long-distance connections. However backups are performed locally within each Data Protector cell, assuming that each cell has its own Media Management Database.

Manager-of-Manager features

Manager-of-Managers provides the following features:

- *Centralized licensing repository*
This enables simplified license management. It is optional but useful for very large environments.
- *Centralized Media Management Database (CMMDB)*
The CMMDB allows you to share devices and media across several cells in a MoM environment. This makes devices of one cell (using the CMMDB) accessible to other cells that use the CMMDB. The CMMDB, if used, must reside in the MoM cell. In this case, a reliable network connection is required between the MoM cell and the other Data Protector cells. Note that it is optional to centralize the Media Management Database.
- *Sharing libraries*
With the CMMDB, you can share high-end devices between cells in the multi-cell environment. One cell can control the robotics, serving several devices that are connected to systems in different cells. Even the Disk Agent to Media Agent data path can go across cell boundaries.
- *Enterprise reporting*
The MoM can generate reports on a single-cell basis as well as for the entire enterprise environment.

Central Media Management Database concept

IDB and CMMDB

In the MoM environment, you can use the Centralized Media Management Database (CMMDB), to share devices and media across several cells.

The Internal Database (IDB) keeps information about backup, restore, and media management sessions, devices, and media. It consists of five parts — MMDB, CDB, DCBF, SMBF, and SIBF— that are located on the Cell Manager. Each part stores some specific Data Protector information. For security reasons, it is impossible to access and use this data from another Data Protector cell.

In large multi-cell environments with high-end backup devices, you may want to share the devices and media among several cells. This can be achieved by having one CMMDB for all the cells and keeping an individual CDB for each cell. This allows media and device sharing while preserving the security capabilities of the multi-cell structure.

Note: You cannot configure a device connected to a client of an individual cell of a MoM environment directly from the MoM Manager, only from the appropriate Cell Manager. Only devices that are connected directly to Cell Managers can be configured from the MoM Manager.

To configure devices in such a case, either configure the devices from the Cell Manager or follow the following steps.

To configure devices and media for any cell within your enterprise environment:

1. In the MoM, click **Clients** in the Context List.
2. Select the cell that has the devices or media that you want to manage.
3. In the Tools menu, click **Device & Media Administration**.
4. A Data Protector Manager GUI opens with the Devices & Media context displayed.
5. Configure devices and media as if you were a local administrator.

How are media shared?

With the CMMDB, media can only be owned by the Data Protector cell that performed the first backup on those media. The media owner is displayed in the media view. While media are protected, only backups from that cell can be appended to the media. Each medium with protected data on it has information showing which cell currently owns the data. Once the protection expires, the media become available to other cells again.

How are media initialized?

If a tape has been initialized by one cell, any other cell can use it as long as it does not have any protected data on it. If a tape is loaded in a library and not yet initialized, any cell can initialize it, assuming that there is a loose policy and no other tapes are available. The media allocation rules apply in exactly the same way to shared tapes, except that appendable media can only be appended by the cell that owns them.

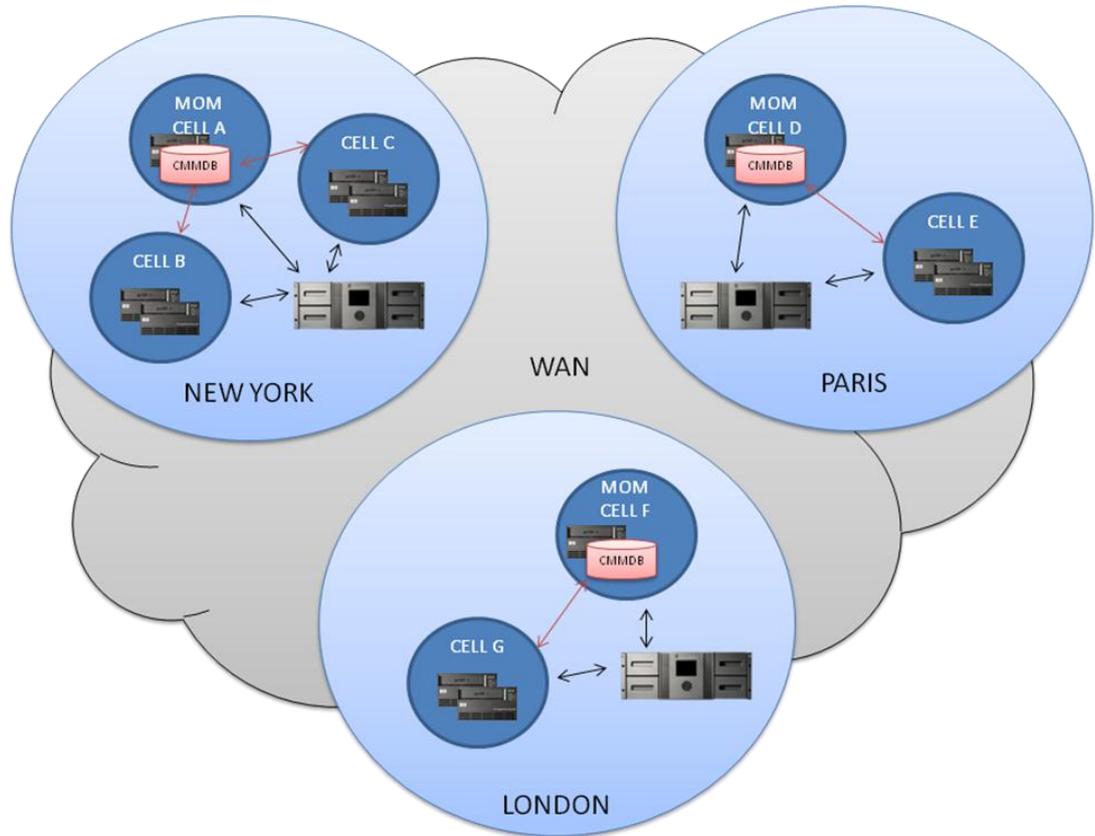
Important

- The CMMDB has a significant effect on licensing. Immediately after the MMDB is changed from local to remote, all the licenses associated with libraries and devices are taken (validated) from the MoM Manager and should be removed from client cells.
- A cell in the enterprise environment must have access to the CMMDB to be able to run a backup. The backup will fail if a network failure occurs between the specific client cell and the MoM cell.

Example

Each of the three departments at New York must be configured into a MoM cell. Additionally, both London and Paris should be configured into local MoM cells, each with two Data Protector client cells.

Configure cell A as the MoM cell for the New York environment, cell D as the MoM cell for the Paris environment, and cell F as the MoM cell for the London environment.



The Cell Managers and Manager-of-Managers in all seven cells should be Windows systems. Use a CMMDB in one of the cells in each MoM environment and Catalog Databases in each of the seven cells. The CMMDB allows you to share libraries between cells within each MoM environment.

Each of the three locations should have its own library.

The two cells at the Paris MoM environment should share a CMMDB, configured on the MoM of cell D to enable the library to be shared between the cells.

Similarly, the two London cells should share a CMMDB, configured on the MoM of cell F to enable the library to be shared.

In this way, each of the three MoM environments can use its own library, shared by client systems in all cells in the environment. Using only one very large library for all data would not make much sense, because huge amounts of data would need to be transferred over the WAN for backup purposes.

The CMMDB is the result of merging MMDBs from several cells in the MoM environment. It allows you to share high-end devices and media across multiple cells in a MoM environment. One cell can control the robotics, serving the devices that are connected to systems in other cells. The CMMDB must reside on the MoM. A reliable network connection between the MoM cell and the other Data Protector cells is highly recommended.

MoM installation and setup

Prerequisites

You must choose a system for the MoM Manager. It should be a highly reliable system that is a Data Protector Cell Manager with the software installed.

Install the required licenses on the MoM cell and on every prospective MoM client cell.

The Cell Managers are LAN connected. The Backup Media Servers are SAN connected to the tape devices. The MoM server is LAN connected.

All servers are entered into the domain.

Overview of the installation

The MoM environment configuration procedure consists of several phases. You need to:

- Install and configure a Cell Manager and/or media server on Windows and/or UNIX OS.
- Set up the MoM Manager.
- Import Data Protector cells into the MoM environment.
- Create a Data Protector user in the admin user group on every cell in the MoM environment who will act as the MoM administrator.
- Restart Data Protector services.
- Optionally, you can also configure a CMMDB, configure centralized licensing, and distribute the MoM configuration.
- Optionally, you can also configure Centralized Licensing.

Installing and configuring a Cell Manager and/or media server on Windows

Two configurations are possible:

1. Use dedicated tape drives for each Cell Manager. Tape media will be shared for both Cell Managers through a common free pool; the drives will be dedicated to each individual Cell Manager in the MoM configuration.
2. Configure the tape library to use the multi-path feature, adding the library into the configuration for only one of the Cell Managers. The other Cell Managers will receive control over the library robotics and shared tape drives via the multi-path configuration in Data Protector.

Using option 1: dedicated tape drives

1. On each Cell Manager, right-click on **Devices & Media, Devices, Autoconfigure Devices...**
Run the **Device Autoconfiguration Wizard** to configure the shared media devices.

Example:

On the first Cell Manager, run the **Device Autoconfiguration Wizard** and add the SAN attached shared media devices:

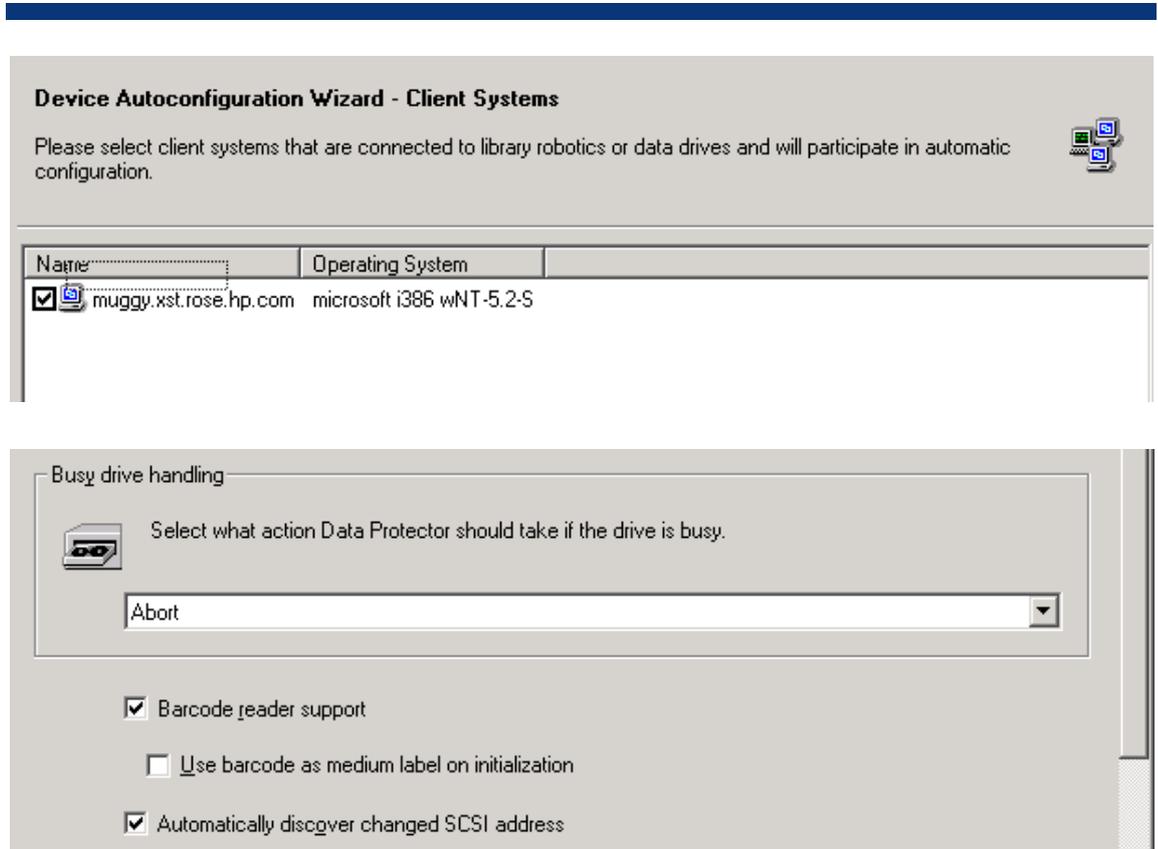


Figure 1: Device Configuration Wizard

Make sure only the number of drives that are dedicated to each Cell Manager are selected in the configuration wizard.

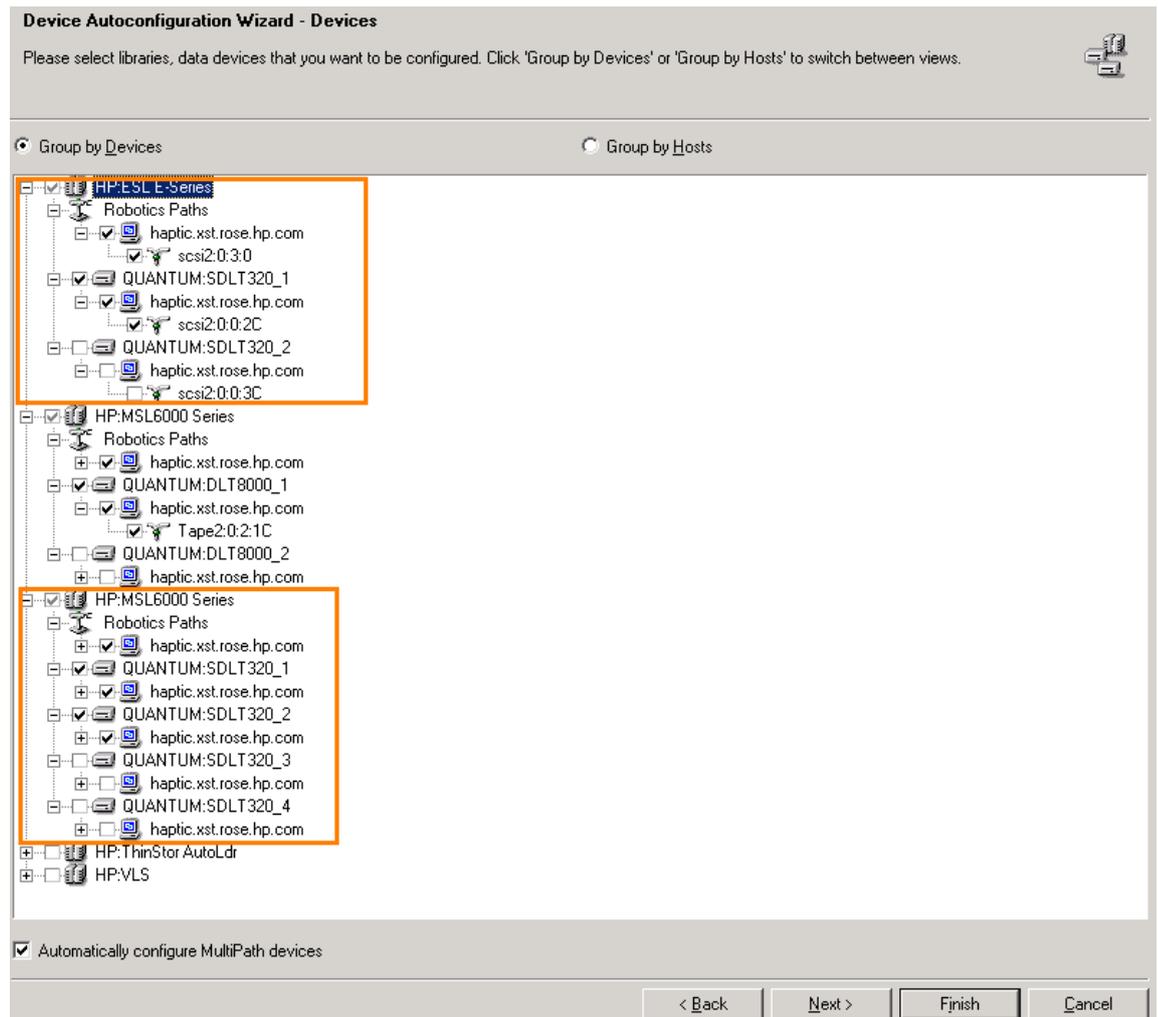


Figure 2: Device Configuration Wizard

2. Create dedicated pools on each of the Cell Managers, and a shared free pool for all Cell Managers. See the *HP Data Protector getting started guide (B6960-90155)* for more details on configuring media.

Note:

When merging to CMMDB, devices and pools with the same name will be renamed to create a unique name for each of the Cell Managers. To avoid renaming, rename all devices and pools prior to merging to CMMDB.

Note:

Media can be used for backups prior to merging to CMMDB.

Example:

On the first Cell Manager, run **Barcode Scan** on the slots. Create pools and format the media into the dedicated pools. Right-click on the media and select **Barcode Scan**:

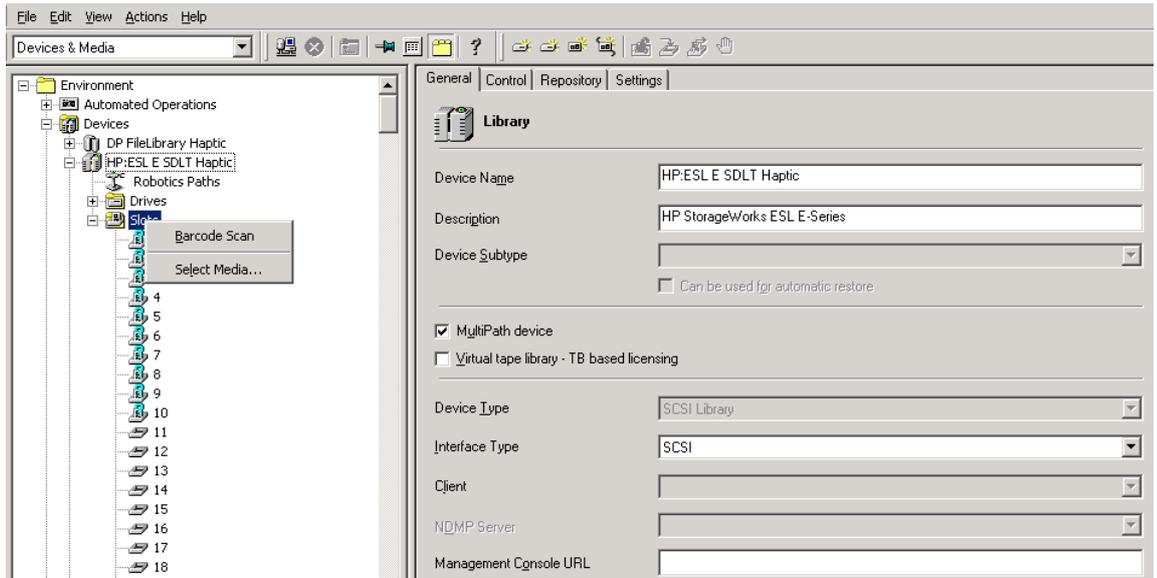


Figure 3: Tape barcode scan

Right-click on the media and select **Format** to format the media into the pools:

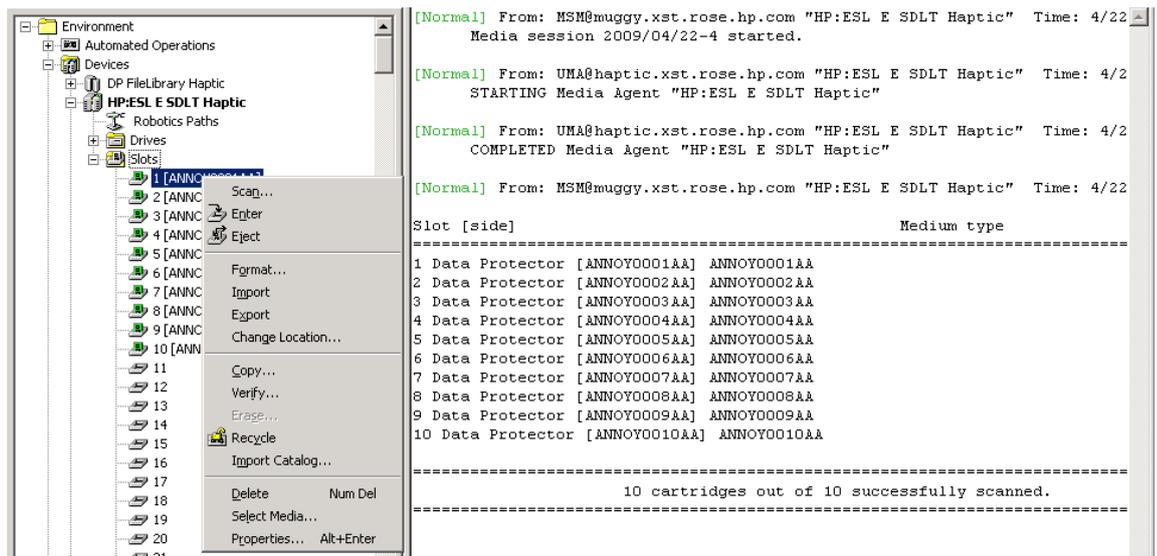


Figure 4: Format tape media

When formatting, select the media pool to add the media in:

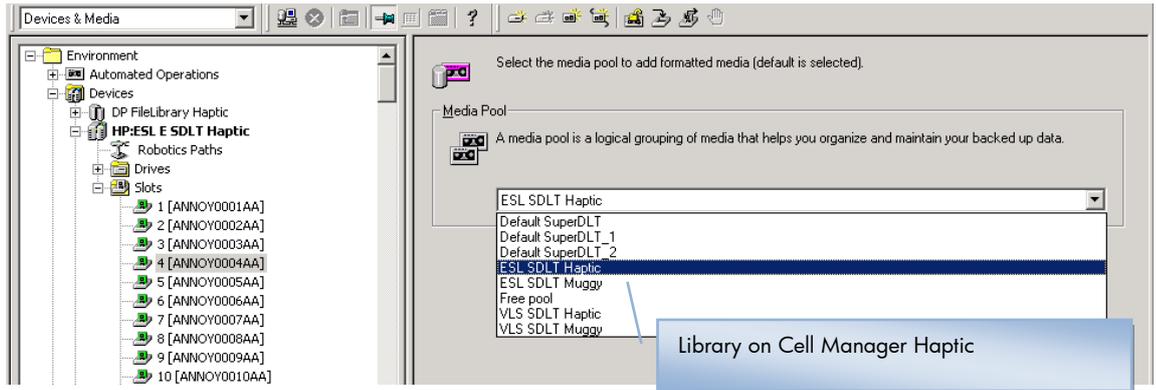


Figure 5: Defining pools

On the second Cell Manager, create pools, run a barcode scan on the slots, and run a scan on the media or format the media into the dedicated pools:

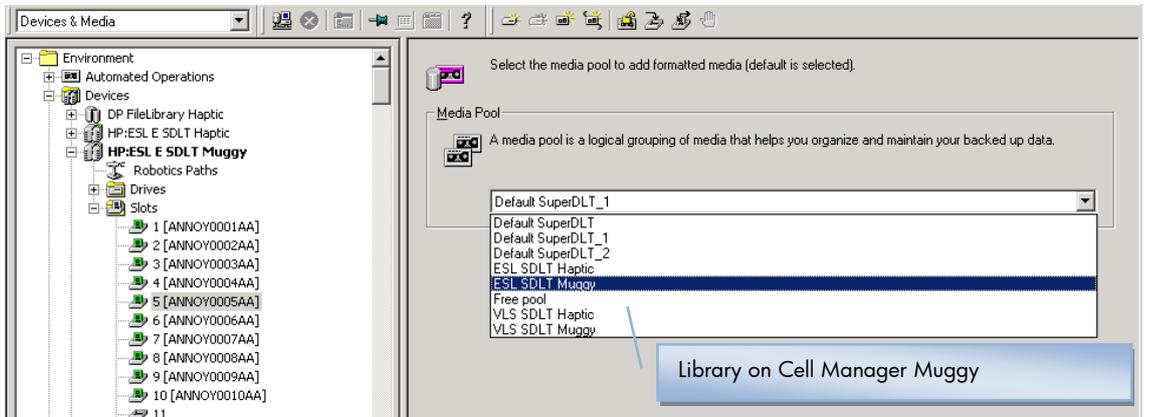


Figure 6: Defining pools

The configured media view will show the media details:

Slot-[Side]	Q...	Location	Format	Protect...	Avail...	Pool	Description
1 [ANNV0001AA]	Good	[HP:ESL E-Series_haptic: 1]	Data Protector	None	102400	ESL SDLT_Haptic	[ANNV0001AA] ANNOY0001AA
2 [ANNV0002AA]	Good	[HP:ESL E-Series_haptic: 2]	Data Protector	None	102400	ESL SDLT_Haptic	[ANNV0002AA] ANNOY0002AA
3 [ANNV0003AA]	Good	[HP:ESL E-Series_haptic: 3]	Data Protector	None	102400	ESL SDLT_Haptic	[ANNV0003AA] ANNOY0003AA
4 [ANNV0004AA]	Good	[HP:ESL E-Series_haptic: 4]	Data Protector	None	102400	ESL SDLT_Haptic	[ANNV0004AA] ANNOY0004AA
5 [ANNV0005AA]	Good	[HP:ESL E-Series_haptic: 5]	Data Protector	None	102400	ESL SDLT_Haptic	[ANNV0005AA] ANNOY0005AA
6 [ANNV0006AA]	Good	[HP:ESL E-Series_haptic: 6]	Data Protector	None	102400	ESL SDLT_Haptic	[ANNV0006AA] ANNOY0006AA
7 [ANNV0007AA]	Good	[HP:ESL E-Series_haptic: 7]	Data Protector	None	102400	ESL SDLT_Haptic	[ANNV0007AA] ANNOY0007AA
8 [ANNV0008AA]	Good	[HP:ESL E-Series_haptic: 8]	Data Protector	None	102400	ESL SDLT_Haptic	[ANNV0008AA] ANNOY0008AA
9 [ANNV0009AA]	Good	[HP:ESL E-Series_haptic: 9]	Data Protector	None	102400	ESL SDLT_Haptic	[ANNV0009AA] ANNOY0009AA
10 [ANNV0010AA]	Good	[HP:ESL E-Series_haptic: 10]	Data Protector	None	102400	ESL SDLT_Haptic	[ANNV0010AA] ANNOY0010AA
11	-	[HP:ESL E-Series_haptic: 11]	Empty	-	-	-	-
12	-	[HP:ESL E-Series_haptic: 12]	Empty	-	-	-	-
13	-	[HP:ESL E-Series_haptic: 13]	Empty	-	-	-	-
14	-	[HP:ESL E-Series_haptic: 14]	Empty	-	-	-	-
15	-	[HP:ESL E-Series_haptic: 15]	Empty	-	-	-	-

Figure 7: Configured media

Using option 2: multi-path device

To configure the device as a multipath device, the host of the CMMDB needs to be made aware of the media agents using this device, which may reside in other cells:

1. Open the `cell_info` file on the Cell Manager. This file is located under `DP_Home\Config\Server\Cell` on Windows Servers. Copy the lines containing the media agent host connected to the device in the `cell_info` file from the Cell Manager to the `cell_info` file on the MoM. A typical line in the `cell_info` file, where only MA is installed looks like the following:

```
-host "host.domain.com" -os "hp s800 hp-ux-11.31" -core A.06.10 -ma A.06.10
```
2. Repeat this process for all Cell Managers in the environment.
3. Save the `cell_info` file on the MoM and restart the GUI.

The same `cell_info` file content needs to be added to the MoM server `cell_info` file.

Note: Additional steps are required if you use the (recommended) secure cell feature (`allow_hosts`).

Now that you have configured the `cell_info` file on the Cell Managers, you can configure the device as a multipath device:

1. Right-click the device to see its properties. Click on the Multipath Device checkbox.

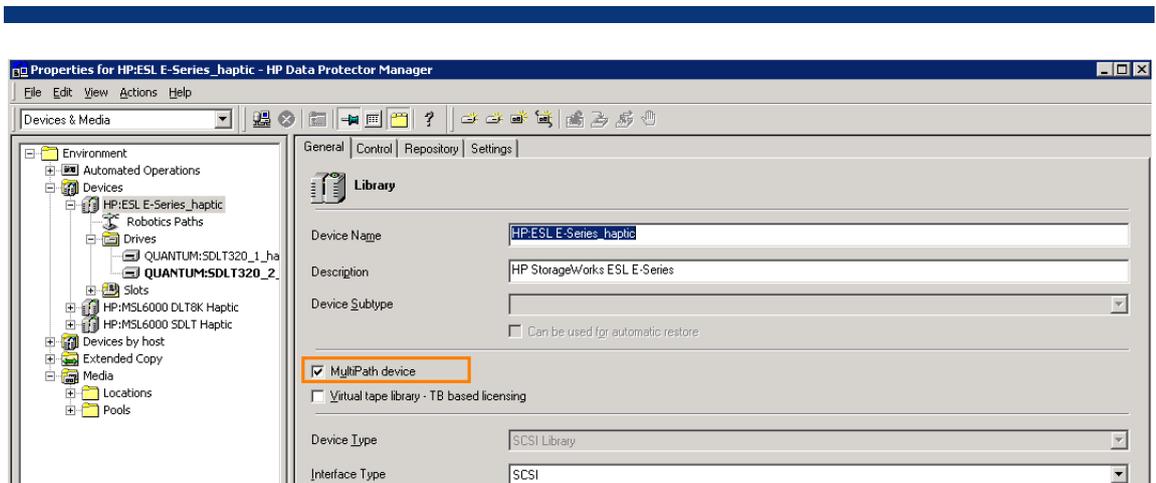


Figure 8: Media configuration

- In the **Control** tab, you can see additional boxes for configuring the client and the SCSI address. Select the appropriate clients and paths for the device. Click **Add** to add all hosts to the library configuration. The path that is available in the SAN to be selected, will have a green tick in front of it. The **Add** button will become active once an available path is highlighted. When all hosts have been added under the **Configured paths**, define the priority of the clients by moving them up or down using the arrows on the right of the **Configured paths** window:

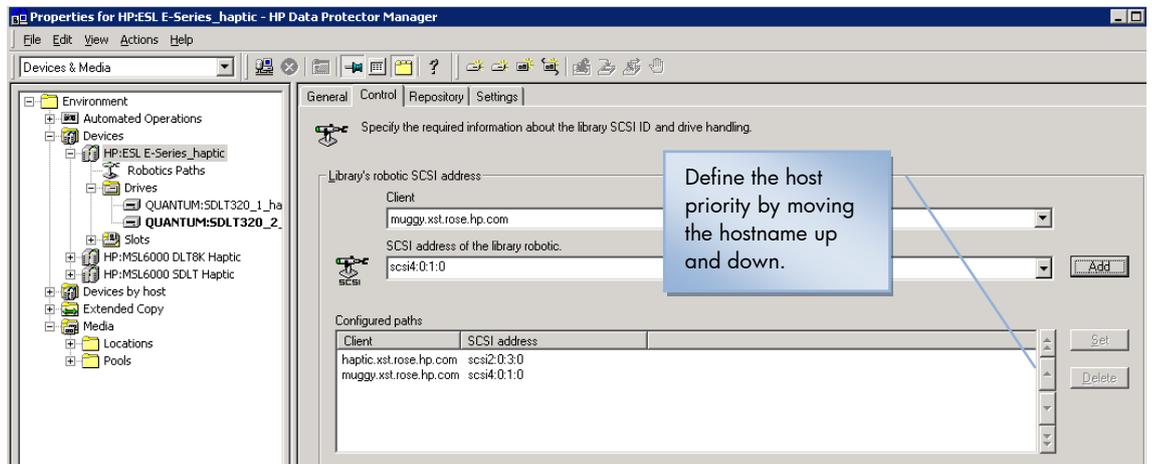
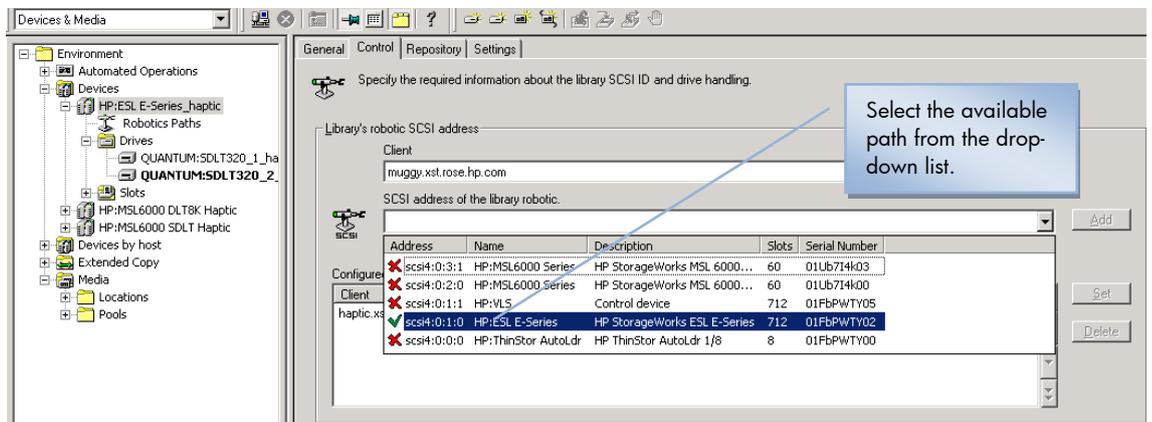


Figure 9: Media configuration

2. Repeat the procedure for all the drives to configure them as multipath drives.

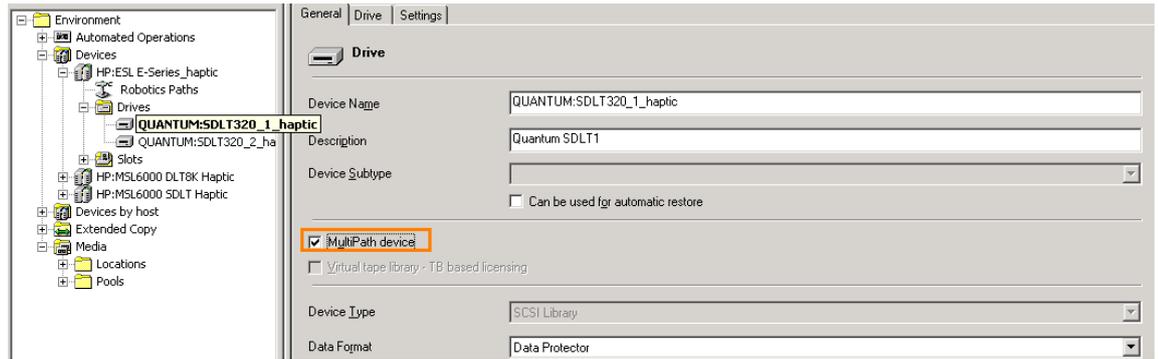


Figure 10: Media configuration

Note: If you switch between the first and second configuration options, you need to configure the same device twice from two different Cell Managers. You should delete one device from CM2 and just keep the device from CM1. You will have to change the “Destination” for the backups configured using the deleted device. You can either do this from the GUI or by editing the datalists/barlists located on the Cell Manager with a text editor.

Using sanconf

Sanconf is a utility for auto-configuring and modifying libraries and drives in a SAN. It allows the following tasks to be performed:

- Scanning specified Data Protector clients, gathering information on SCSI addresses of drives and robotic controls connected to clients in the SAN environment.
- Configuring or modifying settings of a library or drive for given clients using the information gathered during the scan of Data Protector clients.
- Removing drives on all or specified clients from a library.

In Data Protector 6.1, this utility was limited to work only within a single cell, with no option to be used in a MoM environment.

In Data Protector 6.11, sanconf has a new `sanconf -mom -existing options` option from the MoM server. Sanconf is able to configure any device from any cell that uses the same CMMDB as the cell in which sanconf is started.

The following limitations apply:

- All cells have to use a CMMDB. Cells that use their own MMDB (even if they are part of the same MoM) cannot be configured in this way. You must run a separate sanconf for such cells.
- If one MA client is configured in more than one Cell Manager, only the first Cell Manager will be shown during configuration. This will be visible in messages and debugs only; it has no impact on the functionality.
- In environments where security settings do not allow connections across Cell Managers, the functionality will not work. Clients from cells using a CMMDB will have to be configured in a way to allow sanconf from another cell to contact them directly. This is valid for firewall settings and for Data Protector Permission settings.

Setting up a MoM Manager

Two MoM configurations are possible:

- Promote one of the Cell Managers to become the MoM manager as well.
- Use a dedicated server to be the MoM server only.

If a high number of database transactions is expected on the CMMDB (>200 IDB database connections), it is recommended to use a dedicated system for the MoM Manager, separated from the Cell Manager IDBs transactions.

Option 1: Promote one of the Cell Managers to become MoM manager

1. In the Context List, click Clients.
2. In the **Actions** menu, click **Configure CM as Data Protector Manager-of-Managers Server**:

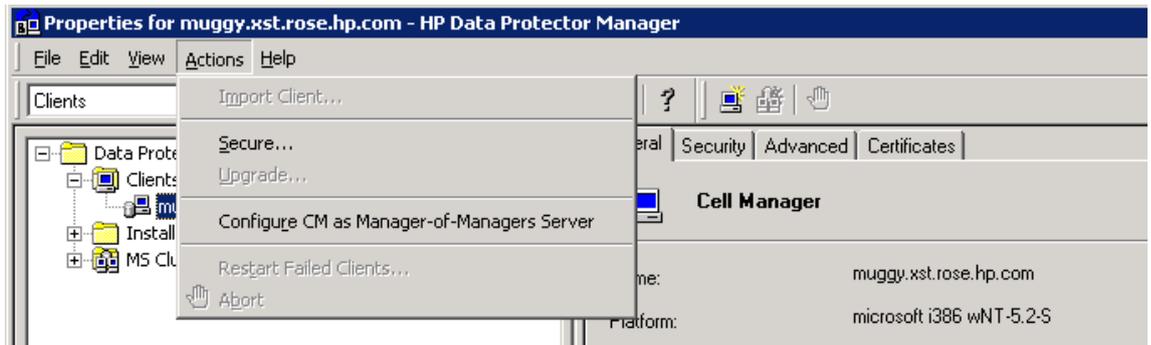


Figure 11: MoM configuration

Option 2: Install a dedicated MoM server

1. To install the MoM software, start the Data Protector setup and chose the MoM interface. Core Data Protector software will be installed in addition to the MoM, but can be unselected. If this is a dedicated MoM server, you can also choose to install the documentation. If this is a Cell Manager upgrade, you can unselect the documentation:



Figure 12: Installing MoM

2. Install the disk and media agent on the MoM server if you need backup of the local MoM server IDB, or perform any other local backup tasks on the MoM server.
3. Start the MoM user interface:

Original Data Protector GUI:

On Windows: Select **Data Protector Manager-of-Managers** in the Data Protector program group. Alternatively, run the `mom.exe` command from the `Data_Protector_home\bin` directory.

Data Protector Java GUI:

On Windows: Select **Data Protector Java GUI Manager-of-Managers** in the Data Protector program group or run the `javadpguimom` command from the `Data_Protector_home\java\client\bin` directory.

On Unix: Run the `/opt/omni/java/client/bin/javadpguimom.sh` command.

- When prompted, open the MoM GUI, create an empty `mom_info` file in the directory `C:\Program Files\OmniBack\Config\Server\cell`, restart the Data Protector services on the MoM server, and start the MoM GUI again:



Figure 13: MoM configuration

Follow the instructions, creating `mom_server` and `mom_info` files, with the name of the MoM server in them:

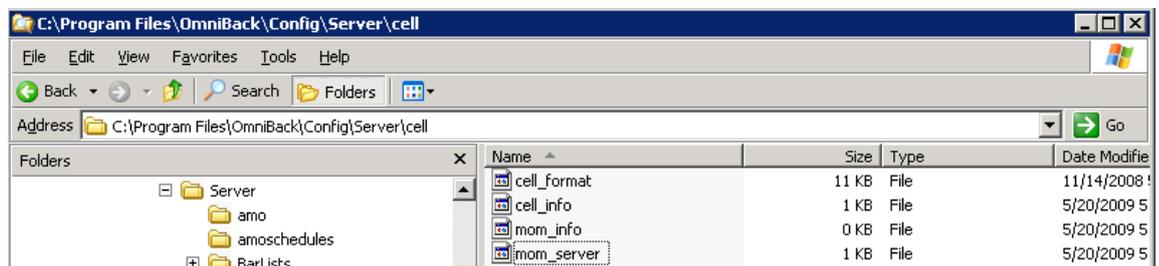


Figure 14: MoM configuration

Creating the MoM administrator user

The active user must be a member of the Admin user group on the Cell Manager of the cell to be imported. If you are using the Java GUI, make sure the user account under which the UIProxy service is running is in the Admin user group on every Cell Manager in the MoM environment.

To create a MoM user account, define a domain service account, and add it to the local system admin group on the Cell Managers and MoM server. You also need to add it to each Cell Manager user list. This account will then be allowed to access the MoM environment and each client cell inside the MoM setup.

Add the account to the local system admin group on the Cell Managers and MoM server:

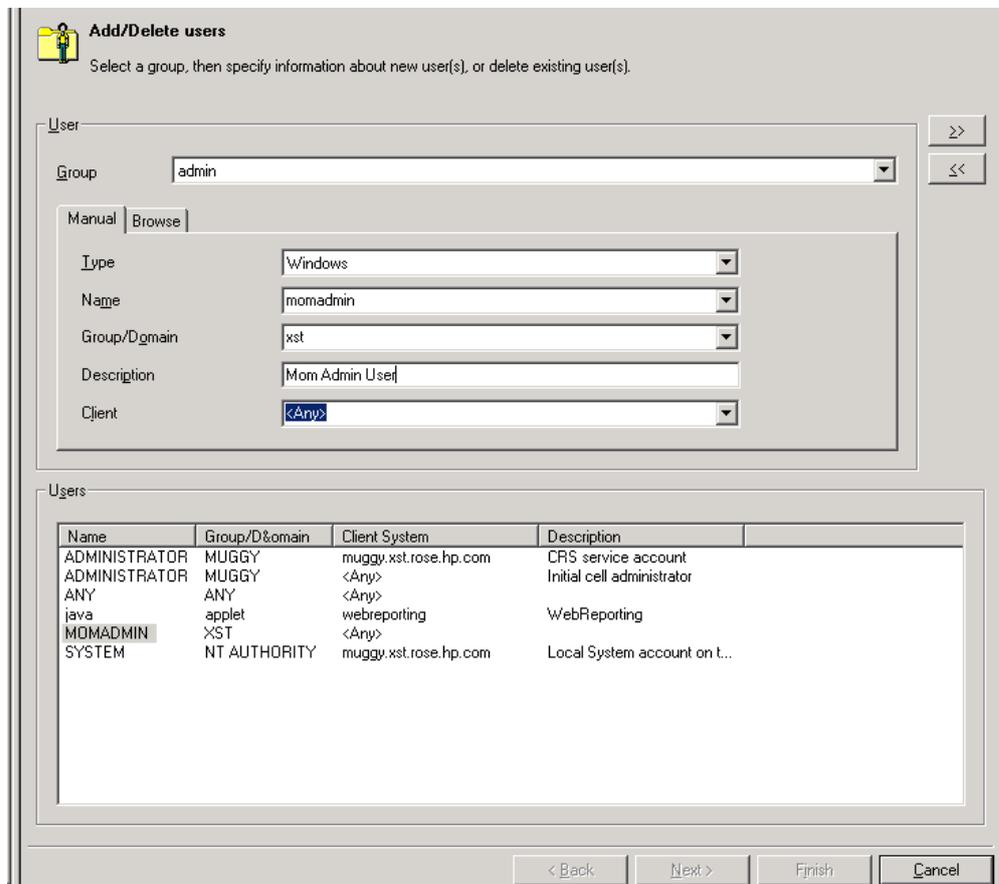
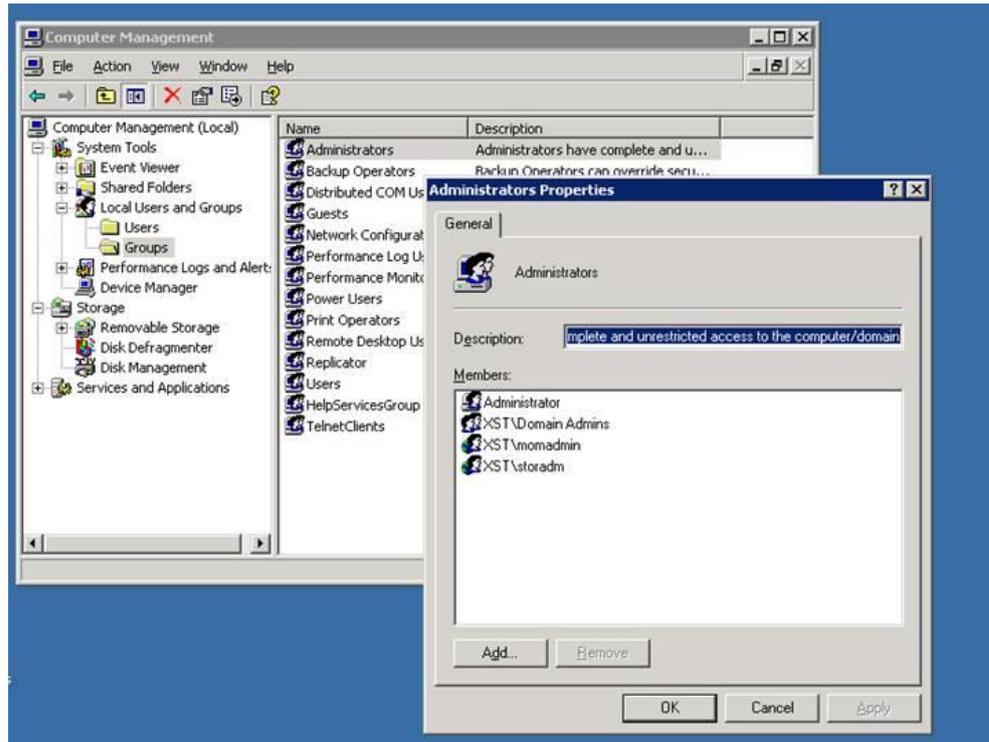


Figure 15: Creating MoM admin user

Importing Cell Managers

Importing a Data Protector cell into a MoM environment allows it to be centrally managed by the MoM Manager.

Cluster clients identify themselves to the MoM Manager with their virtual server names. If you import a cluster in a MoM environment, use only its virtual server name.

1. In the MoM, click **Clients** in the Context List.
2. Right-click **Enterprise Clients** and then click **Import Cell Manager**.
3. Select a Cell Manager to import and click Finish.

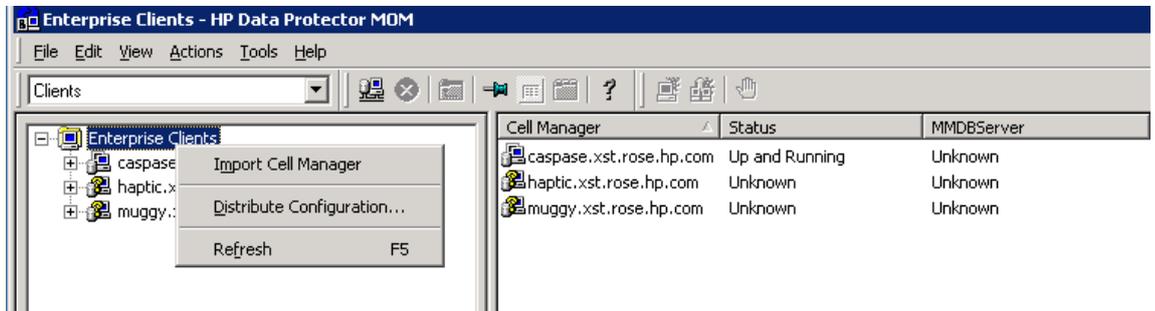


Figure 16: Importing Cell Managers

4. Restart the MoM GUI to browse the imported Cell Managers.

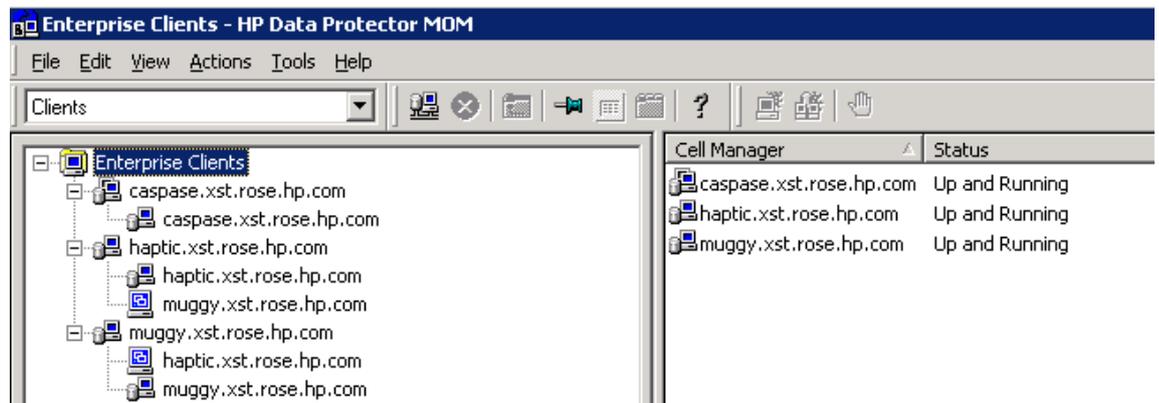


Figure 17: Importing Cell Managers

Configuring CMMDB

- Set up a CMMDB if you want to have central media management. If you do not set up a CMMDB, each cell will have its own MMDB.
- During the configuration, you can choose to have local MMDBs merged into the CMMDB. You can decide for each cell if it will use the CMMDB or its own local MMDB.
- Once you have configured the CMMDB and start using it, you cannot split it back into local MMDBs. You should not try to recover the old state of an MMDB, but rather create a new MMDB from scratch.

Prerequisites

- Check that the Data Protector Cell Managers in all cells have the same version of Data Protector installed and running.
- Check that there are no backup, restore, or media management sessions running on any of the cells to be added to the CMMDB.

Overview

There are two stages to configuration:

- Configure CMMDB on the MoM Manager.
- Configure CMMDB on each client cell.

1. Configuring CMMDB on the MoM Manager

1. Run a backup of the IDB.

Alternatively, log on to the MoM Manager and copy the following directory to a temporary location for safety reasons:

On Windows Server 2008: `Data_Protector_program_data\db40\datafiles\mmdb`

On other Windows systems: `Data_Protector_home\db40\datafiles\mmdb`

On UNIX systems: `/var/opt/omni/server/db40/datafiles/mmdb`

2. On the MoM server, run the following command to merge the local MMDB into the CMMDB:

- *On Windows systems:*

`Data_Protector_home\bin\omnidbutil -mergemmdb Cell_Server_Hostname`

On UNIX systems: `/opt/omni/sbin/omnidbutil -mergemmdb Cell_Server_Hostname`

Note:

If duplicate pool names exist, the pool name will be renamed with _1 to ensure a unique name:



```
C:\WINDOWS\system32\cmd.exe

C:\Program Files\OmniBack\bin>omnidbutil -mergemmdb haptic
About to start media management database merge from host haptic.
Are you sure (y/n)?y
Merging libraries ...
Merging cartridges ...
Merging pool "Default DDS" and belonging devices and media ...
WARNING: Pool "Default DDS" renamed to "Default DDS_1"
Merging pool "Default QIC" and belonging devices and media ...
WARNING: Pool "Default QIC" renamed to "Default QIC_1"
Merging pool "Default Exabyte" and belonging devices and media ...
WARNING: Pool "Default Exabyte" renamed to "Default Exabyte_1"
Merging pool "Default AIT" and belonging devices and media ...
WARNING: Pool "Default AIT" renamed to "Default AIT_1"
Merging pool "Default SAIT" and belonging devices and media ...
WARNING: Pool "Default SAIT" renamed to "Default SAIT_1"
Merging pool "Default T3480/T4890/T9490" and belonging devices and media ...
WARNING: Pool "Default T3480/T4890/T9490" renamed to "Default T3480/T4890/T9490_1"
Merging pool "Default Optical" and belonging devices and media ...
WARNING: Pool "Default Optical" renamed to "Default Optical_1"
Merging pool "Default File" and belonging devices and media ...
WARNING: Pool "Default File" renamed to "Default File_1"
Merging pool "Default T9840" and belonging devices and media ...
WARNING: Pool "Default T9840" renamed to "Default T9840_1"
Merging pool "Default Tape" and belonging devices and media ...
WARNING: Pool "Default Tape" renamed to "Default Tape_1"
Merging pool "Default DLT" and belonging devices and media ...
WARNING: Pool "Default DLT" renamed to "Default DLT_1"
Merging pool "Default SD-3" and belonging devices and media ...
WARNING: Pool "Default SD-3" renamed to "Default SD-3_1"
Merging pool "Default T3590" and belonging devices and media ...
WARNING: Pool "Default T3590" renamed to "Default T3590_1"
Merging pool "Default T3592" and belonging devices and media ...
WARNING: Pool "Default T3592" renamed to "Default T3592_1"
Merging pool "Default LTO-Ultrium" and belonging devices and media ...
WARNING: Pool "Default LTO-Ultrium" renamed to "Default LTO-Ultrium_1"
Merging pool "Default SuperDLT" and belonging devices and media ...
WARNING: Pool "Default SuperDLT" renamed to "Default SuperDLT_1"
Merging pool "Default DTF" and belonging devices and media ...
WARNING: Pool "Default DTF" renamed to "Default DTF_1"
Merging pool "Default T9940" and belonging devices and media ...
WARNING: Pool "Default T9940" renamed to "Default T9940_1"
Merging pool "Default T10000" and belonging devices and media ...
WARNING: Pool "Default T10000" renamed to "Default T10000_1"
Merging pool "ESL_SDLT_Haptic" and belonging devices and media ...
Merging pool "MSL_SDLT_Haptic" and belonging devices and media ...
Merging pool "MSL_DLT8K_Haptic" and belonging devices and media ...
Merging pool "SDLT_Free_Pool" and belonging devices and media ...
Merging pool "DLT8K_Free_Pool" and belonging devices and media ...
DONE!

C:\Program Files\OmniBack\bin>omnidbutil -mergemmdb muggy
About to start media management database merge from host muggy.
Are you sure (y/n)?y
Merging pool "Default DDS" and belonging devices and media ...
WARNING: Pool "Default DDS" renamed to "Default DDS_2"
Merging pool "Default QIC" and belonging devices and media ...
WARNING: Pool "Default QIC" renamed to "Default QIC_2"
Merging pool "Default Exabyte" and belonging devices and media ...
```

Figure 18: Configuring the CMMDB

3. Run the following command on the MoM server to synchronize the local CDB with the CMMDB:
 - *On Windows systems:*
`Data_Protector_home\bin\omnidbutil -cdbsync Cell_Server_Hostname`
 - *On UNIX systems:* `/opt/omni/sbin/omnidbutil -cdbsync Cell_Server_Hostname`

```
C:\Program Files\OmniBack\bin>omnidbutil -cdbsync haptic
About to start catalog database synchronization for host haptic.
Are you sure (y/n)?y
DONE!

C:\Program Files\OmniBack\bin>omnidbutil -cdbsync muggy
About to start catalog database synchronization for host muggy.
Are you sure (y/n)?y
DONE!
```

Figure 19: Configuring CMMDB

4. Edit the duplicated names of media pools and devices. This duplication always occurs with the default pools if they exist on both cells. The duplicated names have `_N` appended to their name, where `N` is a number. In this case, manually change the backup specifications that use these devices to use the new device names.
5. Repeat the steps for all client cells that you want to add to the CMMDB.

If you are configuring a new cell (and you do not yet have devices and media configured), there is no need to merge the database. You only need to merge cells with the CMMDB that already have devices and media configured.

2. Configuring CMMDB on a client cell

1. Log on to the Cell Manager of the client cell as a member of the Admin user group.
2. Create the file containing the name of the MMDB Server (fully qualified):
 - *On Windows Server 2008:*
`Data_Protector_program_data\Config\server\cell\mmdb_server`
 Save the file as Unicode.
 - *On other Windows systems:* `Data_Protector_home\Config\server\cell\mmdb_server`
 Save the file as Unicode.
 - *On UNIX systems:* `/etc/opt/omni/server/cell/mmdb_server`

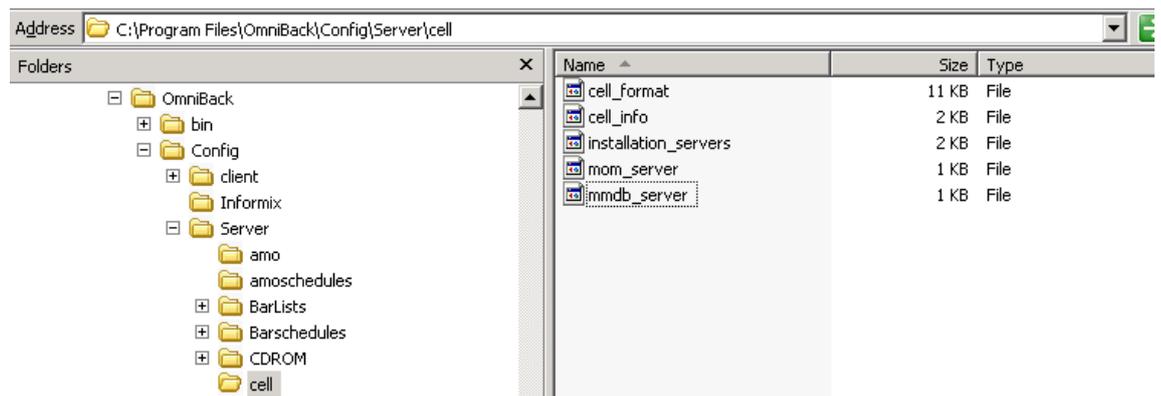


Figure 20: Configuring CMMDB

3. Restart the Data Protector services.
4. Update configuration files by running the following command:
 - On Windows systems: `Data_Protector_home\bin\omnicc -update_mom_server`
 - On UNIX systems: `/opt/omni/bin/omnicc -update_mom_server`
5. Verify with the `omnisv -status` command that the media is managed by the CMMDB:

```

C:\Program Files\OmniBack\bin>omnisv -status
  ProcName  Status  [PID]
  =====
  rds       : Active [3436]
  crs       : Active [1664]
  mmd       : Active (CMMDB is on caspase.xst.rose.hp.com)
  kms       : Active [1704]
  uiproxy   : Active [2212]
  omninet   : Active [1676]
  Sending of traps disabled.
  =====
Status: All Data Protector relevant processes/services up and running.

```

Figure 21: Configuring CMMDB

Note: The pool names of the Cell Manager that was merged first will remain as they are. The names for the second Cell Manager, which was merged later, are changed to "Pool_1".

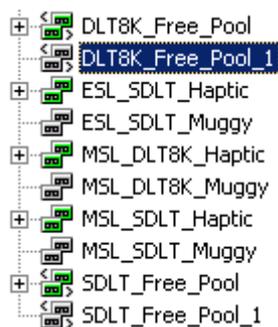


Figure 22: Configuring CMMDB

Configuring Centralized licensing

1. Centralized versus distributed licensing

Centralized licensing means that all licenses are configured on the MoM and can be allocated to specific cells as needed. Centralized licensing simplifies license management. Licensing administration, including the distribution and moving of the licenses, is performed by the MoM administrator for all cells in the MoM environment.

Setting up centralized licensing is optional. Instead, you can install individual licenses on each Cell Manager. These licenses are restricted to the cell on which they are installed and all licensing administration tasks have to be performed locally.

Note: For central licensing with MoM, you need to assign a minimum of 1 TB to each cell using the advanced backup to disk functionality.

2. Setting up centralized licensing

If you are consolidating existing Data Protector cells into a MoM environment, send a request to the HP Password Delivery Center to move the licenses from the existing Cell Managers to the new MoM Manager.

1. Log on to the MoM Manager and create the `licdistrib.dat` file:
 - *On Windows Server 2008:*
`Data_Protector_program_data\Config\server\cell\licdistrib.dat`
 - *On other Windows systems:*
`Data_Protector_home\Config\server\cell\licdistrib.dat`
 - *On UNIX systems:* `/etc/opt/omni/server/cell/licdistrib.dat`
2. Log on to each Cell Manager in the MoM environment and create the `lic_server` file with the name of the MoM Manager:
 - *On Windows Server 2008:*
`Data_Protector_program_data\Config\server\cell\lic_server`
 - *On other Windows systems:* `Data_Protector_home\Config\server\cell\lic_server`
 - *On UNIX systems:* `/etc/opt/omni/server/cell/lic_server`
3. Stop and restart Data Protector services on each Cell Manager on which you have made changes.
4. In the MoM, click **Clients** in the Context List.
5. In the Scoping Pane, right-click the Cell Manager that has the licensing information you want to change, and then click **Configure Licensing** to open the wizard. The types and numbers of licenses available to your selected Cell Manager are displayed.
6. Click the **Remote** option to change the licensing from local to remote. The Used columns change to Allocated.
7. Modify the license configuration. Only the Allocated column is available during the modification process.
 - To release (give up) a license type, thus increasing the number of available licenses, reduce its corresponding number in the Allocated column.
 - To assign a license type, increase its corresponding number in the Allocated column.
8. Click **Finish** to apply the configuration.
9. Repeat the steps for all Cell Managers for which you want to set up the centralized licensing.
10. Stop and restart the Data Protector processes using the `omnisv -stop` and `omnisv -start` commands from the `Data_Protector_home\bin` (Windows) or `/opt/omni/sbin` (UNIX) directory.

If the Cell Manager is configured on MC/ServiceGuard, run the `cmhaltpkg pkg_name` command to stop, and the `cmrunpkg -n node_name pkg_name` to start the Data Protector package, where `pkg_name` is the name of the Data Protector cluster package.

The changes take effect after you stop and restart the Data Protector services on each Cell Manager on which you have made changes.

Data Protector checks the license configuration with the MoM Manager every hour. In the case of communication problems or the MoM Manager being unavailable, the licensing status is kept for 72 hours. If the problems are not resolved within this 72-hour period, local licenses are used.

3. Example of moving licenses

If you have not configured centralized licensing, you cannot move licenses between cells without the approval of the HP Password Delivery Center. This is, however, possible in the MoM environment with configured centralized licensing, where the MoM administrator allocates licenses as needed. In the example below, the clients from one cell are moved to another. This results in the need to move the licenses.

Enterprise environment before the reorganization

Two Cell Managers, Aztec and Mayan, are configured in the enterprise environment with centralized licensing:

- Aztec is an HP-UX Cell Manager with a Cell Manager for UNIX—Single Drive license. There is also an NDMP server connected in the cell that requires an NDMP Server Backup Extension license.
- Mayan is also an HP-UX Cell Manager with one Cell Manager for UNIX—Single Drive license.

Reorganization of the enterprise environment

The Aztec cell needs to be reorganized, with most of the clients and the NDMP server being transferred to the Mayan cell.

Mayan now needs the NDMP Server Backup Extension license.

Steps

1. In the Data Protector Manager-of-Managers, click **Clients** in the Context List.
2. Right-click the Aztec Cell Manager and then click **Configure Licensing**. The types and numbers of licenses available to the Aztec Cell Manager are displayed. Remove the NDMP Server Backup Extension license.
3. Click **Finish** to apply the configuration.
4. Right-click the Mayan Cell Manager and then click **Configure Licensing**. Add the NDMP Server Backup Extension license.
5. Click **Finish** to apply the configuration.

The enterprise environment after reorganization

The Aztec Cell Manager now has one Cell Manager for UNIX—Single Drive license and the Mayan Cell Manager has a Cell Manager for UNIX—Single Drive license and an NDMP Server Backup Extension license for the NDMP server.

4. Licensing report

To produce a license report, use the Data Protector `omnicc` command:

```
omnicc -check_licenses [-detail]
```

If you do not specify the `-detail` option, the command returns information on whether the Data Protector licensing is covered or not.

If you do specify the `-detail` option, a detailed report is produced. The following information is returned for every license in the cell: license name, licenses installed, licenses used and licenses required.

Refer to the `omnicc` man page for more information. Note that the command does not list the expiration dates for the licenses. Depending on the environment and the number of licenses installed, the report may take some time to generate. To get the information on the licenses expiration dates, enter the following command: `omnicc -password_info`.

In a MoM environment with the CMMDB configured, when producing a license report for the items that are subject to libraries and devices related licenses, such as media (including advance file device media), backup devices, drives and slots, the `omnicc` command must be run on the Cell Manager or MoM server with the CMMDB installed.

Alternatively, right-click the MoM server name, and chose **Configure Licenses**.

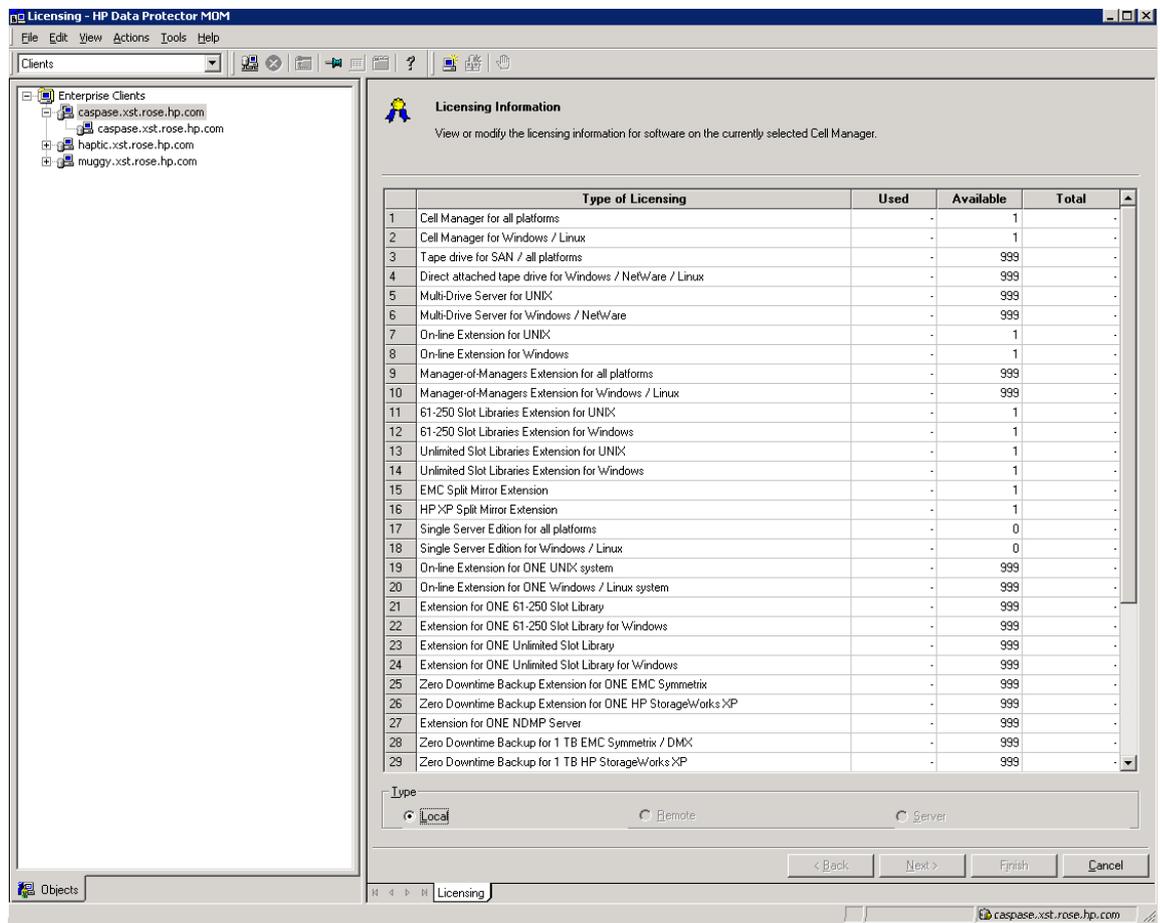


Figure 23: Licensing report

5. Deactivating centralized licensing

Centralized licensing can be deactivated and converted to local licensing:

1. In the MoM, click **Clients** in the Context List.
2. In the Scoping Pane, right-click the Cell Manager for which you want to deactivate centralized licensing and then click **Configure Licensing** to open the wizard. The types and numbers of licenses available to the selected Cell Manager are displayed.
3. Click the **Local** option to change licensing from remote to local.
4. Click **Finish** to apply the configuration.
5. Repeat the steps for all Cell Managers for which you want to deactivate centralized licensing.
6. Log on to the MoM Manager and mount the following directory:
 - On Windows Server 2008: `Data_Protector_program_data\config\server\cell`
 - On other Windows systems: `Data_Protector_home\config\server\cell`
 - On UNIX systems: `/etc/opt/omni/server/cell`
7. Rename the `licdistrib.dat` file, for example to `licdistrib.old`.

The changes take effect after you stop and restart the Data Protector services using the `omnisv -stop` and `omnisv -start` commands from the `Data_Protector_home\bin` (Windows) or `/opt/omni/sbin` (UNIX) directory on the MoM Manager and each Cell Manager on which you made changes.

If the Cell Manager is configured on MC/ServiceGuard, run the `cmhaltpkg pkg_name` command to stop and the `cmrunpkg -n node_name pkg_name` to start the Data Protector package, where `pkg_name` is the name of the Data Protector cluster package.

Backup of the MoM server CMMDB

The MoM server CMMDB is under the same path as the Cell Manager's MMDB. Use the internal database backup option to backup the CMMDB (DA and MA module required).

MoM user creation and Cell Manager population

Users are not automatically populated from the MoM child server to the other child cell servers. You should first add users to the MoM and then manually populate the other cells by using the MoM GUI as seen in the following example. There is no automatic synchronization between users in different cells.

To add or remove a user to and from another Cell Manager, right-click and chose **Add user to other cells**, or **Remove user from other cells**:

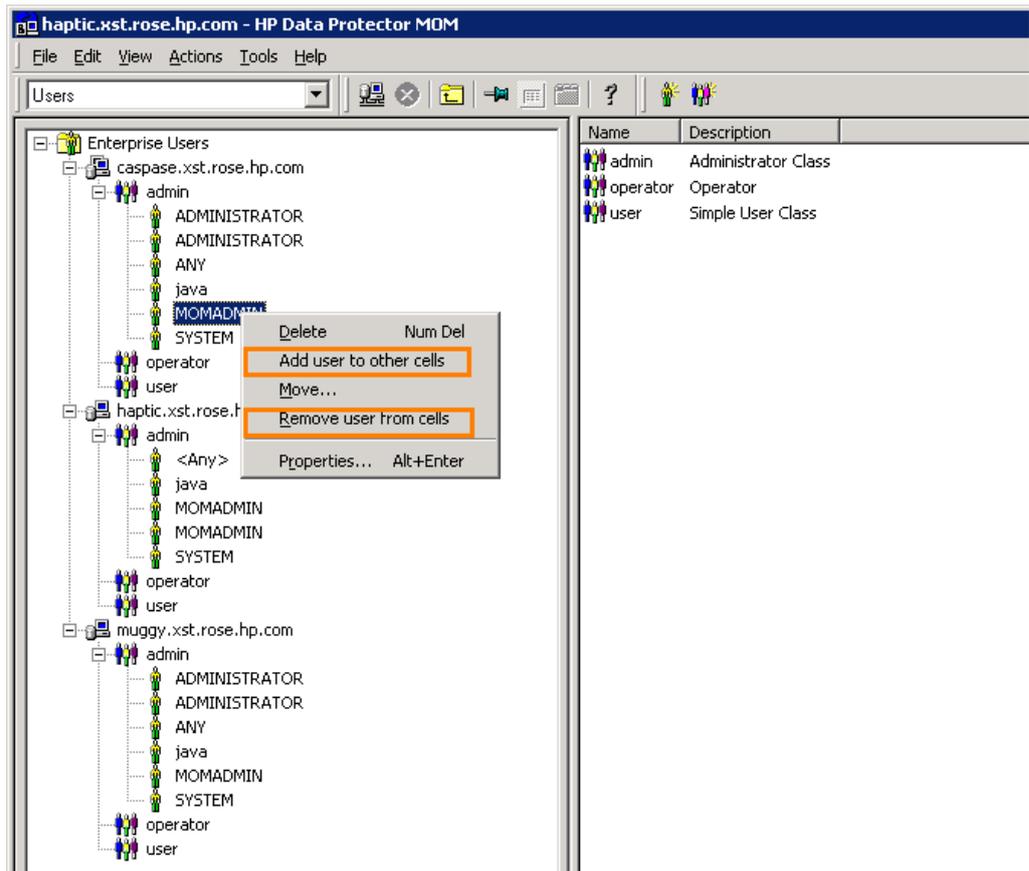


Figure 24: User management

About CMMDB merge

After completion of the CMMDB configuration, the local MMDB is no longer used, but Media Management datafiles are still part of the local IDB, and backed up as part of the local IDB backup.

Important Note! As a consequence of the above, the MMDB files must not be deleted from the filesystem, and need to be stored together with the CDB files, otherwise a local IDB backup will fail.

Security

When you secure a client, the client names of the systems allowed to access a client, are written to the `allow_hosts` file. You can also explicitly deny access to a client from certain computers by adding their names to the `deny_hosts` file.

When using a CMMDB, device access for the client Cell Managers can be controlled from the MoM server by using the `allow_hosts` and `deny_hosts` files.

These files are located in the following directories:

- *On Windows Vista, Windows Server 2008:*
`Data_Protector_program_data\Config\client`
- *On other Windows systems:* `Data_Protector_home\Config\client`
- *On HP-UX, Solaris, and Linux systems:* `/etc/opt/omni/client`
- *On other UNIX systems:* `/usr/omni/config/client`

Specify each client name in a separate line.

Client security is controlled through the `allow_hosts` file. After you have installed the Data Protector clients and imported them to a cell, it is highly recommended to secure them. Data Protector agents installed on the clients in the cell provide numerous powerful capabilities, such as access to all the data on the system. It is important that these capabilities are available only to the processes running on cell authorities (Cell Manager and Installation servers), and that all other requests are rejected.

Data Protector allows you to specify from which cell authorities a client will accept requests on the Data Protector port (default 5555). For activities such as backing up and restoring, starting pre- and post-exec commands, and importing and exporting clients, the client checks if the computer that triggers one of these tasks via the Data Protector port is allowed to do so. Other computers are not able to access such a client.

Only the hosts that are mentioned in the `allow_hosts` file will have access to shared media on the MoM server.

An entire Cell Manager can be secured with all clients in it via the GUI.

- To secure a client via the GUI, right-click on the client properties, and select **Secure**.
- To secure a Cell Manager via the GUI, right-click on the Cell Manager properties, and select **Secure**.

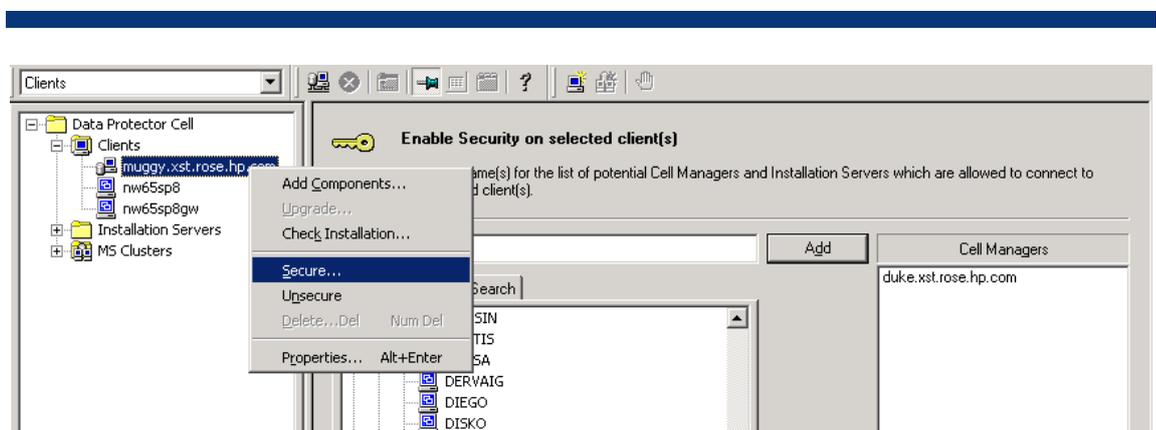


Figure 25: Securing a Cell Manager

Notes:

- If you accidentally lock out a client, you can manually edit (or delete) the `allow_hosts` file on the client.

- When you secure an entire cell, all clients residing in the cell at the time are secured. When you add new clients to the cell, you should also secure them.

Reporting

MoM offers enterprise reporting for shared media devices.

Examples

```
C:\Program Files\OmniBack\bin>omnirpt -report media_statistics
Media Statistics
Cell Manager: muggy.xst.rose.hp.com
Creation Date: 1/19/2010 2:10:45 PM
# Media: 551
# Scratch: 454
# Protected: 97
# Good : 551
# Fair: 0
# Poor: 0
Total [GB]: 52054.34
Used [GB]: 2828.09
Free [GB]: 49226.25
# Appendable: 23
```

```
H:\Program Files\OmniBack\bin>omnirpt -report media_list -multicell
List of Media
Cell Manager: caspase.xst.rose.hp.com (Multicell)
Creation Date: 1/19/2010 2:15:59 PM
```

Label	Location	Cell Manager	Status	Protection	Used [MB]	Total [MB]	Last Used	Pool	Type
FileLib_NW65SP8GW_MediaPoo	[FileLib_NW65SP8GW: FILELIB:\6d03320a54b55eae450a2850004.f]	muggy.xst.rose.hp.com	Good	2/18/2010 6:00:50	153419.00	153419.00	1/19/2010 9:26:37 AM	FileLib_NW65SP8	File
FileLib_NW65SP8GW_MediaPoo	[FileLib_NW65SP8GW: FILELIB:\6d03320a54b26e4ce509ac50001.f]	muggy.xst.rose.hp.com	Good	1/17/2010 4:09:00	8327.00	95367.00	12/13/2009 9:16:39 P	FileLib_NW65SP8	File
FileLib_NW65SP8_MediaPool	[FileLib_NW65SP8: FILELIB:\6d03320a54afc522f51c8050001.f]	haptic.xst.rose.hp.com	Good	1/15/2010 10:00:1	153656.00	153656.00	12/13/2009 9:17:05 P	FileLib_NW65SP8	File

Note: Run the report `omnirpt -report media_list -multicell` in the MoM/CMMDB environment:

- If the CMMDB is configured, then DBSM in other Cell Managers will ignore the messages from the MMDB server.
- If the CMMDB is not configured, the DBSM in other Cell Managers will send the report from the local MMDB.

Note: If your Cell Manager is not the MoM server, you will receive the following error message:

```
C:\Program Files\OmniBack\bin>omnirpt -report media_list -multicell
Error creating the report "Interactive":
CRS is not running in Manager-of-Managers Server mode.
The empty file cell/mom_info must be created
and Data Protector server processes must be restarted on the Manager-of-
Managers server host.
System error: [2] The system cannot find the file specified.
```

Troubleshooting hints & tips

Verifying the MoM configuration

When merging to a CMMDB, make sure the clients show the MMDB is used on the MoM server.

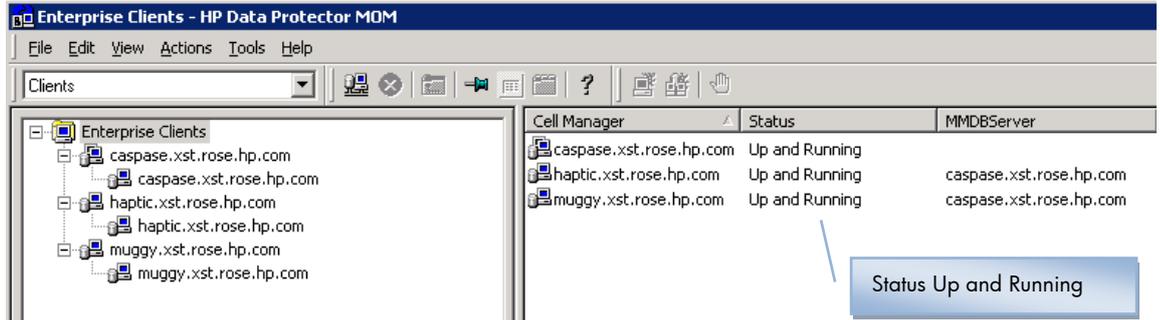


Figure 26: Configuring CMMDB

Note: The status (Up and running) is shown correctly only after reconnecting to the Cell Manager. There is no status polling for status.

Viewing media on Cell Managers

It is possible for the media of a shared device to show up on one host as formatted and on the other as a question mark:

Host 1 
Host 2  1 [ANNOY0001AA]

This is normal, since although the device is shared the IDB is different (unless a CMMDB is used) and so one host does not necessarily have the same information about the slots/medium as the other.

Using multipath devices

It is possible for media to appear to be fine when scanning the slot, but for an error with one of the devices to be reported when a backup is executed:

```
[Major] From: BSM@muggy.xst.rose.hp.com "muggy_ESL" Time: 4/15/2009 10:05:08 AM Host for device QUANTUM: SDLT320_1_muggy(2) not found.
```

This is not an issue, but rather a desired functionality. From Figure 27:, you can see that a Multipath device is used. Multipath devices and libraries can have several paths on multiple hosts. As a result, the client information on the General tab would be irrelevant or insufficient, and so it is disabled and moved to the Control/Drives tab, where hosts are defined together with their paths.

On the General tab, the client will not be defined.

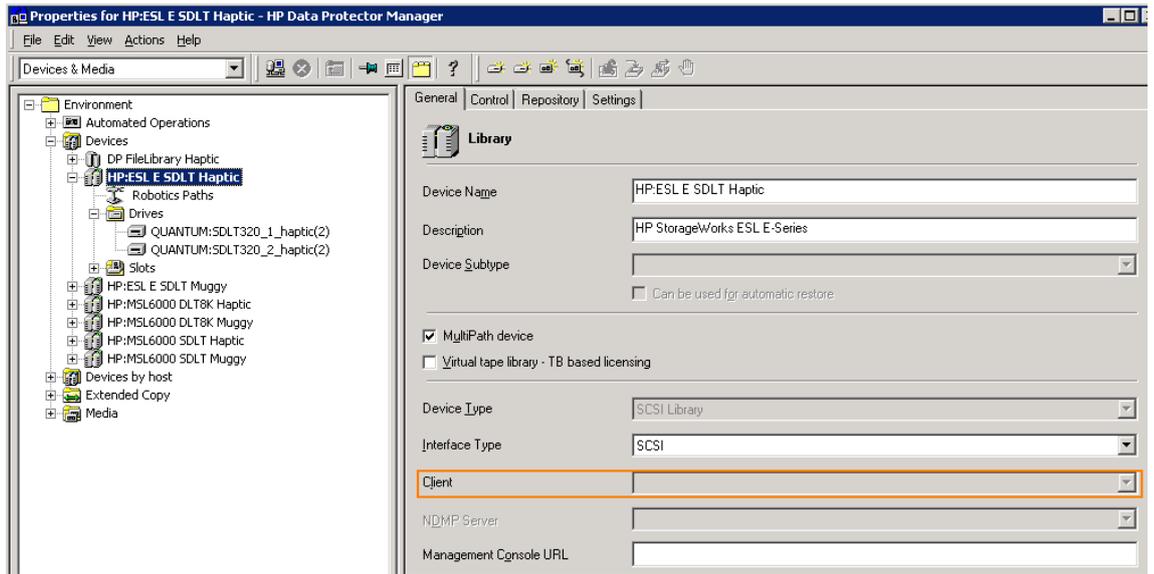


Figure 27: Device configuration wizard

When sharing a multi-path device in a MoM environment, the backup media server that last accessed the tape devices will be shown as the current client in Data Protector.

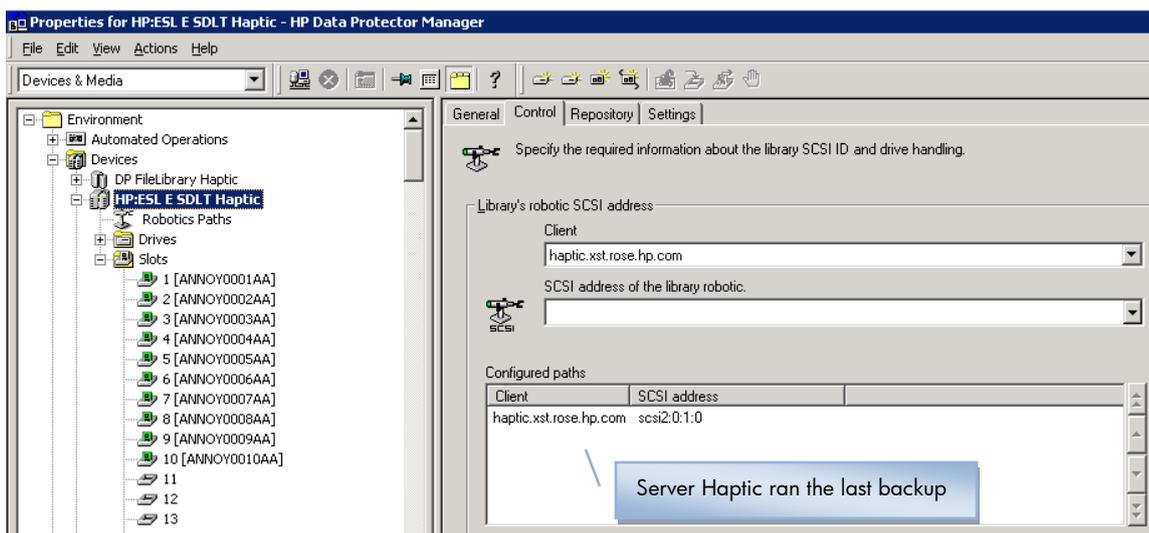
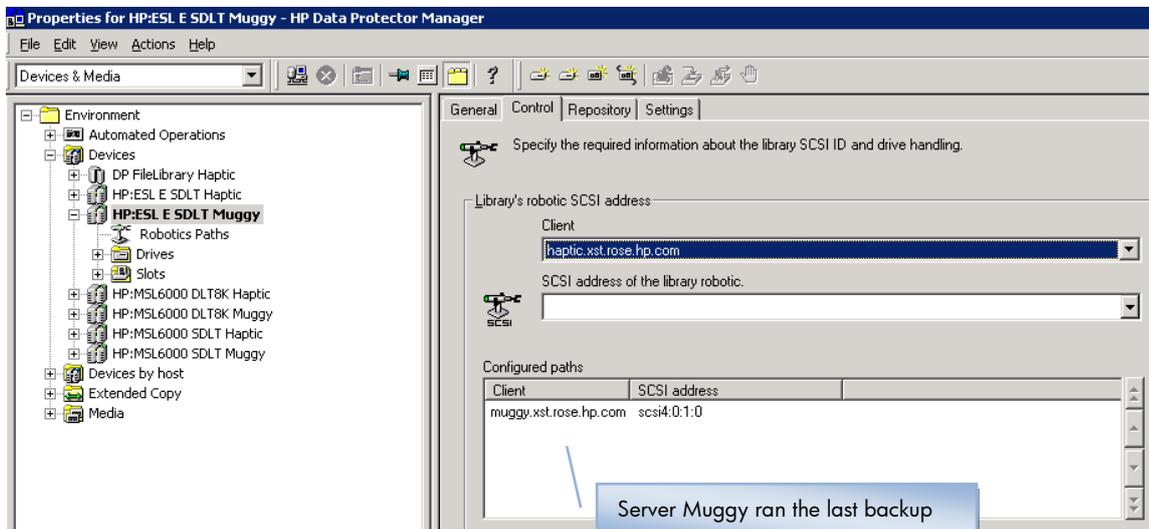


Figure 28: Device Configuration Wizards

Shared tape drive lockname

Under the tape drive advanced properties, make sure the lockname for the library is the same for all Cell Managers sharing access.

Note: No lockname is required for multipath configurations.

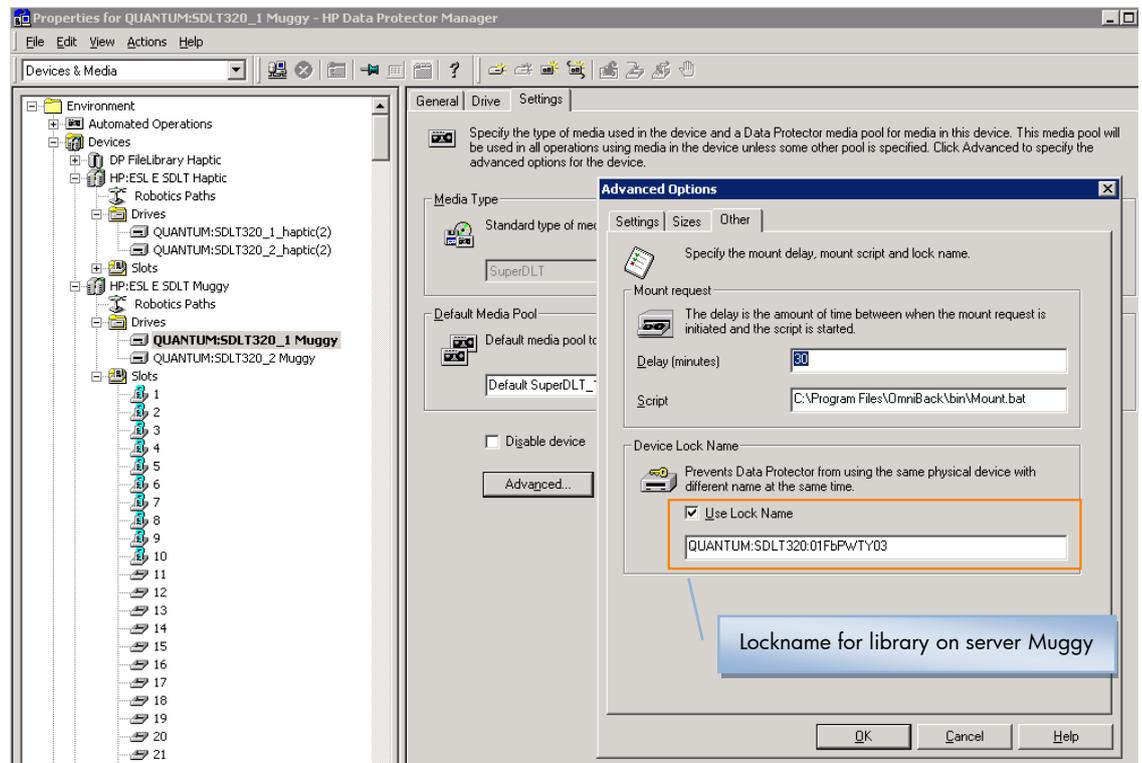
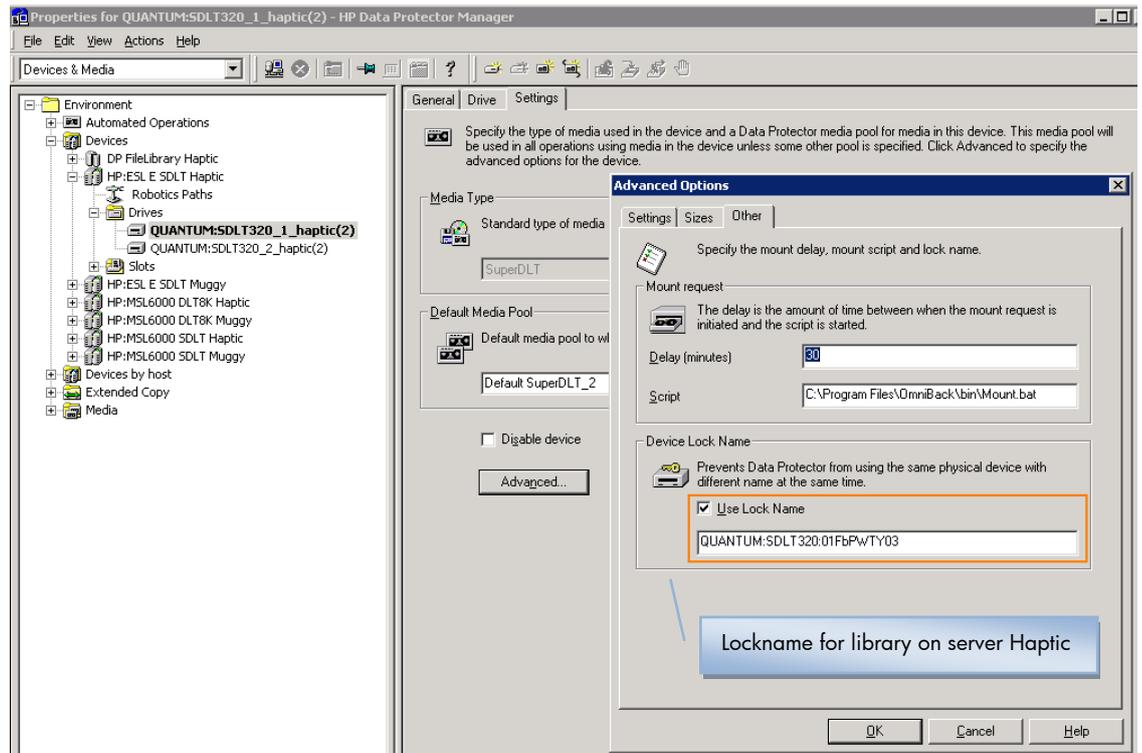


Figure 29: Media configuration

Using the Cell Manager's dedicated pools

Move the media from the default pool into the Cell Manager's dedicated pool.

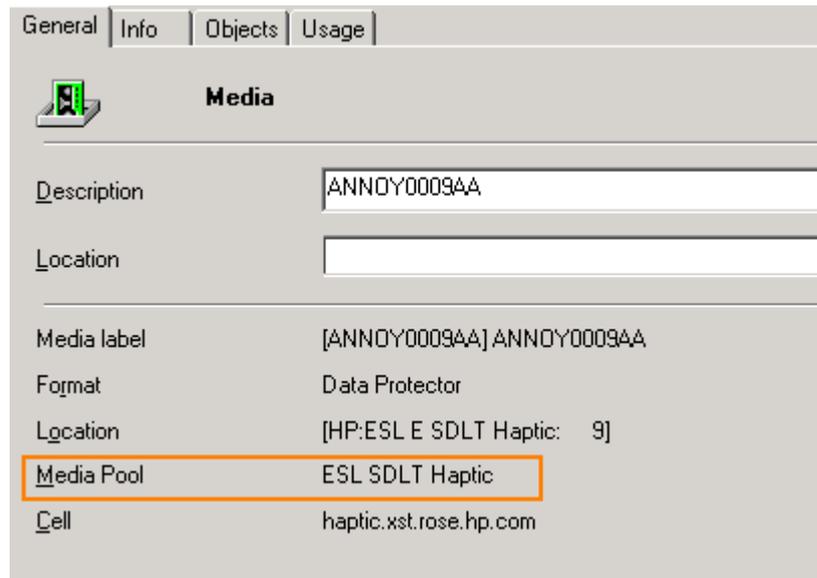


Figure 30: Media configuration

Note: The name of the Cell Manager shown in Figure 30: is the name of the Cell Manager that formatted the media.

In the backup specification, change the pool from the default pool to the Cell Manager's dedicated pool:

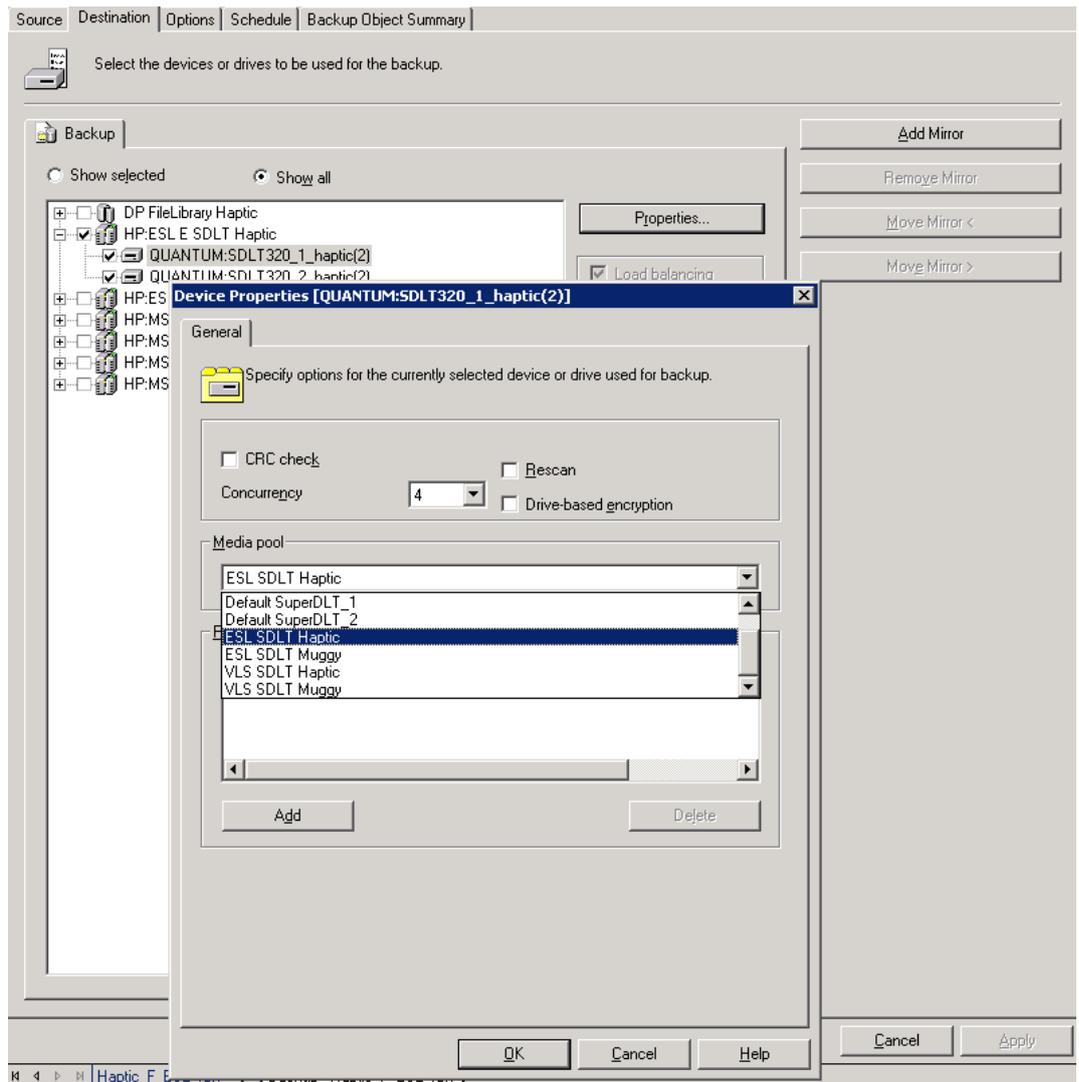


Figure 31: Media configuration

The backup session will now be using the media in the new pool.

The screenshot shows a Backup console window with a table of backup sessions and a log of messages. The table below is a simplified representation of the data shown in the image:

Status	Type	Client System	Source	Device	Size	Done	Errors	Warnings	Description
Running	RawDisk	haptic.xst.rose.hp.com		QUANTUM:SDLT320_1_haptic(2)	2...	70%	0	0	[Disk Image]: haptic.xst.rose.hp.com

Status	Device	Client System	Drive	Total Data	Medium Label
Inactive/Waiting	QUANTUM:SDLT320_2_haptic(2)	haptic.xst.rose.hp.com		-	
Running	QUANTUM:SDLT320_1_haptic(2)	haptic.xst.rose.hp.com	scsi2:0:1:2C	15048000 KB	[ANNOY0009AA] ANNOY0009AA

The log messages below the table are as follows:

```
[Normal] From: BSM@haptic.xst.rose.hp.com "Haptic_F_ESL_raw" Time: 4/21/2009 3:20:15 PM
Backup session 2009/04/21-5 started.

[Normal] From: BMA@haptic.xst.rose.hp.com "QUANTUM:SDLT320_1_haptic(2)" Time: 4/21/2009 3:20:20 PM
STARTING Media Agent "QUANTUM:SDLT320_1_haptic(2)"

[Normal] From: BMA@haptic.xst.rose.hp.com "QUANTUM:SDLT320_1_haptic(2)" Time: 4/21/2009 3:20:23 PM
By: UMA@haptic.xst.rose.hp.com@scsi2:0:3:0
Loading medium from slot 9 to device scsi2:0:1:2C

[Normal] From: RBD@haptic.xst.rose.hp.com "[Disk Image]: haptic.xst.rose.hp.com" Time: 4/21/2009 3:20:42 PM
STARTING Disk Agent for haptic.xst.rose.hp.com "[Disk Image]: haptic.xst.rose.hp.com".
```

Figure 32: Media configuration

Note: Once media is written by a specific Cell Manager, only that Cell Manager will have access to append backup data. Other Cell Managers will not be able to write to this media.

The screenshot shows the 'Media' configuration window with the following details:

- Description:** ANNOY0009AA
- Location:** (Empty field)
- Media label:** [ANNOY0009AA] ANNOY0009AA
- Format:** Data Protector
- Location:** [HP:ESL E SDLT Haptic: 9]
- Media Pool:** ESL SDLT Haptic
- Cell:** haptic.xst.rose.hp.com

Figure 33: Media configuration

Sharing a free pool

For each of the media pools on the Cell Managers, configure a loose allocation policy to a shared the free pool between all Cell Managers.

The Cell Manager name is visible on the bottom right corner of the Data Protector client GUI:

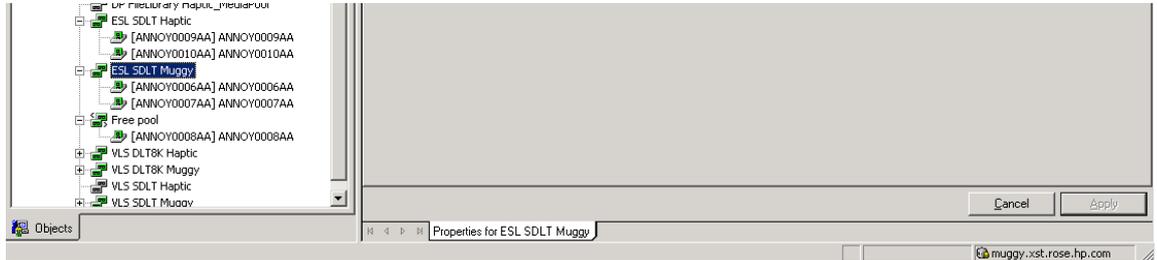


Figure 34: Media configuration

Assign a free pool to the media pools:

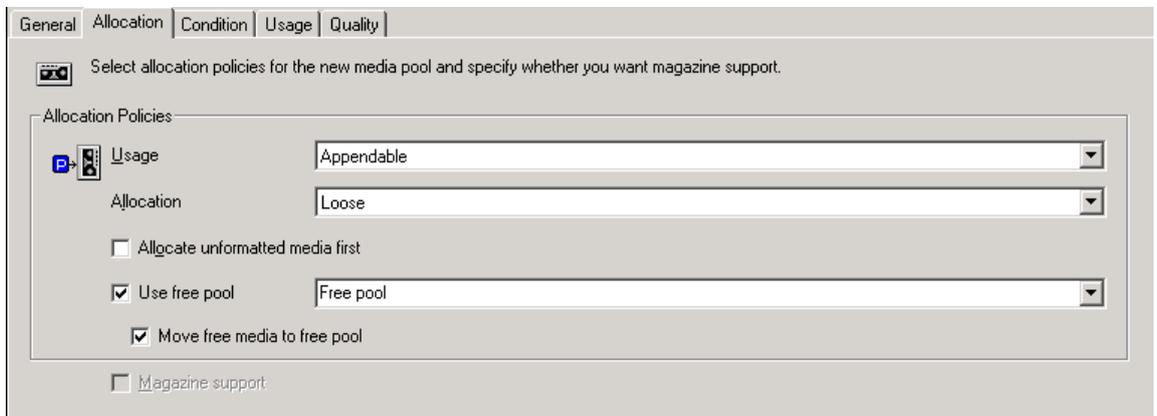


Figure 35: Pool configuration

Under the backup specification tape drive properties, define the dedicated pools instead of no pool preference or default pool, and add media to the preallocation list. When no media is available from the dedicated pool, the media from the free pool will be used during the backup session:

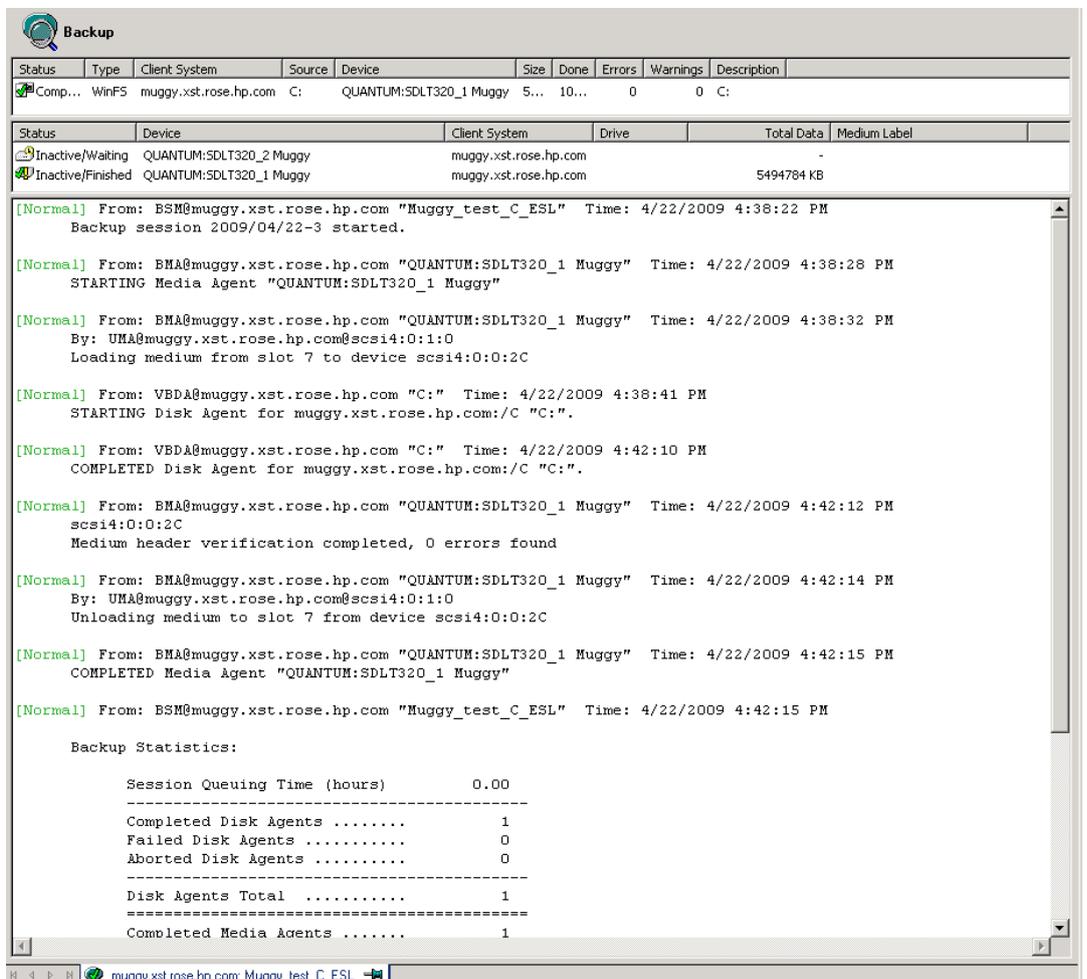
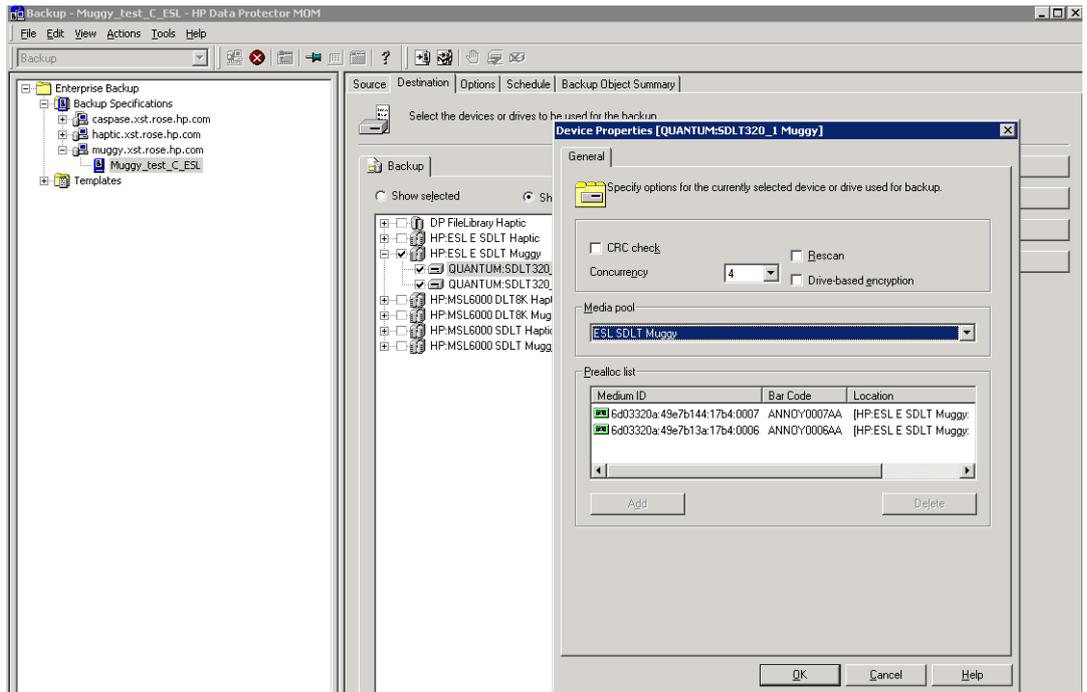
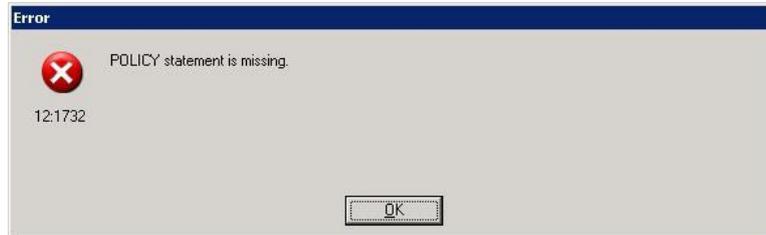


Figure 36: Media configuration

Installing the Media Agent on the MoM server

The Disk Agent and Media Agent must be installed on the MoM server if you need to perform a local backup.

If the MoM server does not have a Media Agent installed, you cannot change such things as pool settings using the Data Protector GUI. When you click **Apply** to save the changed pool name, a dialog box is shown which does not let you change the properties:



The easiest solution is to install a Media Agent on the MoM server, but if you do not want to do this, use the following workaround:

1. Find the configuration for the drives:
`omnidownload -list_devices -detail > devices.txt`
2. Modify the file to contain only the changes to the target drives.
3. Make sure you add the new pool names for the drives.
4. Make sure all GUIs are closed.
5. Apply the configuration:
`omniupload -modify_device drive_name -file devices.txt`

This process can be scripted for environments where many drives are present. Also libraries can be re-configured by the `-modify_library` option of `omniupload`.

Restarting the Data Protector services in MoM

After you have configured the MoM environment, you are requested to restart the Data Protector services.

If you use the Windows Service Control Manager to stop and start services on the Cell Manager, only the current and previous copies of the database log are kept.

Use the `omnisv` command to save all previous database logs. The command is located in:

- On Windows: `Data_Protector_home\bin`
- On UNIX: `/opt/omni/sbin/`

Stopping Data Protector services

Cell Manager in a non-cluster environment

Run the following command: `omnisv -stop`.

Cell Manager on MC/ServiceGuard

Run the following command: `cmhaltpkg pkg_name`, where `pkg_name` is the name of the Data Protector cluster package.

This stops Data Protector and dismounts the Data Protector shared volume group.

Cell Manager on Microsoft Cluster Server

Take the OBVS_VELOCIS cluster group offline (using the Cluster Administrator utility on the active node).

You also need to stop the RS cluster service need to be stopped as well, and stop the Data Protector inet service via local services.

Starting the Data Protector services

Cell Manager in a non-cluster environment:

Run the following command: `omnisv -start`

Cell Manager on MC/ServiceGuard:

Restart the Data Protector package using the `cmrunpkg -n node_name pkg_name` command.

Cell Manager on Microsoft Cluster Server:

Bring the OBVS_VELOCIS and OBVS_MCRS cluster groups online using the Cluster Administrator utility.

Object Copy

Object Copy sessions are configured (scheduled/interactive) and initiated from the individual Cell Managers. Session details can be found in the local Cell Manager IDB, not in the session information for the MoM IDB.

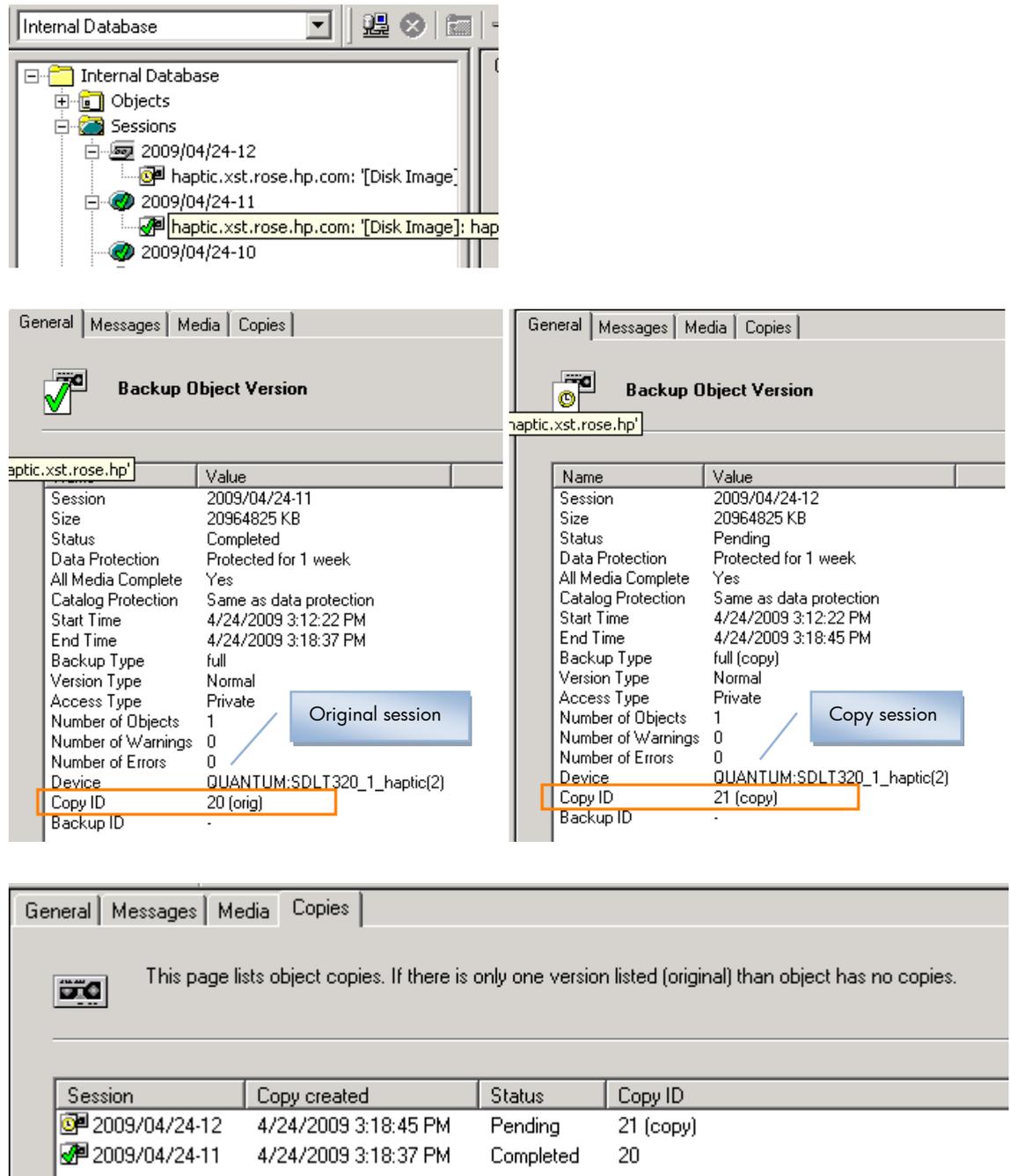


Figure 37: Session information

Acronyms

- CM: Data Protector Cell Manager
- CMMDB: Central Media Management Database
- MMDB: Media Management Database
- IDB: Internal Database

References

- *Data Protector concepts guide*
- *Data Protector installation and licensing guide*
- *Data Protector MoM firewall white paper*

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