HP Data Protector A.06.10

Product announcements, software notes, and references for Beta %1

T B D

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invent

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Publication version history

Table 1 Edition history

Version	Date	Description
0.5	July 16, 2008	Beta %1

About this guide

This guide provides information about:

- Product announcements
- Limitations and known issues
- Installation requirements (such as hardware, OS patches)
- Obsolete platforms
- Last minute changes that are not documented elsewhere and documentation errata

Intended audience

This guide is intended for administrators who want to install and deploy Data Protector, with knowledge of:

- Basic operating system commands and utilities

Document conventions and symbols

Table 2 Document conventions

Convention	Element
Blue text: Table 2 on page 15	Cross-reference links and e-mail addresses
Blue, underlined text: http://www.hp.com	website addresses
Italic text	Text emphasis
`Monospace` text	• File and directory names • System output • Code • Commands, their arguments, and argument values

Convention	Element
`Monospace, italic` text	• Code variables • Command variables
text	Emphasized monospace text

△ CAUTION:

Indicates that failure to follow directions could result in damage to equipment or data.

IMPORTANT:

Provides clarifying information or specific instructions.

NOTE:

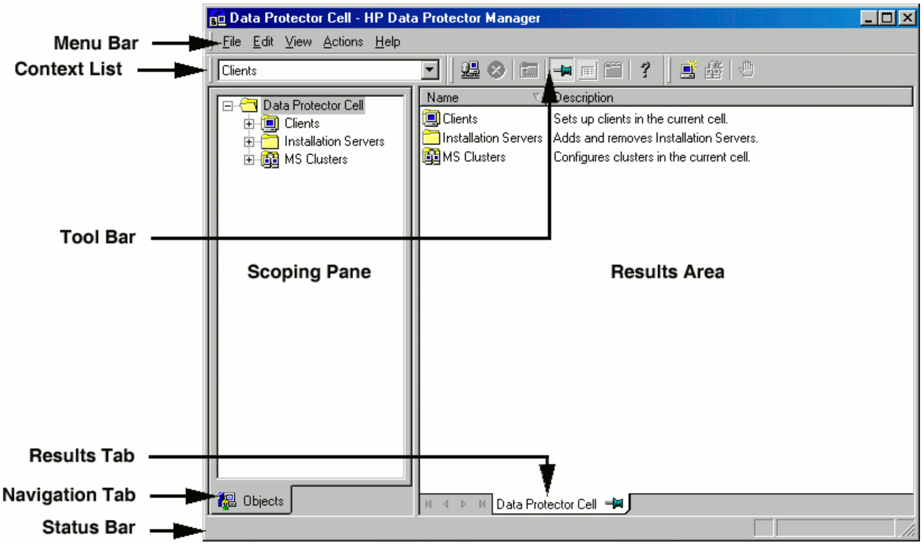
Provides additional information.

TIP:

Provides helpful hints and shortcuts.

Data Protector graphical user interface

Data Protector provides a cross-platform (Windows and UNIX) graphical user interface. You can use the original Data Protector GUI or the Data Protector Java GUI. Refer to the online Help for information about the Data Protector graphical user interface.



Name	Description
Clients	Sets up clients in the current cell.
Installation Servers	Adds and removes Installation Servers.
MS Clusters	Configures clusters in the current cell.

Figure 1 Data Protector graphical user interface

General Information

General information about Data Protector can be found at http://www.hp.com/go/dataprotector.

HP technical support

For worldwide technical support information, see the HP support website:

http://www.hp.com/support

Before contacting HP, collect the following information:

- Product model names and numbers
- Technical support registration number (if applicable)
- Product serial numbers
- Error messages
- Operating system type and revision level
- Detailed questions

Subscription service

HP recommends that you register your product at the Subscriber's Choice for Business website:

http://www.hp.com/go/e-updates

After registering, you will receive e-mail notification of product enhancements, new driver versions, firmware updates, and other product resources.

HP websites

For additional information, see the following HP websites:

- http://www.hp.com
- http://www.hp.com/go/software
- http://www.hp.com/service_locator
- http://www.hp.com/support/manuals
- http://www.hp.com/support/downloads

Documentation feedback

HP welcomes your feedback.

To make comments and suggestions about product documentation, please send a message to DP.DocFeedback@hp.com. All submissions become the property of HP.

1 Beta %1 announcements

Beta usage statement

This is a functional Beta version of HP Data Protector. It is to be used for test purposes only. Since this product is still under development and in spite of the intention to provide you with an "error free" product, reality has proven in the past that this cannot be presumed to always be the case. Hewlett-Packard therefore expressly advises you that this Beta version could include technical inaccuracies and/or errors for which HP undertakes no warranty or liability whatsoever. Therefore this product must not be used in a production environment where you depend on the backups obtained using this version of the product.

Refer to the `beta_license` agreement file for the full text of the license agreement. It is available on the Beta FTP site.

License requirements

The Data Protector A.06.10 prerelease version is delivered with a pre-installed 150-day evaluation license. This evaluation period must not be extended by applying a valid license. No further license requirements do exist to use all the Data Protector functionality for 150 days.

Encryption license

The evaluation encryption license (`Encryption_License.dat`) for 150 days can be downloaded from the Beta website. For details on how to obtain Data Protector passwords, see the *HP Data Protector installation and licensing guide*.

Data Protector version identification

You can see the currently installed version of Data Protector on your computer by selecting **About** in the **Help** menu of the Data Protector GUI.

Data Protector A.06.10 Beta %1 release known issues and workarounds

The list of known issues is not complete.

Installation and upgrade issues

ID:	QXCR1000464867
Issue:	Upgrade from Data Protector A.06.00 to Data Protector A.06.10 on HP-UX 11.31 MC/ServiceGuard on rx2660 IA64 machines fails
Description:	When Data Protector A.06.00 Cell Manager is installed on rx2660 IA64 machines, it does not create the `cell_info` file. As a result, it cannot be upgraded to Data Protector A.06.10.
Workaround:	None.

ID:	QXCR1000814995
Issue:	Installing license from AutoPass does not work as expected
Description:	Invalid entries in the AutoPass license file result in incorrect values (a string of zeros) in Data Protector license reporting using the `omnicc` command.
Workaround:	While retrieving license from the file, do not select all the licenses which are listed in the license file at once. Instead, select only the necessary ones. Manually add the license file (`lic.dat`) to the license path. For example: Windows: *`Data_Protector_home`*\config\server\cell UNIX: /etc/opt/omni/server/cell/

ID:	QXCR1000828089
Issue:	Cluster-aware client import is not working properly on Windows Server 2008 (x64 platform) in a cluster environment

Description:	Basically cluster client can be imported with virtual IP address, but in a Windows Server 2008 cluster environment, the cluster aware clients must be imported with the `Fileserver` name that was used while creating the file shares for the Data Protector installation.
Workaround:	Import the client with the `Fileserver` name provided to the cluster.

Encryption issues

ID:	N/A
Issue:	The keystore in Data Protector A.06.10 Beta %1 will not be compatible with future Beta/release candidates
Description:	Format changes are being done to write a custom integration library to integrate with a third party key management appliance/product. Hence it is not possible to use the keys created in this Data Protector A.06.10 Beta %1 version with later Beta releases or release candidate of Data Protector A.06.10. It is also not possible to migrate keys created in this Beta %1 version to future Beta version or release candidate of Data Protector A.06.10. As a result, it is not recommended to encrypt production data with this Beta %1 version of Data Protector A.06.10.
Workaround:	None.

ID:	QXCR1000827556
Issue:	IDB backup on clustered Cell Manager does not complete without error

Description:	When performing an IDB backup in a Microsoft Cluster environment, the backup fails with the following error:
	`[Minor] From: DBBDA@tpc193 "[Database]: smocl056.dprotector.test" Time: 07.07.2008 13:57:11[81:76] D:\DP_Share\\log\server\auditing`
	`Cannot perform stat (): ([123] The filename, directory name, or volume label syntax is incorrect. ) => not backed up.`

Workaround:	The “Auditing” directory must be created manually under the shared disk (`shared_disk/log/server/auditing`) in a Microsoft cluster environment before performing an IDB backup.

ID:	QXCR1000829502
Issue:	`omnidbcheck -keystore` reports "unknown internal error" when keystore is corrupted
Description:	In case the keystore database is corrupted, the command `omnidbcheck -keystore` will report the following error: `Unknown internal error`
Workaround:	Check the KMS audit log for any errors. Restore the keystore database from the last known good IDB backup and restart the operation.

Integration issues

ID:	QXCR1000714657
Issue:	DB2 integration: Japanese tablespace cannot be shown in correct characters, backup fails
Description:	• In the Results area, Japanese tablespaces are not displayed correctly, even if you change the encoding. • In the Backup context, if you run a backup with Japanese tablespaces, the backup completes, but no data is backed up.
Workaround:	None.

ID:	QXCR1000774432, QXCR1000774435
Issue:	Offline zero downtime backup in an Oracle Server RAC environment fails
Description:	The ZDB session fails because Oracle Server database cannot be put offline. Data Protector session messages do not contain details about root

	cause of the problem, therefore the exact reason for failure cannot be identified.
Workaround:	None.

ID:	QXCR1000799197
Issue:	Data Protector GUI showing strange characters for Oracle backup configuration
Description:	While configuring the backup specification from Data Protector GUI Application database drop-down showing strange characters along with the oracle SID's. Strange table spaces/datafile names are seen when database is expanded from Data Protector GUI.
Workaround:	Add `LANG=En_US` to profile or to `omnirc`.

ID:	QXCR1000801518
Issue:	Virtual Server Virtual Machines residing on FAT32 filesystem are backed up
Description:	The VSS integration does not check if the disk that is backed up is an NTFS disk and does not prevent such backups, unsupported by VSS, from starting.
Workaround:	None.

ID:	QXCR1000807867
Issue:	Wrong backup session report If no VCB framework present on VCBproxy
Description:	VCBfile and VCBimage backup sessions that use a backup proxy, on which the VCB software is missing, complete with the status `Completed with errors`. The reported status is wrong, the correct one should be `Failed` because no virtual machines could be backed up.
Workaround:	None.

ID:	QXCR1000812353
Issue:	VSS Exchange Server 2003 database consistency checks fails during backup
Description:	When listing failed session with `omnidbvss`, the output contains the object that has failed and is not available for restore.
Workaround:	None.

ID:	QXCR1000816607
Issue:	Oracle backup fails when the command 'restore database validate' is used
Description:	If the command `'restore database validate;'` is added at the end of the RMAN script, the backup fails.
Workaround:	None.

ID:	QXCR1000819827
Issue:	A major error seems to occur during incremental backup session for backing up Lotus Notes/Domino Server data
Description:	Data Protector skips incremental backup of Lotus Notes/Domino Server data if amount of changed data does not exceed the value of the **Amount of log** option. However, in such cases, the session report contains a major error message that might confuse the backup administrator.
Workaround:	None.

ID:	QXCR1000827244
Issue:	Copy As does not preserve some SAP R/3 backup specification options
Description:	If you create a copy of the backup specification, the concurrency, balance and the Use default RMAN Channel options is not preserved.

Workaround:	Set the concurrency, balance, and RMAN channels in the copy of the backup specification.

ID:	QXCR1000827247
Issue:	Handling of the path under "SAP Integration specific option" -> Log files
Description:	If you enter a wrong path (for example, a directory that does not exist) for the log files, Data Protector does not generate any warning about the wrong destination for the logs.
Workaround:	None.

ID:	QXCR1000827250
Issue:	A Microsoft Exchange Public folder is not restored to original location
Description:	When a Microsoft Exchange Public folder is restored with the option **Restore into orignal location set**, a new folder called `All Public Folders` is created and the original folder is restored in to it.
Workaround:	None.

ID:	QXCR1000827330
Issue:	Restore of "Oracle Recovery backup Catalog" object fails of Data Protector A.05.50 session
Description:	After upgrading from Data Protector A.05.50 to Data Protector A.06.10 , **Oracle Recovery Backup Catalog** and **Data Protector Managed Control File Backup** objects that were backed up with Data Protector A.05.50 cannot be restored.
Workaround:	None.

ID:	QXCR1000827338
Issue:	Single Mailbox backups taken using Data Protector A.05.10 are not restorable with Data Protector A.06.10

Description:	A backup of an Exchange Server 2003 Single Mailbox, created with Data Protector cannot be restored with Data Protector.
Workaround:	None.

ID:	QXCR1000828120
Issue:	A backup of many SAP archivelog files failed
Description:	SAP archive log backup fails with an error, similar to the following: `BR279E Return code from 'C:\sapmnt\SAP\SYS\exe\run\backint.exe -u SAP -f backup -i file_name.lst -t file -c': 128` The problem can appear if a huge number of files is backed up.
Workaround:	None.

ID:	QXCR1000828126
Issue:	Multiple SQL Server 2005 instances are visible in SQL Virtual Server client
Description:	If several SQL Server 2005 instances are running on the same cluster node, the Default SQL 2005 Instance is displayed even if it is not running on this node.
Workaround:	None.

ID:	QXCR1000828234
Issue:	VMware A VCBfile full backup fails
Description:	A VCBfile full backup of a virtual machine fails with an error similar to the following: Virtual machine '*machine_name*': operation failed: remount Error: 44 warning]
Workaround:	None.

ID:	QXCR1000828638
Issue:	SAP compliance mode: configuration fails due to instant recovery check
Description:	With SAP compliant ZDB, the control files and redo logs can reside on the same disk as the data files. In such a case, the instant recovery check fails. The check is not performed if the variable `OB2_MIRROR_COMP` is set, but this variable can only be set after the configuration.
Workaround:	When you create the first backup specification for an SAP compliant ZDB session, proceed to the Source page with the Track the replica for instant recovery cleared, set the `OB2_MIRROR_COMP` environment variable to enable SAP compliant ZDB sessions, and then return to the previous page of the backup specification and select the **Track the replica for instant recovery** option.

ID:	QXCR1000828649
Issue:	The `omniex2000.exe` utility is not functioning as expected
Description:	Two problems exist with usage of this utility: • `omniex2000.exe` does not require users to specify the option `-all_storage_groups` to mount or dismount all storage groups of a particular Exchange Server, although it should. • `omniex2000.exe` does not provide means for mounting and dismounting Recovery Storage Group. This fact is not documented.
Workaround:	None.

ID:	QXCR1000830653
Issue:	MS SPS Restore: Restore does not work from GUI
Description:	When restoring Microsoft SharePoint Portal Server from the GUI, the restore does not work although Data Protector reports that the session completed successfully.
Workaround:	Use the Command line interface (CLI) instead.

User interface issues

ID:	QXCR1000813189
Issue:	Restore and recovery options are shaded
Description:	Restore and recovery options may be shaded if you proceed as follows: 1. In the Restore context, browse **Restore Objects** > **Oracle Server** > *Client_name* > **Oracle Server**[*instance_name*]. 3. In the Source pane, select **Perform RMAN Repository Restore** > **CONTROL FILE FROM DP MANAGED BACKUP** . 4. In the Options pane, enter all needed fields. 5. Switch back to the Options tab and select **Perform Restore and Recovery** as Restore action. 6. Select whole database to perform restore and recovery. 7. Switch to the Options tab.
Workaround:	Set the right restore action on the Source page before you proceed to the Options page.

ID:	QXCR1000826815
Issue:	Instant recovery session is not visible after exporting media
Description:	When you make a copy of a medium and export it and recycle the original medium, instant recovery sessions can no longer be restored, because they disappear from instant recovery context in the GUI.
Workaround:	None.

ID:	QXCR1000827406
Issue:	Java GUI - 'Abort session' icon is disabled during backup
Description:	During a backup session, the **Abort session** button in the toolbar menu is disabled.
Workaround:	Abort the session from the **Action** menu.

ID:	QXCR1000827458
Issue:	Java GUI - unable to collect DBSM debugs when running Java GUI
Description:	When Java GUI is run with debug options enabled and DBSM queries are run via Java GUI, no DBSM debugs can be found. It is not possible to collect any DBSM debugs, unless `uiproxyd` is started with debug options. Currently it is not possible to turn debugging on and off from UIproxy and since the DBSMs are shared among Java GUI clients, it is also more or less impossible to extract DBSM debugs specific to a single Java GUI.
Workaround:	Start `uiproxy` with the debug options set.

ID:	QXCR1000827666
Issue:	Bad catalog access for message
Description:	This error message is generated for missing message catalogs in the Japanese and French locales. Currently, product localization is in progress. There are occurrences in the MFC graphical user interface and command-line interface of non-translated messages. Please do not submit defects against such occurrences. Non-translated messages are listed in attachments JPN and FRA of the defect QXCR1000827666.
Workaround:	None.

ID:	QXCR1000828019
Issue:	Copy & Consolidation - Refresh does not load actual data in Copy context
Description:	The issue appears in the **Copy and Consolidation** context. If you generate a new Post Backup item in the original Data Protector GUI and then refresh the tree in the Java GUI, you will not see the new item.
Workaround:	Reconnect the Java GUI client.

ID:	QXCR1000828122
Issue:	"Network share backup" option is not available in UNIX Java GUI

Description:	In the Backup context on non Windows systems, Network Share Backup is not available . This is normal behavior and slightly differs from the original Data Protector GUI. Microsoft network share backup is not possible when the Java GUI server (uiproxy) runs on a non-Windows Cell Manager.
Workaround:	Use the Java GUI or original GUI on the Windows client to configure a network share backup.

Disaster recovery issues

ID:	QXCR1000793235
Issue:	OBDR on cluster aware client does not work properly.
Description:	When creating an OBDR backup specification of a cluster-aware client, several errors may appear, such as missing client names and so on. As a result, a proper backup of the client may not be possible.
Workaround:	None.

ID:	QXCR1000823097
Issue:	Online restore of a cluster aware client fails with Object not found.
Description:	When performing an EADR of a cluster-aware client while in online restore mode, the following message is displayed: `Object not found, error 3` The restore then switches to offline restore.
Workaround:	None.

Other Issues

ID:	QXCR1000826143

Issue:	MPE/iX: Device is locked after backup session
Description:	Scan, format, and backup operations complete successfully, but the device is locked. This results in subsequent operations stopping responding.
Workaround:	Restart the `omniinet` service on the MPE/iX client.

ID:	QXCR1000826147
Issue:	MPE/iX: restore and verify and medium aborts with medium error
Description:	Restore and verify operations fail with the message `Unexpected status of medium error ….`
Workaround:	None.

ID:	QXCR1000827233
Issue:	Cannot export Configuration object
Description:	While backing up the system configuration objects on Windows Server 2008, which might involve SYSVOL, the backup might not be completely successful and report `Cannot export configuration object: () => backup incomplete`
Workaround:	Deselect `SYSVOL` under the configuration objects and re-run the backup.

ID:	QXCR1000827357
Issue:	OpenVMS: Cannot add OpenVMS client to Cell Manager
Description:	OpenVMS client import fails with all Cell Managers.
Workaround:	None.

Test areas

Beta customers should test all functionality. However, special attention should be given to the following new functionalities:

- Encryption
- Data Protector Java GUI
- Support for Microsoft Windows Server 2008
- Enhanced Microsoft Volume Shadow Copy Service support

Reporting defects

Defects should be reported using the Data Protector Beta website.

You have to be registered in order to submit defects. Registration takes a few minutes and saves you from having to re-enter static data for subsequent defect reports.

Installing or upgrading to Data Protector A.06.10

For general installation requirements, refer to the Upgrade section in Chapter 6, page 115.

Installing Data Protector A.06.10 Beta %1

To install Data Protector A.06.10 Beta %1, use the procedure in the *HP Data Protector installation and licensing guide* for installing Data Protector A.06.10. No specific steps are required for a Beta version.

Upgrading from a pre-A.06.10 version to A.06.10 Beta %1

To upgrade from Data Protector A.05.10, Data Protector A.05.50, or Data Protector A.06.00, use the procedure documented in the *HP Data Protector installation and licensing guide* for upgrading from these versions to Data Protector A.06.10. No specific steps are required for this upgrade.

Localization

The A.06.10 Beta %1 build is partially localized to the French and Japanese language. This includes the GUI, command line interface, and documentation.

Documentation

Printed manuals and online Help are under development.

The *HP Data Protector administrator's guide* was obsoleted with the A.06.00 release. It is replaced by the online Help, the *HP Data Protector troubleshooting guide*, and *HP Data Protector disaster recovery guide*.

The manuals are located in the `Data_Protector_home\docs` directory on Windows and `/opt/omni/doc` directory on UNIX platforms. User documentation is currently under construction. Final version will be available in the released version of the product.

2 Announcements

HP Data Protector automates high performance backup and recovery, from disk or tape, over unlimited distances, to ensure 24x7 business continuity, and seamless integration with HP storage hardware and management solutions. Data Protector delivers innovation and performance at a much lower cost than competitive solutions, while offering flexibility, scalability, and performance. Data Protector is a key member of the fast-growing HP storage software portfolio and offers the unique advantage of being able to source hardware, software, and award winning service offerings from a single, trusted source. Data Protector is both easy to deploy and use. It has a simple installation, automated routine tasks, and centralized licensing facility that reduces costs and data center complexity.

Now announcing its later version: Data Protector A.06.10.

Upgrades

Upgrade information is available in the *HP Data Protector installation and licensing guide*. Procedures for upgrading from Data Protector versions A.05.10, A.05.50, and A.06.00 to Data Protector A.06.10 are described.

What is supported?

Detailed information about supported platforms, devices, and integrations is available in the support matrices, which can be found on any Data Protector DVD in the `\DOCS\support_matrices` directory. The following support matrices are available in Portable Document Format (PDF):

- *HP Data Protector A.06.10 supported platforms and integrations*
- *HP Data Protector A.06.10 supported devices*
- *HP Data Protector A.06.10 split-mirror backup for HP StorageWorks Disk Array XP*
- *HP Data Protector A.06.10 zero downtime backup for HP StorageWorks Virtual Array*

- *HP Data Protector A.06.10 zero downtime backup for HP StorageWorks Enterprise Virtual Array using EVA SMI-S agent*
- *HP Data Protector A.06.10 EMC split-mirror backup integration*
- *HP Data Protector A.06.10 disaster recovery support matrix*
- *HP Data Protector A.06.10 supported devices and SAN solutions*
- *HP Data Protector A.06.10 fibre channel SAN support matrix*
- *HP Data Protector A.06.10 VSS support matrix*
- *HP Data Protector A.06.10 network attached storage (NAS) support matrix*
- *HP Data Protector A.06.10 direct backup support matrix*

For the latest list of support matrices on the Web, refer to:

http://www.hp.com/support/manuals

In the event of hardware or software failures on third-party products, please contact the respective vendor directly.

Supported command-line interface (CLI) commands for Data Protector are documented in the *HP Data Protector command line interface reference*.

Licensing

Data Protector A.06.10 leverages the product numbers from Data Protector A.05.10, A.05.50, A.06.00 and Application Recovery Manager A.06.00. All Data Protector A.05.10, A.05.50, A.06.00 and Application Recovery Manager A.06.00 licenses can be used with Data Protector A.06.10 and retain their original functionality. No license migration is required. However, depending on new functionality, you may have to install new product licenses.

For more information, refer to the *HP Data Protector installation and licensing guide*.

Support for old agents

Wherever possible, all clients in a Data Protector cell should be upgraded to version A.06.10 during the regular upgrade process. This ensures that customers can benefit from the full feature set of Data Protector A.06.10 on all systems in a cell.

However, due to the high demand, support for older agents has been extended. Disk agents and media agents of the same Data Protector version (A.05.10, A.05.50, and A.06.00) are supported in an A.06.10 cell with the following constraints:

- Support is limited to the feature set of the older Data Protector version.

- Operations involving clients on different systems (for example export media / import media) have to be performed using agents of the same version.
- Older media agents are not supported in combination with NDMP servers.
- If one Data Protector component on a client is upgraded to A.06.10, all other components have to be upgraded to A.06.10 as well.
- Version A.05.10 disk agents must be upgraded to A.06.10, if you plan to back up files which contain non-ASCII characters in their file names.

If you have any problems establishing a connection with older agents, consider upgrading to A.06.10 as the first resolution step.

Updated information

For the latest information, including corrections to documentation, see the Data Protector home page http://www.hp.com/go/dataprotector.

3 Product features and benefits

Below is a summary of the benefits provided by Data Protector A.06.10:

- Encryption
- Data Protector Java GUI
- Data Protector VMware Virtual Infrastructure integration
- Data Protector Microsoft SharePoint Portal Server Integration
- Support for new platforms
- Disaster recovery enhancements and support for new platforms
- Enhanced Data Protector integrations: Microsoft Volume Shadow Copy Service, Microsoft SQL Server, Oracle Server, SAP R/3, Microsoft Exchange Server, and Lotus Notes/Domino Server
- Disk Agent enhancements
- Device enhancements
- Internal Database enhancements
- Improved reporting

The rest of the chapter gives a more detailed description of these Data Protector A.06.10 features and major changes in comparison to the previous Data Protector version.

Encryption

Data Protector A.06.10 enhances the existing encoding functionality by introducing the following advanced encryption techniques:

- AES 256-bit encryption
- Drive-based encryption

AES 256-bit encryption

The Data Protector software encryption, referred to as AES 256-bit encryption, is based on the Advanced Encryption Standard (AES) cryptographic algorithm that uses a symmetric key for both encryption and decryption. Data is encrypted before it is transferred over the network and written to media.

You can encrypt all or selected objects in a backup specification and also combine encrypted and unencrypted sessions on the same medium.

Drive-based encryption

The Data Protector drive-based encryption utilizes encryption functionality of the drive. The actual implementation and encryption strength depend on the drive's firmware. Data Protector only turns on the feature and manages encryption keys. For an up-to-date list of devices that support drive-based encryption, refer to the support matrices in the *HP Data Protector product announcements, software notes, and references*.

Drive-based encryption can be used with backup, object consolidation, object copy, and automated media copy operations. It can be enabled in each respective operation or centrally in the properties of the drives used for these operations.

Data Protector Java GUI

Data Protector A.06.10 introduces a Java-based graphical user interface with a client-server architecture, which enables backup management with the same look and feel as the original Data Protector GUI.

As Java can run on numerous platforms, the Data Protector Java GUI is supported on a larger number of platforms than the original Data Protector GUI. Due to the one-to-one relationship with the original Data Protector GUI, no re-learning effort is required. In addition, both user interfaces can run simultaneously on the same computer.

Benefits of Java GUI

The Data Protector Java GUI has the following advantages over the original Data Protector GUI:

- Portability

The Data Protector Java GUI architecture enables you to install Java GUI Clients on most platforms that support Java Runtime Environment (JRE).

- Easy firewall configuration

  For details, see the Data Protector support matrices under specifications at http://www.hp.com/support/manuals.

  The Java GUI Client uses port 5556 to connect to the Java GUI Server. It is easier to configure Java GUI in a firewall environment because only one port needs to be opened.

- Improved localization and internationalization

  Only one installation package is needed for all locales. The Java GUI enables better display in all locales, since controls are automatically resized to match the size of the text.

- Non-blocking behavior

  The Java GUI Server transmits only data for the current context, which reduces the network traffic between the Java GUI Server and the Java GUI Client. Due to its non-blocking behavior, you can work on different contexts while Java GUI Server processes your requests in the background.

Data Protector VMware Virtual Infrastructure integration

Data Protector A.06.10 introduces support for the VMware Virtual Infrastructure environment, enabling you to perform backups and restores of the following VMware objects:

- Virtual machines
- Filesystems of virtual machines (running Windows operating systems)

Backup

During backup, virtual machines can be online and actively used.

Data Protector offers the following backup methods:

- Snapshot
- Suspend
- VCBimage
- VCBfile

Data Protector offers interactive and scheduled backups of the following types:

- Full
- Incremental
- Differential

Restore

Virtual machines can be restored to the original or a different datacenter and ESX Server system. Restore to a different location should be done only in case of a disaster recovery. It is not meant to clone existing virtual machines.

Using the restore options, you can specify what to do once the virtual machines are restored. You can:

- Register virtual machines
- Power on virtual machines
- Consolidate virtual machine snapshot files to a single file

Filesystems can be restored to any Windows system (physical or virtual) that has the `VMware Integration` component installed.

If virtual machines or filesystems to be restored already exist in the destination, the restore options also enable you to specify whether you want to keep or overwrite the existing files.

Scripting solution

Data Protector A.06.10 no longer supports VMware ESX Server 2.x scripting solution. Virtual machines backed up with pre-Data Protector A.06.10 scripts can still be restored using the standard Disk Agent (common filesystem restore). If the virtual machines to be restored already exist in the destination datacenter, put them offline before you start the session.

Data Protector Microsoft SharePoint Portal Server Integration

Data Protector A.06.10 introduces support for the Microsoft SharePoint Portal Server application, enabling you to perform backups and restores of the following SharePoint Portal Server objects:

- Team databases

- Site databases (*portal_name*_SITE, *portal_name*_SERV, *portal_name*_PROF)
- Index servers
- Single sign-on database
- Document library

Team databases, site databases, and the single sign-on database are SQL Server databases.

During backup, the SharePoint Portal Server and the SQL Server instances are online and actively used. The SharePoint Portal Server integration provides the following backup types:

- Full
- Trans (MS SQL Server objects only)
- Differential (MS SQL Server objects only)

When performing a restore, Data Protector offers an option to specify the restore destination for SQL Server databases and index servers.

You can restore an SQL Server database to the original location or:

- To another SQL Server system
- To another SQL Server instance
- Under a different name

You can restore a SharePoint Portal index server to the original location or:

- To another client
- To another directory

If your SharePoint Portal Server farm is centralized (having the master portal and child portals), you have two options of how to restore the master portal:

- Restore the old master portal as a child on the current master portal
- Remove the current master portal and restore the old master portal

Support for new platforms

Microsoft Windows Server 2008

Data Protector A.06.10 introduces support for Windows Server 2008 operating system for 32-bit and 64-bit processor architectures. The following Data Protector components are available for this platform:

- Cell Manager (including Manager-of-Managers)
- Installation Server
- User Interface
- Java GUI Client
- Manager-of-Managers User Interface
- Disk Agent
- General Media Agent

In Microsoft Cluster Server environment, Cell Manager can be installed in a cluster-aware mode.

On Windows Server 2008 platform, you can run backup sessions for backing up data residing on local file systems or remote network shares.

Symbolic links is a new filesystem feature available in Windows Server 2008. On this platform, Data Protector A.06.10 handles symbolic links in the same way as NTFS reparse points.

On Windows Server 2008, within the Disk Agent functionality, backup of CONFIGURATION objects is performed using Volume Shadow Copy Service.

Microsoft Windows Vista

Data Protector A.06.10 introduces support for Windows Vista operating system for 64-bit processor architecture. The following Data Protector components are available for this platform:

- User Interface
- Java GUI Client
- Disk Agent
- General Media Agent

On Windows Vista platform, you can run backup sessions for backing up data residing on local file systems or remote network shares.

Symbolic links is a new filesystem feature available in Windows Vista. On this platform, Data Protector A.06.10 handles symbolic links in the same way as NTFS reparse points.

On Windows Vista systems, within the Disk Agent functionality, backup of CONFIGURATION objects is performed using Volume Shadow Copy Service.

HP-UX 11.31

Data Protector A.06.10 introduces support for the following components on HP-UX 11.31 operating system:

- Media Agent
- Disk Agent
- HP StorageWorks XP Agent
- HP StorageWorks EVA SMI-S Agent

With this support, Data Protector now recognizes **legacy** and **agile (multi-pathing and path-independent)** Device Special Files (DSFs) as backup objects and restore objects.

The agile DSFs are also called **persistent** DSFs.

Benefits of the agile DSFs naming model

Data Protector A.06.10 introduces support for the agile DSFs on HP-UX 11.31 systems. The agile naming model has the following benefits over the legacy naming model:

- Adaptability

  Agile DSFs are not affected by any physical changes in the paths to the device.
- Reliability

  Agile DSFs are more reliable than legacy DSFs, and are not affected by the number of paths leading to the device.
- Availability

  Agile DSFs are path-independent. This way using multi-path, high-availability software is no longer necessary (for example, the HP StorageWorks Secure Path).
- Scalability

  Agile DSFs support large size LUNs.

For more information, see the HP-UX related documentation.

Novell Open Enterprise Server (OES)

Data Protector A.06.10 introduces support for Novell OES running on 32-bit SUSE Linux Enterprise Server 9.0. This support enables you to run backup and restore of Novell Storage Services (NSS) volumes, native Linux volumes, and Novell Cluster Services volumes.

Disaster recovery enhancements and support for new platforms

New supported platforms

Data Protector A.06.10 introduces disaster recovery on new platforms:

- Microsoft Windows Vista
- Microsoft Windows 2003 Server SP1 and R2 (on x64 and Itanium platforms)
- Microsoft Windows XP Professional SP2 (on x64 and Itanium platforms)

For details, see the latest support matrices at http://www.hp.com/support/manuals and the *HP Data Protector disaster recovery guide*.

Disaster recovery enhancements

Data Protector A.06.10 introduces the following disaster recovery enhancements:

- Support for Automated System Recovery (ASR) on nodes in Majority Node Set (MNS) Quorum server clusters.

  This enhancement enables you to create ASR disk sets and then perform an ASR on such server clusters.

Enhanced Data Protector Microsoft Volume Shadow Copy Service integration

Data Protector A.06.10 enhances the Microsoft VSS integration for zero downtime backup and instant recovery support through the VSS interface using Data Protector ZDB agents, and introduces support for additional applications through the VSS interface.

Microsoft VSS integration enhancements for zero downtime backup (ZDB)

Support for integration with Data Protector ZDB agents

Data Protector A.06.10 extends functionality of the Microsoft VSS integration by using HP StorageWorks EVA SMI-S Agent and HP StorageWorks XP Agent.

Support for Disk Array XP hardware provider provides two configuration modes: VSS compliant mode and resync mode. Resync mode requires HP StorageWorks XP Agent. Instant recovery method available depends on the configuration mode selected during ZDB to disk.

Support for EVA hardware provider together with HP StorageWorks EVA SMIS-S Agent introduces new instant recovery methods.

Filesystem backup

Data Protector A.06.10 supports backup of entire volumes (disks) with NTFS filesystem through the VSS/VDS interface. With hardware providers, volumes with FAT filesystem can also be backed up.

New instant recovery methods using ZDB agents

Using SMI-S Agent and XP Agent, Data Protector A.06.10 supports two new instant recovery methods:

- Copy of replica data with the source volume retained (using SMI-S Agent only)

  Instead of presenting the replica, a copy is created first and then presented during instant recovery. Another restore from the same backup data is possible and the source volume is retained.

- Copy of replica data with the source volume not retained (using SMI-S Agent or using XP Agent after backup in the resync configuration mode)

  During instant recovery, the source volume is directly overwritten by the replica. Another restore from the same backup is possible, but the source volume is lost.

For more information on using Data Protectorr Microsoft VSS integration together with ZDB integrations, see *HP Data Protector zero downtime backup integration guide*.

Mounting replicas to backup system

Replicas created during ZDB sessions can be mounted on the backup system. This enables you to perform additional, non-backup or restore related tasks, such as data mining.

Waiting for snapclone to complete

For HP StorageWorks EVA, Data Protector A.06.10 offers the option **Wait for the replica to complete** to wait for a specified period of time until the snapclone creation completes, before continuing with backup.

Support for new and improved support for existing writers

Microsoft SQL Server 2005

Data Protector A.06.10 introduces support for the Microsoft SQL Server 2005 writer. Only Full and Copy backup types are supported.

Microsoft Exchange Server 2007

Data Protector A.06.10 introduces support for the Microsoft Exchange Server 2007 writer, together with two Exchange Server models of replication for data protection: local continuous replication (LCR) and cluster continuous replication (CCR). With VSS integration, you can back up LCR or CCR replicas of databases and storage groups.

With Microsoft Exchange Server 2007 writer, you can restore a whole storage group or a single store not only to the original location but also to a different location:

- Different storage group
- Different server
- Non-Exchange location, with optional creation of the recovery storage group after restore

Improved support for Microsoft Exchange Server consistency check

Data Protector A.06.10 offers an improved support for consistency check of the Microsoft Exchange Server 2003/2007 writer. The consistency check can now be enabled from the Data Protector GUI or CLI and throttled to optimize restore performance.

Microsoft Virtual Server 2005

Data Protector A.06.10 introduces support for the Microsoft Virtual Server 2005 writer. You can back up individual virtual machines and the Virtual Server configuration using the Data Protector Microsoft VSS integration.

For more information on Data Protector Microsoft VSS integration and its new features, see *HP Data Protector integration guide for Microsoft applications: SQL Server, SharePoint Portal Server, Exchange Server, and Volume Shadow Copy Service*.

Enhanced Data Protector Microsoft SQL Server integration

Enhanced configuration

Until now, if you wanted to enable Data Protector to connect to the SQL Server instance with a Windows domain user account, you had to restart the Data Protector `Inet` service under this account and select the Data Protector Integrated security option during the Data Protector SQL Server configuration. Since different SQL Server instances could have different Windows administrative accounts, you had to restart the Data Protector `Inet` service whenever you wanted to back up a different SQL Server instance.

Data Protector A.06.10 provides a new option in the Configure the SQL Server dialog box, enabling you to specify a Windows domain user account for each SQL Server instance separately.

Support for Windows x64 platform

Data Protector A.06.10 introduces support for Microsoft SQL Server 2005 running on the 64-bit Windows x64 platform. This support enables you to run standard backups and restores of Microsoft SQL Server 2005 databases, as well as ZDB and instant recovery sessions.

Enhanced Data Protector Oracle Server integration

The configuration of the Data Protector Oracle Server integration is now much simpler.

- On UNIX clients with Oracle9i/10g, the creation of symbolic links to the Data Protector MML is no longer necessary. Therefore, if you have upgraded UNIX clients from an older version of Data Protector, it is recommended that you remove the existing symbolic links.
- On UNIX and Windows clients with Oracle8i and on HP OpenVMS clients with any Oracle version, you still need to link Oracle Server with the Data Protector MML manually.

Enhanced Data Protector SAP R/3 integration

Enhanced configuration

The configuration of the Data Protector SAP R/3 integration for the RMAN mode is now much simpler.

- You no longer have to install and configure the Data Protector Oracle Server integration.
- ***SAP R/3 with Oracle8i:*** On UNIX and Windows clients, you still need to manually link Oracle Server with the Data Protector MML.

Authentication improvements

Data Protector A.06.10 introduces a new authentication mode for accessing SAP R/3 databases: operating system authentication. The Data Protector SAP R/3 integration can now use two authentication modes when backing up and restoring Oracle databases that are used by SAP R/3:

- database authentication mode
- operating system authentication mode

With database authentication mode, you need to re-configure the SAP R/3 integration for an SAP R/3 database each time the respective Oracle database user account changes. Such a reconfiguration is not needed if the operating system authentication mode is used.

You select the preferred authentication mode when you configure the SAP R/3 integration for a particular SAP R/3 database.

SAP compliant ZDB sessions

In previous releases, you could start ZDB sessions (more specifically, BRBACKUP) only on the application system. With A.06.10, you can configure Data Protector to start ZDB sessions on the backup system, which is what SAP recommends.

Enhanced Data Protector Microsoft Exchange Server integration

Data Protector A.06.10 introduces support for Microsoft Exchange Server 2007 running on the 64-bit Windows x64 platform. This support enables backup and restore of Exchange Server databases, as well as individual mailboxes and Public Folders. Backup and restore are performed in the same way as with previous Exchange Server versions.

Zero downtime backup (ZDB) and instant recovery of Exchange Server 2007 data are not supported.

Enhanced Data Protector Lotus Notes/Domino Server integration

Data Protector A.06.10 introduces an enhanced Lotus Notes/Domino Server integration agent, which significantly improves backup and restore performance, and simplifies the configuration of the integration. The new agent reduces the time needed for backup as well as the CPU usage and memory consumption on the Cell Manager.

Disk agent enhancements

Data Protector A.06.10 Disk Agent enhanced Windows platform support for Microsoft Volume Shadow Copy Service

The Data Protector A.06.10 Disk Agent supports Microsoft Volume Shadow Copy Service filesystem backup on Windows XP Home Edition, Windows XP Professional 32–bit Edition, and Windows XP Professional 64–bit Edition operating systems running on AMD64/Intel EM64T or Itanium processors.

Windows Disk Agent performance improvement

Data Protector A.06.10 introduces asynchronous reading to improve Disk Agent performance of Windows filesystem backup. Asynchronous reading improves performance of the Disk Agent when backing up data on disk arrays, especially if large files are backed up. The **Asynchronous reading** option can be set for the whole backup specification or for an individual backup object.

Device Enhancements

Data Protector A.06.10 introduces the following device enhancements:

- Automatic restore device selection

  Until now, if the devices that were used for backup were not available during restore, Data Protector would wait for the devices to become available. This would cause a delay in the restore session. In Data Protector A.06.10, you can configure Data Protector to automatically replace unavailable devices with available devices of the same subtype.

- Automatic device disable

  This enhancement enables you to configure Data Protector to automatically disable devices on which a certain number of unknown errors has occurred. You determine the threshold value by setting the `SmDeviceErrorThreshold` global option.

- Reserve or release SCSI robotics or drive

  This enhancement enables SCSI Reserve/Release. By selecting this option, the devices are reserved only for Data Protector operations.

Internal database enhancements

Flexible time frame filtering options in the Internal Database

Data Protector A.06.10 provides more flexible filtering options to view sessions in the Internal Database. You can customize the filtering options according to your needs by specifying the exact start date and time as well as end date and time.

DCBF limit

With previous versions of Data Protector, the size of detail catalog binary files was limited to 2 GB. Data Protector A.06.10 increases the maximum size per DCBF files as well as per DCBF directories. DCBF files are now limited only by the file system settings.

Improved reporting

Data Protector A.06.10 introduces backup session auditing functionality, enhanced reporting functionality, and provides you with additional information on your backup environment:

- Backup session auditing

  Data Protector A.06.10 introduces backup session auditing, which stores non-tamperable and non-overwritable information about all backup tasks that were performed over user-defined periods for the whole Data Protector A.06.10 cell. The auditing information is retrievable on demand in an integral and printable fashion for auditing or administrative purposes.

- Object copy and consolidation reporting

  Most relevant reports are now modified to include information regarding the object copy and object consolidation functionalities. Several reports are renamed to more generic names, so that, for example, the ones that apply only to backup reflect that. In addition, two new reports are introduced.

- Enhanced Drive Flow report

  Until now, only logical device names were shown in the Device Flow report. In Data Protector A.06.10, you can configure the report to show also the physical representation of devices (lock names and serial numbers). In addition, devices with the same physical representation are grouped together.

  The MoM enterprise (multi-cell) Device Flow report has also changed. The summary lines that separate different Cell Managers enable greater scrutiny of the report.

Additional changes and improvements

Enhanced HP AutoPass functionality

HP AutoPass, the utility used for automatic retrieval and installation of Data Protector license passwords, has been extended with new options and additional platform coverage. In addition, you can now install AutoPass as a standalone product. For more information on AutoPass, see the *HP Data Protector installation and licensing guide* and the HP AutoPass online Help.

Support for Windows NTFS Change Log Provider

Data Protector A.06.10 enhances the incremental backup functionality by introducing the enhanced incremental backup using the Windows NTFS Change Log Provider. The Change Log Provider is based on the Windows Change Journal that records all changes made to the files and directories on an NTFS volume. Data Protector uses the Change Journal as a tracking mechanism to generate a list of files that have been modified since the last full backup. The main change from a traditional enhanced incremental backup is that a list of files to be backed up is generated by querying the Change Journal rather than performing a file tree walk which can take a considerable amount of time to complete. Using the Change Log Provider improves the overall incremental backup performance, especially in environments that contain millions of files only a few of which have changed.

A set of new commands and `omnirc` variables is provided to control and administer the Change Journal and optimize the Change Log Provider performance.

Scheduler enhancements

Data Protector A.06.10 offers an improved and extended scheduling functionality:

- Backups can be scheduled up to the year 2038.
- Finer scheduler granularity enables you to tune your scheduling up to 1 minute.
- Time zone independence allows you to see all scheduler-related times as seen on the Cell Manager system, not taking into account time zone differences.

Recycling of failed source objects

Data Protector A.06.10 enables you to recycle failed backup objects on your media. A new option, **Recycle data and catalog protection of failed source objects**, was introduced to remove data and catalog protection of failed objects. Consequently, the media can be reused for new backups. The option is available in the post-backup or scheduled object copy specification.

Single session restore from GUI

Data Protector A.06.10 introduces restore from a single incremental session, enabling you to restore files without having to restore the entire restore chain. This feature simplifies and speeds up the restore.

Debug log collector enhancements

Data Protector A.06.10 offers a new version of the debug log file collector utility (the Data Protector `omnidlc` command), enabling you to add user-specific information to the debug data that you send to the HP Customer Support Service. In addition, you can now exclude the configuration information from the collected data.

Separate English language documentation and online Help installation package

In previous Data Protector releases, you could only install the documentation and online Help together with the graphical user interface. Data Protector A.06.10 introduces a new English language documentation and online Help installation package that is independent of the graphical user interface.

4 Limitations and recommendations

Size limitations

Internal database size

	Data Protector A.06.10
Number of filenames[1]	32 GB or approx. 700 million (UNIX systems) 450 million (Windows systems)
Number of file versions	10 x No of filenames
Maximum number of DCBF[2] directories	50
Maximum size per DCBF directory[3]	limited by the file system settings
Maximum size per DCBF file	limited by the file system settings
Maximum number of files per DCBF directory	10,000
Maximum number of concurrent drives (DLT7000 and lower performing)	100
Maximum number of concurrent drives (DLT8000/SDLT/LTO)	50

[1] The maximum size of the filename database is 32 GB for the Cell Manager. The number of filenames is an estimate for an average Data Protector environment.

[2] DCBF = Detail Catalog Binary Files

[3] In the GUI you are allowed to set it up to 32,768 MB.

Number of media

There can be up to 40,000 media in one pool.

In total, there can be 500,000 media in the Data Protector media management database.

Size of file depots used for file library

It is recommended that you use the default file depot size (5 GB). Note that increasing this value can cause some performance degradation. The maximum supported file depot size is 2 TB.

Number of sessions in the database

There can be up to 1,000,000 sessions in the database. At the most, 9,999 backup sessions can be run in one day.

Number of backups scheduled at one time

The maximum total number of backup sessions running in parallel is 100 on UNIX systems and 60 on Windows systems. The default value is set to 5. This can be increased using the `MaxBSessions` global option. When the number of parallel sessions is larger than 50 (recommended maximum) the probability of hitting one of the system limits on the Cell Manager increases significantly (number of file descriptors, TCP/IP limitations, memory limitations).

Concurrent activities

- Each backup session can by default use up to 32 devices at the same time. The upper limit for this parameter is controlled by the `MaxMAperSM` global option (default = 32).
- By default, up to 32 Disk Agents (depending on the concurrency of a device) can write to the same device at the same time. This number can be controlled using the `MaxDAperMA` global option.
- Up to 10 media can be imported in the IDB at the same time.

Number of cells in a MoM environment

There can be up to 50 cells in a MoM environment.

Upgrade limitations

- A backup of the Internal Database, created with previous versions of Data Protector, cannot be restored with Data Protector A.06.00. After upgrading the Cell Manager, backup the Internal Database before you continue using Data Protector.

Migration limitations

- Cell Manager can only be migrated to the same Data Protector version.

  To use a new Data Protector version on the system you want to migrate to, upgrade the existing Cell Manager installation to the new version before you start migration.
- Cross-platform migration, for example from a Windows system to an HP-UX system, is not supported.
- Due to a problem in Raima Database Server, migration of Data Protector Cell Manager from a 32–bit Windows operating system to 64–bit Windows Server 2008 operating system is not supported.

Localization limitations

- Data Protector A.06.10 is localized to the Japanese and French languages on Windows, HP-UX, Solaris, and Linux operating systems. However, the installation procedure is not localized.
  - The Japanese localized version is supported on Microsoft Windows with Japanese language support. International versions of Microsoft Windows are not supported.
  - The French localized version is supported on Microsoft Windows with French language support. International versions of Microsoft Windows are not supported.

Platform limitations

UNIX and Linux limitations

- LOFS filesystems are fully supported. However, Data Protector does not recognize directories that are lofs-mounted, if they are mounted within the same filesystem. This will result in additional data being backed up.
- The maximum size of files and disk images you can back up depends on operating system and filesystem limitations. Data Protector has no file size limitations on the following UNIX systems: HP-UX, Solaris, AIX, IRIX, Linux, Tru64. On other UNIX systems Data Protector backs up files and disk images of up to 2 GB.
- Cross-filesystem restore of ACLs (file permission attributes) is not supported. For example, ACLs backed-up from the VxFS filesystem cannot be restored to a UFS filesystem and vice versa. File objects however, can be restored to a different filesystem without ACLs.
- Cross-platform restore of ACLs is not supported. This limitation is due to different internal ACL data structures on different UNIX systems.
- Cross restore of ACLs between Linux 32-bit and 64-bit is not supported.
- Modification of ACL entries does not affect the modification time of the file object, so the file object (and the modified ACL) is not backed up during an incremental backup.
- The GUI on UNIX can display a maximum 64000 items (files in one directory, slots in a library, and so on) in a tree view.
- File names containing quotation marks are not supported.
- To view online Help on UNIX platforms, you need to have a Web browser installed. You also have to set the Help Mode to default HTML browser in the **Preferences** options from the **File** menu in the GUI.

HP-UX limitations

- Restore of a single file from a disk image is not supported.
- On HP-UX 11.31 that uses new persistent multi-pathing and path-independent Device Special Files (DSFs), backup specifications referring to the old DSF may not work if the old DSF is disabled on the system. In this case, reconfigure the devices and update backup specifications to use the new-style DSF.
- L0ong hostname/uname and user name group name not supported.

Solaris limitations

- If a csh script is used for pre- or post-exec, the -b option must be specified in the interpreter specification line: #!/bin/csh -b
- On Solaris, /tmp is a virtual filesystem in the swap area. If the /tmp directory is included in a backup specification, it is backed up as an empty directory. If restoring such backup, a swap area must be configured on the client prior the restore, otherwise the /tmp directory cannot be re-created.
- Data Protector A.06.10 does not support backup and restore of access control lists (ACLs) on Veritas Cluster File System (CFS).
- On Solaris, detection of media types other than Data Protector media is not reliable, due to the use of a number of different block sizes. Do not rely on Data Protector to recognize foreign media.Workaround: To prevent Data Protector from automatically initializing a medium it does not recognize correctly, set INITONLOOSEPOLICY=0 in the global options file. All media then have to be initialized manually.
- Cleaning tape recognition in DDS libraries does not work on Solaris.

Tru64 limitations

- Raw device backup is not supported.
- Backup and restore of sockets and FIFOs is not supported on Tru64.

Linux limitations

- After the transition from the ext2 to the ext3 filesystem on Linux systems, the journal will be visible as the .journal file in the root directory of the filesystem. If the filesystem is not mounted, the journal will be hidden and will not appear in the filesystem.

  Due to the Linux operating system limitations, do not delete this .journal file, do not back it up, and do not restore it from backup.
- If you use access control lists (ACLs) and perform backups and restores between 32-bit and 64-bit Linux systems (for example, you perform a backup on a 32-bit Linux system and restore this backup to a 64-bit Linux system), the ACL entries are not restored.
- SNMP traps are not supported on 64-bit Linux systems (x86-64).

SCO limitations

- The `Restore Sparse Files` option, which can be selected when setting options for the Restore Session, is not supported on SCO UNIX.

Windows limitations

- Windows directory share information can only be restored to a Windows system (except for Windows ME) with a Data Protector A.06.10 Disk Agent or newer. If this requirement is not met, the directory will still be restored, but the Disk Agent will ignore the directory share information.
- Only one CONFIGURATION backup can run on a Windows client at a time.
- Data Protector requires the same name for both, the computer name and the resolving hostname.
- Microsoft Installer (MSI) 2.0 is required to install Data Protector A.06.10. If an older MSI version is installed on the target system, the Data Protector setup will automatically upgrade it to version 2.0. In this case, Data Protector will display a note at the end of the upgrade, stating that MSI was upgraded. It is highly recommended to restart the system, if MSI was upgraded. This applies to remote installation procedure as well (the MSI on the client will be updated and it is recommended to reboot the client).
- Remote installation using secure shell (SSH) is not supported on Windows platforms.
- Secure shell installation supports key-based authentication. It does not support other authentication modes.
- Backing up network shared volumes using the VSS functionality is not supported.
- The GUI on Windows can display a maximum 64000 items (files in one directory, slots in a library, and so on) in a tree view.
- When installing Data Protector on Windows, you cannot run multiple instances of the `setup.exe` program.
- The *`file share`* name used during the installation of the Data Protector Cluster Integration on Windows must not be `omniback`. See also the *HP Data Protector installation and licensing guide*.
- When browsing with the backup specification editor a Windows client, the Windows user interface lists both online and offline Informix Server dbspaces. To check for databases, use the `onstat -d` command. Available databases are marked with the PO flag.
- Data Protector Cell Manager cannot be installed on Windows 2000 if NetLimiter is installed on the same system.

- Data Protector cannot be installed on Windows 2000 systems if any of the products from the Citrix MetaFrame application family is installed on the system (QXCR1000109889).
- On Windows Server 2008 systems, the user performing a network share backup must be a member of the operating system Backup Operators user group and must be added to the Inet configuration on the system where Disk Agent is running (using `omniinetpasswd -add`).

32-bit Windows limitation

- On Windows, the native robotics driver (Removable Storage Manager) is automatically loaded to enable tape libraries. To use the library robotics with Data Protector on 32-bit Windows systems, disable the Windows medium changer (robotics) driver before you configure the system with the Data Protector Media Agent.

64-bit Windows limitations

- The Product Demo for Windows is not supported on 64-bit versions of Windows.
- The glossary is not available in online Help on 64-bit versions of Windows.
- The native Microsoft Windows installation CD is supported for Automated System Recovery (ASR). The *Windows XP 64-bit Edition Recovery DVD* that comes with Itanium systems cannot be used for ASR.
- It is not possible to integrate the Data Protector GUI with the Microsoft Management Console (MMC) using the Data Protector OB2_Snap snap-in.
- Data Protector A.06.10 does not support Web Reporting on the 64-bit versions of Windows XP/Server 2003, as JVM does not include support for Itanium 2 on Windows.
- On AMD64/Intel EM64T systems, sending notifications and reports by e-mail using MAPI is supported only with Microsoft Outlook Express, and not Microsoft Outlook.

Windows Me limitation

- On Windows Me, the original time attributes of the directory cannot be restored even if the `overwrite` option is used. The time attributes are preserved only if the original directory structure exists on the target system.

Novell Open Enterprise Server (OES) limitations

- Data Protector A.06.10 cannot backup or restore:

- Any Group Wise System files.
- eDirectory information (not supported by Novell).

When a cross file system restore is attempted from NSS to a native Linux volume, the NSS file system specific attributes are lost while the data will be intact.

Novell NetWare limitations

- The Novell NetWare client must be installed locally on the Novell NetWare system. There is no support for remote installation from an Installation Server.
- Data Protector can restore Novell NetWare files to Novell OES and vice versa, these are the only cross-system restore supported.
- The restore option `Omit deleted files` is not supported.

MPE/iX limitations

- The MPE/iX client must be installed locally on the MPE/iX system. There is no support for a remote installation from an Installation Server.
- The maximum number of MPE/iX Disk Agents that can be running at the same time is limited to 15.
- The backup of MPE/iX configuration files or operating system is not possible. If you need to recover the MPE/iX configuration files or operating system, you should create a System Load Tape (SLT).
- The TurboSTORE/iX 7x24 True-Online product musts be installed on the system in order to use the online and true-online backup options (option `ONLINE` and `ONLINE = START`).
- True-online backup with the `ONLINE = END` option is not supported.
- Cross-platform restore is not supported.
- The maximal path of arguments (trees and directories) for Data Protector `-tree` and `-exclude` DA options is 210 characters. It is recommended to back up whole accounts and groups on MPE/iX filesystem, instead of backing up individual files in one backup session.
- Backup preview with option`-exclude` uses POSIX wildcards (*, ?). Backup with option `-exclude` uses specific MPE/iX wildcards @ (replace zero or more alphanumeric characters) and ? (replace one alphanumeric character).
- Maximum Media Agent communication buffer is 32 KB.
- On MPE/iX clients, only the `omnib` command is supported.
- The following TurboSTORE/iX options are not supported and must not be used: `FCRANGE`, `FCRANGE`, `FILES`, `LOGVOLSET`, `MAXTAPEBUF`, `NOTIFY`, `ONERROR`, `PURGE`, `RENAME`, `SPLITVS`, `STOREDIRECTORY`, `STORESET` and `TRANSPORT`.

- The following TurboSTORE/iX options are not supported by the TurboSTORE/iX API (which is used by Data Protector A.06.10 for backup and restore): `COMPRESS`, `FCRANGE`, `FILES`, `FULLDB`, `INTER`, `LOGVOLSET`, `MAXTAPEBUF`, `NOTIFY`, `ONERROR`, `ONLINE=END`, `PARALLEL`, `PARTIALDB`, `PURGE`, `RENAME`, `SPLITVS`, `STOREDIRECTORY`, `STORESET` and `TRANSPORT`.
- Tape statistics functionality is not supported on Media Agents running on MPE.

HP OpenVMS limitations

- The OpenVMS client must be installed locally on the OpenVMS system. There is no support for a remote installation from an Installation Server.
- The product can only be installed on the system disk in `SYS$COMMON:[OMNI]`.
- Any file specifications that are passed to the CLI must conform to a UNIX style syntax:

  ```
  /disk/directory1/directory2/filename.ext.n
  ```

  - The string should begin with a slash, followed by the disk, directories, and file name, separated by slashes.
  - Do not place a colon after the disk name.
  - A period should be used before the version number instead of a semi-colon.
  - File specifications for OpenVMS files are case insensitive, except for the files that reside on ODS-5 disks.

  For example:

  An OpenVMS file specification of:

  ```
  $1$DGA100:[USERS.DOE]LOGIN.COM;1
  ```

  must be specified in the form:

  ```
  /$1$DGA100/Users/Doe/Login.Com.1
  ```

- There is no implicit version number. You always have to specify a version number. Only file versions selected for the backup will be backed up. If you wish to include all versions of the file, select them all in the GUI window, or, using the CLI, include the file specifications under the `Only (-only)` option, including wildcards for the version number, as follows

  ```
  /DKA1/dir1/filename.txt.*
  ```

- If the `Do not preserve access time attributes` option is enabled during a backup, the last accessed date will be updated with the current date and time on ODS-5 disks. On ODS-2 disks, this option has no effect, and all the dates remain unchanged.
- Rawdisk backups are not available on OpenVMS. There is no equivalent to a “BACKUP/IMAGE” or “BACKUP/PHYSICAL”.

- The `Backup POSIX hard links as files (-hlink)` option is not available on OpenVMS.

  Files with multiple directory entries are only backed up once using the primary path name. The secondary path entries are saved as soft links. During a restore, these extra path entries will also be restored.

  For example, system specific roots on an OpenVMS system disk will have the `SYSCOMMON.DIR;1` path stored as a soft link. The data for this path will be saved under `[VMS$COMMON...]`.
- Files being backed up or restored are always locked regardless of whether the `Lock files during backup (-lock)` option is enabled or disabled. With the `-lock` option enabled any file opened for write is not backed up. With the `-lock` option disabled any open file is backed up as well. No message is issued when an open file is saved.
- The default device and directory for pre- and post-exec command procedures is `/omni$root/bin`. To place the command procedure anywhere else the file specification must contain the device and directory path in UNIX style format: For example:`/SYS$MANAGER/DP_SAVE1.COM`
- If you restore to a location other than the original location, only the disk device and starting directory are changed. The original directory path is added to the destination path to form the new restore location.
- To successfully back up write-protected and shadow disks, enable the `Do not preserve access time attributes` option in the backup specification.
- If the `Do not preserve access time attributes` option is disabled during a backup and if the `Restore Time Attributes` option is disabled during a restore, the last accessed date will be updated with the current date and time on ODS-5 disks. On ODS-2 disks, the original dates will be set on the files.
- The `Move Busy Files (-move)` and `Restore Sparse Files (-sparse)` options are not available on OpenVMS.
- Files backed up from an ODS-5 disk on an OpenVMS system that have extended filesystem names (for example upper and lower case letters, Unicode characters, etc) may not be restored to an ODS-2 disk.
- If the `Restore Protection Attributes (-no_protection)` option is disabled, the files are created with the default owner, protection and ACL.
- There is no support for a BACKUP/IMAGE equivalence. To make a restored copy of an OpenVMS system disk bootable, the OpenVMS WRITEBOOT utility has to be used to write a boot block onto the restored disk.
- The `omnicheck -patches -host` command is not supported on OpenVMS.
- 16-bit Unicode filenames on an ODS-5 disk volume will be displayed in VTF7 (OpenVMS specific) notation on the Cell Manager in the form of "^Uxxyy" for a

Unicode character where "xx" and "yy" are the Unicode hex codes for this character. Other valid characters for files on ODS-5 volumes can be specified using the OpenVMS guidelines for extended file specification syntax.

- File library device cannot be created on ODS-2 disk because of its filename length limitations.
- If you restore OpenVMS files to a non-OpenVMS platform you will lose the OpenVMS specific file attributes (for example record format, backup date, ACL).
- Files that have been saved on non-OpenVMS platforms and are to be restored to an OpenVMS system may lose some file attributes. No ACL will be restored in this case.
- No qualification is done for tape drives which are not supported by OpenVMS. See the OpenVMS Software Product Description (SPD) for a complete list of tape drives.
- HSJ connected tape libraries cannot be autoconfigured. Use manual configuration methods to add these devices to Data Protector.
- Maximum block size on tape is 63.5 kB for all tape devices.
- All tape media initialized by the Media Agent starts with an ANSI VOL1 label having a non-blank Volume Accessibility character. To mount such a tape volume under OpenVMS use the `/OVERRIDE=ACCESSIBILITY` qualifier. However, the tape volume does not comply with ANSI tape labeling and can therefore not be used with OpenVMS utilities like DCL-COPY.
- Restore file to original location with the `no-overwrite` option will not restore any files.
- Incremental Backup will work at the directory level only, because OpenVMS creates a new file with a new version number upon modification of an existing file. Data Protector on OpenVMS allows to create incremental backups at file level only if the filename is exactly the same as the previous, including the version number.
- On the OpenVMS client with the Oracle integration installed, you have to configure a Data Protector `admin` user with the username `<Any>` and the group name `<Any>`. This limitation is due to the lack of the user group name concept on OpenVMS.
- If you run the Media Agent and the Data Protector Oracle integration agent on the same OpenVMS client, modify the group ID of the `omniadmin` user as `DBA` using the `MCR AUTHORIZE` utility.
- When a debug and logfile collector is used on OpenVMS, the following applies:
  - The OpenVMS ODS-2 disk structure file name can contain the maximum of 39 characters.

- As OpenVMS systems do not have the `get_info` utility, the `get_info.out` file is blank and is not collected.
- The `omnidlc` command run with the `-session` parameter does not collect the debug files produced during specified session, because session names are not part of the OpenVMS debug filename. Instead, all available logs are collected.

Limitations on disk array integrations

HP StorageWorks Disk Array XP limitations

- Asynchronous CA configuration is not supported.
- With BC1 configurations, only filesystem and disk image backups are supported.
- Split mirror restore (restore to a secondary volume and synchronizing to the primary volume) is supported for the filesystems and disk images in the BC configuration. Database/application split-mirror restore is not supported.
- Instant recovery is only possible to restore the data backed up in BC configurations.
- In case Microsoft Exchange Server is installed on the backup system, its Information Store (MDB) and Directory Store have to be installed on the HP StorageWorks Disk Array XP LDEVs that are different than the mirrored LDEVs used for the integration. The drive letters assigned to these LDEVs have to be different from those assigned to the LDEVs that are used for the integration.
- Object copying and object mirroring are not supported for ZDB to disk.
- Instant recovery from a ZDB-to-disk+tape session cannot be performed using the Data Protector GUI after exporting or overwriting the media used in the backup session. The backup media must not be exported or overwritten even after an object copy session. If the backup media have been exported or overwritten, perform instant recovery using the Data Protector CLI. For information, refer to the *HP Data Protector zero downtime backup administrator's guide*.
- When restoring filesystems in an instant recovery session, no object other than those selected for instant recovery should share the disks that are used by objects selected for the session.
- Routine maintenance, including (but not limited to) hot-swapping any field replaceable components like, disk array controllers, FC switches, and/or online firmware upgrades during backups are not supported. Backups are a high-IO activity and should not be done at the same time as routine maintenance.

EMC Symmetrix disk array limitations

- ZDB to disk, ZDB to disk+tape, and instant recovery are not supported. Only ZDB to tape is supported.
- Backup preview is not supported.
- Routine maintenance, including (but not limited to) hot-swapping any field replaceable components like, disk array controllers, FC switches, and/or online firmware upgrades during backups are not supported. Backups are a high-IO activity and should not be done at the same time as routine maintenance.

HP StorageWorks Virtual Array limitations

- Only one logical volume can reside on one HP StorageWorks Virtual Array LUN in case LVM Mirroring is used.
- LUN0 is used as a command device and is accessed by all hosts connected to the disk array. Follow the array guidelines with configuration of LUN0 and make sure it does not contain any user data.
- Dynamic disks are not supported.
- Object copying and object mirroring are not supported for ZDB to disk.
- Instant recovery from a ZDB-to-disk+tape session cannot be performed using the Data Protector GUI after exporting or overwriting the media used in the backup session. The backup media must not be exported or overwritten even after an object copy session. If the backup media have been exported or overwritten, perform instant recovery using the Data Protector CLI. For information, refer to the *HP Data Protector zero downtime backup administrator's guide*.
- When restoring filesystems in an instant recovery session, no object other than those selected for instant recovery should share the disks that are used by objects selected for the session.
- Due to a hardware limitation, it is not possible to perform instant recovery if extra snapshots, associated with the same parent LUNs as those to be restored are existing on the HP StorageWorks Virtual Array.

  Workaround: It is necessary to delete (using `omnidbva` or manually remove) these extra snapshots before the instant recovery can be performed. Snapshots created by Data Protector can be identified using the `omnidbva -lun` command.
- If instant recovery is performed, all snapshots for the parent LUNs involved in the instant recovery session will be deleted automatically before the restore takes place.
- Routine maintenance, including (but not limited to) hot-swapping HBAs/SCSI controllers, disk array controllers, FC switches, and/or online firmware upgrades

during backups are not supported. Backups are a high-IO activity and should not be done at the same time as routine maintenance.

HP StorageWorks Enterprise Virtual Array limitations

- Dynamic disks are not supported.
- Only one type of target volume per source volume can exist on a disk array at the same time. For example, a snapclone of a source volume cannot be created if a vsnap or a standard snapshot of the same source volume already exists.
- A replica cannot be reused if any snapclone from this replica has a snapshot attached or if a target volume from this replica is presented to some system.
- Data Protector does not allow ZDB to use an instant recovery object as a source volume.
- For ZDB-to-disk and ZDB-to-disk+tape sessions (instant recovery enabled), only snapclones are used.
- When cloning of a source volume is in progress, another snapclone of that source volume cannot be created.
- Backup preview is not supported.
- Object copying and object mirroring are not supported for ZDB to disk.
- Care must be taken when instant recovery is performed on objects located on lower performance disks, as this may result in undesired performance penalties. In such cases, a ZDB to the high performance disks and subsequent instant recovery will reverse the situation.
- During instant recovery, CRC check is not performed.
- Instant recovery from a ZDB-to-disk+tape session cannot be performed using the Data Protector GUI after exporting or overwriting the media used in the backup session. The backup media must not be exported or overwritten even after an object copy session. If the backup media have been exported or overwritten, perform instant recovery using the Data Protector CLI. For information, refer to the *HP Data Protector zero downtime backup administrator's guide*.
- Routine maintenance, including (but not limited to) hot-swapping HBAs/SCSI controllers, disk array controllers, FC switches, and/or online firmware upgrades during backups are not supported. Backups are a high-IO activity and should not be done at the same time as routine maintenance.

NDMP limitations

- Only filesystem backup and restore is possible.

- The NDMP integration can handle backups of up to 20 million files if up to 10% of the total number of backed up files are directories, for an average directory name length of 25 characters, and average filename length of 10 characters. In such a case, the NDMP integration allocates up to 1.9 GB of system memory and 2.8 GB of disk space.

  For optimal performance the recommended number of files and directories for an NDMP backup specification is 10 million.The default upper limit for the number of files for an NDMP backup specification is 5 million. To enable higher values, the `OB2NDMPMEMONLY` omnirc file variable must be set to `0`.
- Load balancing is not supported.
- Only Full and Incr1 backup levels are supported.
- Maximum device concurrency is 1.
- Device selection as well as filesystem browsing is not possible.
- Supported device block sizes:

NAS device	Block size range (KB)
ONTAP < 6.5.3	64
ONTAP ≥ 6.5.3	64 ≤ *Size* ≤ 256
Celerra	64 ≤ *Size* ≤ 256

- NDMP devices must use dedicated media pools.
- Localization for the NetApp specific messages is not possible.
- It is not possible to deselect a subtree of the selected tree to be restored.
- It is not possible to perform a restore of the selected fileset as a tree with a different path name.
- Object copying, object mirroring, and media copying is not supported for NDMP backup.
- Medium header sanity check is not supported on NDMP clients.
- Restore of data residing on more than one medium using the `List from Media` option is not supported. To perform such a restore, you should first import all related media.

NetApp filer

- On NetApp filers running Data ONTAP version prior to 6.4, direct access restore (DAR) is not supported for directories; a standard restore will be performed instead. This has performance implications only.

Celerra

- If you select directory restore using the Direct Access Restore functionality, only the selected directory will be restored without its contents. To restore an entire directory tree, set `DIRECT=N`.

IAP backup limitations

- Only Windows NTFS filesystem backup is supported.
- Backup of Windows CONFIGURATION is not supported.
- Backup of network shares (CIFS, SMB) is not supported.
- Backup of FAT16 and FAT32 filesystems is not supported.
- Data encoding and compression is not possible.
- Backup of sparse files and reparse points is not supported; these objects are skipped from backup with an appropriate warning message.
- Raw disk backup is not supported.
- Hard links are backed up as files.
- Only unnamed stream (file content) is stored into IAP; alternate NTFS streams are not backed up and restored.
- A backup specification containing IAP devices cannot contain other devices (tape devices, file devices, and so on).
- You cannot restore a complete session TBD.
- Disaster recovery is not supported.
- Object copy and object consolidation are not supported.
- Object mirroring is not supported.

VLS automigration limitations

- Smart copies can only be made between slots and copy slots of the same VTL, not to other (virtual) tape libraries. This limitation does not apply to remote copies to other VLS that are transparent to Data Protector (when they appear as physical libraries attached to the VLS).

- Direct access to the media in the physical libraries is not possible. This means that the restore from such media is not possible as long as the media is not moved to a drive controlled by Data Protector.
- The VLS filters out slots containing cleaning tapes. Data Protector is not aware of them and is not able to trigger the clean process.

Direct backup limitations

- In a direct backup environment, the backup and restore of an Oracle database installed on raw partitions (rawdisk or raw logical volumes) are not supported.
- Instant Recovery of data backed up in a direct backup environment is supported only if:
  - Control files and online redo logs do not reside on the same logical volumes as data files.
  - A whole database backup had been performed, meaning that all data files that belong to the Oracle Server instance had been selected during the backup.
- The pre-exec and post-exec options for backup objects are not available for direct backup of raw logical volumes. They are available for Oracle direct backup.
- The systems in the direct backup environment must be HP-UX 11.11.

Limitations on enhanced incremental backups using Change Log Provider

- Only Windows NTFS backup is supported.
- Backup of FAT16 and FAT32 filesystems is not supported.
- Data Protector does not have private access to the Change Journal meaning that other applications could turn it off while Data Protector is using it.

Limitations on database integrations

For additional integration specific limitations not included in this section, see the *HP Data Protector integration guide* and *HP Data Protector zero downtime backup integration guide*.

General limitations

- With database integrations that support restore by starting the integration agent via the CLI, starting such a restore is not supported if you access the client through

Remote Desktop Connection and the Media Agent to be used is on the same client.

Oracle limitations

- When using RMAN scripts in Oracle backup specifications, double quotes (") must not be used, single quotes (‘) must be used instead.
- Data Protector does not check whether database objects to be restored were backed up and exist in the Data Protector internal database. The restore procedure simply starts.
- When restoring tablespaces to point in time the RMAN interface has to be used.
- Only the Oracle Restore GUI and Oracle RMAN can be used to recover the Oracle recovery catalog database.
- When restoring a database using the Data Protector GUI to a host other than the one where the database originally resided, the instance name chosen on the new host must be the same as that of the original instance name.
- On Windows platforms, a proxy copy backup of an Oracle database is not possible if the database is on raw disks. The backup seems to be completed without any problems reported, but restore from the session is not possible.
- If an object is deleted from the RMAN Recovery Catalog database, these changes will not be propagated automatically to the IDB and vice versa.
- The Oracle backup set ZDB method is not supported if the database is installed on raw disks.

SAP R/3 limitations

- If ZDB to tape is used to back up a tablespace in a ZDB environment on Windows, and the `ZDB_ORA_INCLUDE_CF_OLFomnirc` variable is not set to 1, the backup does not work if the control file is not on the mirrored disk/in the snapshot that will be backed up.

SAP DB limitations

- You cannot perform transactional backups (log backups) of SAP DB database instances with SAP DB versions prior to 7.04.03.

Informix server limitations

- On Windows, due to an Informix Server known issue, you cannot perform an Informix Server restore by a logical log number with the Informix Server version 7.31.TC2.

- On Windows, cold restore of non-critical dbspaces is not possible.

Microsoft Exchange Server 2003 limitations

- Backup preview is not supported.

VSS limitations

Microsoft Exchange Server 2003

- Due to a Microsoft Exchange Server 2003 writer issue, non-latin characters (for example, Japanese characters) for Exchange store or storage group names are not supported.

Microsoft Virtual Server 2005

- Cluster backup of Microsoft Virtual Server 2005 is not supported. You can back up only individual nodes.

Limitations on clusters

MC/ServiceGuard limitation

- When adding components on MC/ServiceGuard, add the component(s) on the active node. Then start the package on the other node, and add the component(s) on this node too.

Other limitations

- Dynamic disks are not supported.
- Only local shared storage (connected to cluster nodes via SCSI) is supported in cluster environments for ASR. Shared storage on Disk Arrays connected to cluster nodes via Fibre Channel (for example: EVA or XP disk arrays) is not supported unless appropriate device drivers are provided during the initial phase of ASR recovery (by pressing F6). This enables Windows 2003 Setup to correctly detect shared storage located on Disk Arrays.

  It is necessary to execute a test plan. The operation is at your own risk.
- Data Protector does not support hostnames with non-ASCII characters.

- Do not export media which contain integration object copies made from platforms that support Unicode (for example, Windows) to non-Unicode platforms (for example, HP-UX) or vice versa.
- The STK - Horizon Library manager is not supported.
- You cannot select different condition factors for pools sharing the same free pool. All media pools using a free pool inherit the condition from the free pool.
- Device files for the spt driver cannot be created automatically by Data Protector. The device file needs to be created manually using the `mknod` command.
- Media pools with magazine support cannot use free pools.
- Data and catalog protection can only be set until the year 2037.

  Workaround: set protection period to 2037 or less and extend it with one of the future Data Protector releases that will support time settings past the year 2037.
- The network connections from a Cell Manager to DA clients must respond within 10 seconds or the backup will be marked as failed.
- The name of a backup specification should not exceed 64 characters.
- The maximum length of text strings to identify or describe the properties of media and devices (for example, the media label applied to a medium when being initialized) is 80 characters.
- Session level restore is not available for the online database integrations.
- The - (minus) symbol must not be used as the first character in any Data Protector labels or descriptions.
- The word `DEFAULT` is a reserved keyword and must not be used in device names, backup specification names, and pool names.
- All media with barcode labels starting with the CLN prefix are treated as cleaning tapes. Labels with this prefix should only be used on cleaning tapes.
- Software data compression for online database backups, such as Oracle, Sybase, SAP R/3, Informix Server, and Microsoft SQL Server, is not supported.
- The eject/enter functionality for ATL 2640 and ATL 6/176 devices is not supported using the fast access port.
- Media of different format types are not compatible:
  - Data Protector (written by devices under direct Data Protector MA control)
  - NDMP NetApp (written by devices connected to NetApp filers)
  - NDMP Celerra

  Media from these different format categories cannot reside in the same pool. A media from one format category cannot be recognized when subjected to one of the other environments using a different format category. In such a case, the media will be viewed as foreign and depending on the policy, unexpected overwrites might occur.

- From one backup object, only 1,024 files and/or directories can be selected, otherwise select the entire object. For details about backup objects, refer to the online Help.
- Some filesystems allow creation of deep directory structures (deeper than 100). Data Protector can only back up down to a depth of 100.
- When changing the `omnirc` file, it is required to restart the Data Protector services/daemons on the system. This is mandatory for the `crs` daemon on UNIX and recommended for `Data Protector Inet` and CRS services on Windows. On Windows, restarting is not required when adding or changing entries, it is required only when removing entries.
- If you use quotes ("") to specify a pathname, do not use the combination of a backslash and quotes (\"). If you need to use trailing backslash at the end of the pathname, use double backslash (\\).
- Tape quality statistics functionality is not currently supported if the Media Agent runs on: MPE, SCO, NetWare, Linux, Sinix, AIX.
- Automatic drive cleaning for library definitions with a shared cleaning tape is not supported. Each library definition needs to have its own cleaning tape configured.
- The path of DR image file is limited to 250 characters, if it is saved on the Cell Manager during backup.
- When recreating volumes during the Phase 1 of automated disaster recovery (EADR or OBDR), the original volume-compression flag is not restored (always saved to non-compressed).

  Workaround: Restore the volume compression flag manually after restore.
- The maximum pathname length supported by Data Protector is 1023 characters.
- Devices of type file library are not supported for filesystem which have compression turned on.
- The length of the directory names which can be configured for devices of type file library cannot exceed 46 characters.
- The length of the pathname for jukebox slots and standalone file devices cannot exceed 77 characters.
- Data Protector does not support copying a media copy. However, such a copy can be made if the original medium is exported and thus the copy becomes the original. If you export the second level copy, you cannot import it again if the original medium is imported.
- The configuration of SNMP traps using the Data Protector Manager depends on the platform of the Cell Manager: On HP-UX Cell Managers, the recipient system for the trap that is configured in the GUI receives the traps. On Windows Cell Managers, the content of the recipient field in the GUI is ignored. The recipient

must be configured on the Cell Manager in the Control Panel under Network->Services->SNMP Services.

- The HP AutoPass utility is not supported on Windows 2003 (64–bit), Windows Vista, Windows Longhorn, and Linux operating systems.
- The `omniinstlic` command, used to administer the HP AutoPass utility, operates only if JRE 1.4.2_08 or higher is installed on the Cell Manager.
- The Data Protector GUI can display a limited number of backup specifications. The number of backup specifications depends on the size of their parameters (name, group, ownership information and information if the backup specification is dynamic or not). This size should not exceed 80 Kb. TBD
- Disaster recovery is not available in the Data Protector Java GUI.

Reporting limitations

- Information about physical devices, which is shown in the Device Flow report if the *`RptDisplayPhysicalPath`* global variable is set to 1, is taken from the current device configurations and may therefore be different from information at the time when the devices were actually used.
- In the Manager-of-Managers enterprise (multi-cell) Device Flow Web Report, devices are not sorted separately for each Cell Manager in the MoM.
- The following reports provide information only on destination media: Configured Devices not Used by Data Protector, Extended Report on Used Media, Report on Used Media, Session Media Report, and Session Devices Report.

Recommendations

Number of clients in a cell

In typical environments, 100 clients per cell is a recommended number. In some customer environments, it is possible to have several hundred clients in one cell, depending on factors like:

- IDB load: types of objects backed up, filesystem log level, image, online database, split mirror backup/zero downtime backup, NDMP...
- Network and system load: local versus network backup, level of concurrent backup activities.
- Maintenance tasks: user management, configuration of backup specifications, upgrade, patches.

The maximum number of clients per cell should not exceed 1000.

Large number of small files

Backup of a client with a large number (>100,000) of small files puts a high stress on system resources. If such a system needs to be backed up, the following steps (in the suggested sequence) can be performed to improve the situation:

1. Avoid any other activity on the system where the Media Agent runs during backup.
2. Change the log level option for such filesystems to directory. This way, individual filenames and file versions will not increase the size of the database.
3. Consider disk image backup.
4. Increase the system resources (memory, CPU) on the system where the Media Agent runs first and then on the Cell Manager system.

Synthetic backup - object consolidation frequency

When consolidating a large number of objects with very long restore chains, an error might occur. To prevent this, run object consolidation regularly, for example, when you would normally run a full backup, to keep the restore chain manageable.

NDMP backup configuration

The maximum number of files and directories per NDMP backup specification should not exceed 20 million. The recommended number of files and directories per NDMP backup specification is 10 million.

Support for NIS+

NIS+ cannot be used as the primary name resolution for hosts when using Data Protector. However, you can run Data Protector on the hosts where NIS+ is configured if one of the following alternatives for name resolution with Data Protector is chosen:

- Using DNS. In this case, change the line starting with hosts in the `/etc/nsswitch.conf` file as follows:

  ```
  hosts: dns [NOTFOUND=continue] nisplus
  ```

- Using hosts file. In this case, change the line starting with hosts in the `/etc/nsswitch.conf` file as follows:

  ```
  hosts: files [NOTFOUND=continue] nisplus
  ```

In both cases, the Cell Manager must have full qualified name registered in DNS or hosts file.

Microsoft Exchange single mailbox backup

Microsoft Exchange Server single mailbox backup is not as space- and CPU-efficient as backup of the whole Microsoft Exchange Server. It is recommended to use Microsoft Exchange Single Mailbox Integration only for backup of a small number of mailboxes. If you are backing up large numbers of mailboxes, use Microsoft Exchange Server Integration instead.

GUI on UNIX

When using the GUI on UNIX systems, it is strongly recommended to set the locale to a locale that uses UTF-8 encoding in order to:

- enable switching between different encodings, thus enabling proper display of file names and session messages containing non-ASCII characters in mixed environments.
- ensure that names of devices, backup specifications, and such, containing non-ASCII characters, which were created in UNIX GUI, also display properly in Windows GUI, and vice versa.
- prevent failures to create a backup specification or other similar items when using an S-JIS locale on UNIX, typically when using characters with second byte equal to '\' (backslash).

Large file support

It is recommended that the file system where DC directories reside supports files larger than 2 GB, especially if drives with large capacity, for example LTO 4, are used, and more than 10 million files are backed up on tape. In addition, on Windows platforms it is strongly recommended to use NTFS files.

Regular maintenance of the VSS registry

Using Microsoft Registry Management Tool, Microsoft maintains a record of mounts in the registry. This results in registry growth over time, which leads to Volume Shadow Copy import problems. For details, see the *HP Data Protector zero downtime backup integration guide* , chapter *Integrating the Data Protector ZDB integrations and Microsoft Volume Shadow Copy Service*, section *Troubleshooting*.

It is recommended to consider using Microsoft registry management tool. You need to perform registry management tasks periodically to prevent the registry from filling.

Allocation policy for DCBF directories

It is recommended to change the allocation policy for DCBF directories from “fill in sequence” (default) to “balance size”.

5 Recognized issues and workarounds

This section lists known Data Protector and non-Data Protector issues and workarounds.

Known Data Protector issues and workarounds

Installation and upgrade related issues

- In case there is not enough free disk space on the destination partition, the push installation of the User Interface fails and reports: `[Warning] Installation of User Interface FAILED! Data Protector Software package installation failed Check the log file /var/tmp/cc.pkgadd-log`

  Workaround: The disk space on the destination partition has to be at least 40 MB even if the package is installed on the linked partition.

- Installation DVD-ROM cannot be ejected after installing the Cell Manager on Solaris systems.

  Workaround: Stop and start Data Protector services:

  ```
  /opt/omni/sbin/omnisv stop
  ```

  ```
  /opt/omni/sbin/omnisv start
  ```

- If the cluster client is configured under several virtual names, then Data Protector Cell Manager will only update configuration information for cluster virtual node.

  Workaround: This has no effect on the actual state of the Data Protector client - only configuration data is not upgraded. To finish the upgrade, log to the Cell Manager system and run the command `omnicc -update_host` *`virtual-name`* for every virtual name (other than cluster name).

- When installing Data Protector clients remotely in a cluster environment, the Data Protector GUI allows you to push the components to a virtual host, even though the components must not be added to the virtual host.

Workaround: None. Do not push the components to the virtual host. Install the clients locally, as described in the documentation.

- Import of the Data Protector cluster virtual server will not finish successfully (cluster will be imported but offline virtual servers will not be imported) during the installation of cluster-aware Cell Manager if there is another cluster virtual server configured on Microsoft Cluster Server in any cluster group and is offline. If this virtual server is online during the Data Protector installation, the import of the Data Protector cluster virtual server will be successful.

  Workaround: Put all virtual servers in your cluster online and import the Data Protector cluster virtual server manually after the installation.

- If you upgrade a Data Protector client on HP-UX 11.23/11.31, the binaries of the Data Protector components that are not supported on HP-UX 11.23/11.31 (for example EMC, DB2) are not removed. If you later uninstall Data Protector, the binaries are left on the system.

  Workaround: Uninstall the previous version of Data Protector before installing Data Protector A.06.10.

- On HP-UX 11.23 (Itanium) and SuSE Linux (x86-64) the maximum size of database files can exceed the default maximum size of 2 GB. Consequently, during an upgrade to Data Protector A.06.10 a warning message is displayed with an advice to adjust the maximum size of database files.

  To resolve the issue, proceed as follows:

  1. To make the IDB consistent, run:

     `omnidbutil -writedb -mmdb` *`Directory`* `-cdb` *`Directory`*

  2. Copy the `dcbf` directory to a temporary location.
  3. Initialize the IDB:

     `omnidbinit`

  4. Add the required number of extension files for the tablespace *`Tablespace`*:

     `omnidbutil -extendtblspace` *`Tablespace Pathname`* `-maxsize` *`Size_MB`*

  5. Adjust the maximum size of database files:

     `omnidbutil -modifytblspace`

  6. Export the IDB:

     `omnidbutil -readdb -mmdb` *`Directory`* `-cdb` *`Directory`*

- On Windows systems, desktop shortcuts used to start Data Protector that were created by the user (for example by dragging the menu entry to the desktop) do not work after an upgrade.

Workaround: Recreate the desktop shortcuts after upgrading.

- Backups fail after upgrading a Data Protector A.05.10 or A.05.50 SAP R/3 client to Data Protector A.06.10.

  Workaround: Set the ORA_NLS_CHARACTERSET parameter to the encoding used by the Oracle database by running:

  ```
  util_cmd –putopt SAP SAP_instance ORA_NLS_CHARACTERSET
  Oracle_encoding
  ```

User interface related issues

- When using Data Protector CLI on Windows to manage backups of data residing on clients running other platforms, the filenames will only be displayed correctly for code page `1252`. Characters from other code pages will appear corrupted. Even though a filename appears corrupted in the CLI, it will be backed up or restored properly. Data Protector CLI expects such "corrupted" filenames as input parameters. You can use copy and paste to input filenames as they appear in code page 1252.

  Refer also to online Help index keyword “`internationalization`” for internationalization limitations tables.

Media agent and disk agent related issues

- In previous releases the `devbra` command on Linux and Solaris systems reported rewind on close device files (`/dev/st*` on Linux and `/dev/rmt/*mb` on Solaris) during the configuration instead of no rewind on close devices (`/dev/nst*` on Linux and `/dev/rmt/*mbn` on Solaris). Thus, the devices were configured as rewind on close devices. As a result, Data Protector can overwrite the media header and thus render the backup unusable. The problem occurs in SAN environments, for example if the path (rewind on close) of one device points to another device that is currently in use on another host.

  Workaround: Ensure that there are no rewind on close devices configured. Review your device configuration on Linux and Solaris systems and reconfigure all rewind on close devices as no rewind on close devices.

  During an upgrade, the rewind on close devices are not upgraded automatically, instead a warning is displayed with an advice to reconfigure the devices. Reconfigure devices manually before you perform the next backup.

- When you have a cell set up where the Cell Manager is installed outside the cluster and the devices are connected to cluster nodes and a failover during backup activity occurs, the Media Agent may not be able to properly abort the session, which results in the medium no longer being appendable.

- When attempting a parallel restore which has more Disk Agents than the Media Agent concurrency, some Disk Agents may fail with the following error:

  Cannot handshake with Media Agent (Details unknown.) => aborting.

  Workaround: Restart the restore objects of the failed Disk Agents..

- During restore, the restore Disk Agent (VRDA) displays the mount points of the application host in the monitor. For example, instead of the restore target mount point `/var/opt/omni/tmp/`*`name.company.com`*`/BC/fs/LVM/VXFS` it actually displays the corresponding application source mount point `/BC/fs/LVM/VXFS`.
- Cleaning tape drive functionality works correctly when there is a cleaning tape present either in the library slot or in the repository slot. If the cleaning tape is not present, the mount request for the cleaning tape will not work properly.
- When importing a range of tapes, Data Protector normally skips all invalid tapes (such as tar tapes, blank tapes, etc.) and continues with the next slot. If importing a range of tapes on a NetApp Filer (Celerra), and a NetApp tape is detected, Data Protector reports a major error and aborts.
- If during backup/restore to ACSLS library mount request occurs (in case that library run out of usable media) do not format or scan additional tapes with the tape device used by the backup/restore session. Use the different tape device in library to perform this operation and confirm the mount request.
- If you restart the system during a backup, the medium to which data is backed up may get corrupted, although Data Protector does not report any errors. Consequently, you may not be able to restore any backups from this medium. Subsequent backups to the corrupted medium will fail too.
- When restoring files to a different host via a UNC share, the restore fails with the following message in the session log:

  ```
  Can not open: ([112] There is not enough space on the disk.
  ) => not restored.
  ```

  ```
  [Warning] From: VRDA@host1.test.com "host2.test.com [/H]"
  Time: 27/09/00 16:58:40 Nothing restored
  ```

  Workaround: `OmniInet` logon user must have the access to log on to the remote host, which is specified in the UNC path. You should also be the owner or have write permission to the files you want to restore via UNC share.

- Data Protector UNIX session manager sometimes fails to start restore media agents in parallel on Novell NetWare clients with an error message like, for example, `Could not connect to inet` or `Connection reset by peer`. It is possible that some parallel restore sessions are completed without errors, while other restore sessions are not even started.

Workaround: Set the `SmMaxAgentStartupRetries` global variable in the Data Protector global options file (located in `/etc/opt/omni/server/options/global`) to `2` or more (max. 50). This variable specifies the maximum number of retries for the session manager to restart the failed agent before it fails. For more information on the Data Protector global options file, refer to the online Help index keyword “global options file”.

- After upgrading to Data Protector A.06.10, you cannot use devices that were configured as different device types in previous releases. For example, you cannot use 9940 devices that were configured as 9840 devices, 3592 devices that were configured as 3590 devices or SuperDLT devices that were configured as DLT devices. The following error occurs:

  ```
  [Critical] From: BMA@ukulele.company.com "SDLT" Time:
  2/22/2003 5:12:34 PM [90:43] /dev/rmt/1m Invalid physical
  device type => aborting
  ```

  Workaround: Manually reconfigure these devices using the `mchange` command, located on the Cell Manager in the following directories:

  - On HP-UX: `/opt/omni/sbin/utilns/HPUX`
  - On Solaris: `/opt/omni/sbin/utilns/SOL`
  - On Linux: `/opt/omni/sbin/utilns/LINUX`
  - On Windows: `Data_Protector_home\bin\utilns\NT`

  The syntax of the `mchange` command is: `mchange -pool` *`PoolName`* `-newtype` *`NewMediaClass`* where: *`PoolName`* is the name of the media pool with devices that are currently configured and should be reconfigured (for example, Default DLT or Default T9840). *`NewMediaClass`* is the new media type of the devices, for example, T9940 for 9940 devices, T3592 for 3592 devices, and SuperDLT for SuperDLT device.

  This command changes media types for all media, drives and libraries that use the defined media pool. After you have executed this command for each device you changed, move the media associated with the reconfigured devices from the current media pool to the media pool corresponding to these media. For example, move the media associated with the reconfigured 9940 devices to the Default T9940 media pool, media associated with the reconfigured 3592 devices to the Default T3590 media pool, and the media associated with the reconfigured SuperDLT devices to the Default SuperDLT media pool. For related procedures, refer to the online Help.

- If you are upgrading from Data Protector A.05.10 and A.05.50, the default block size for file devices, file libraries, or jukebox devices is changed from 16kB to 64kB after the upgrade to Data Protector A.06.10. The append and import medium operations on media in such devices are not possible after the upgrade if the media were configured with the default block size setting before the upgrade.

Workarounds:

- If you still need the data on the media, change the block size setting to 16kB for the devices used with the needed media.
- If you do not need the data on the media, recycle or reformat the media using the new default block size setting.

- When restoring data using List From Media, the session may fail with the following message: `[Critical] From: MSM@vinyl.hermes.com "FUYL" Time: 13.8.04 11:29:16 Failed to allocate memory. [Normal] From: MMA@vinyl.hermes.com "FUYL" Time: 13.8.04 11:29:16 ABORTED Media Agent "FUYL"`

  Backups with a large number of files require a large amount of memory when List From Media is used.

  Workaround: Import the medium to write detailed information about backed up data on the medium to the IDB and then browse it for a restore.

- Backup sessions for backing up to a file library device ignore the media pre-allocation list.
- If the media of a file library device are unprotected, they are deleted at the beginning of the next backup session that is using this device. However, the session, which was using the first medium of the file library device, is still stored in the database. If you try to perform a restore by specifying this session, the restore fails and the following message is issued: `Object not found.`
- When trying to back up directory structure with more than 100 directories (on HPUX this number is equal to the maximum number of allowed open file descriptors), the following message is displayed twice instead of once:

  ```
  [Major] From: VBDA@host.hermes.si "C:" Time: 8/31/2004
  11:04:52 AM
  ```

  ```
  [81:74] File system too deep: (100) levels.
  ```

- When backing up mount point on Windows, if a subdirectory is deselected (excluded from backup), the whole mount point might still be backed up.
- When trying to expand the empty windows mount point in tree view, the following error is reported:

  ```
  Cannot read directory contents.
  ```

- When a restore of the configuration on a Novell NetWare platform is attempted, the `TSA.nlm` module might report an error similar to the following:

  ```
  [Minor] From: HPVRDA@host "CONFIGURATION:" Time: xx/xx/xxxx
  xx:xx:xxTSA: Error (TSAFS.NLM 6.50 272) The program was
  ```

```
processing a record or sub record and did not find the
Trailer field.
```

- When utilizing autoloader devices, messages from the `HPUMA.nlm` module might be unreadable. For example:

  ```
  [Normal] From: HPBMA@host "device name" Time: xx/xx/xxxx
  xx:xx:xx
  ?T?y??K?
  ```

- On Windows, the encrypt attribute of an encrypted folder will be restored. However, only a user who logs on using the account under which the OmniInet service runs on the client or an Administrator will be able to remove the attribute.
- If a disk becomes full during a backup session using a jukebox (with media of type file) as destination device all slots (configured on this disk) containing unprotected media will be marked as empty.

  Workaround:

  1. Rescan the slots which are marked as empty. After the rescan, the media will be visible again in the slot.
  2. Free up space on the disk to avoid this problem again.

  After performing both steps, you can continue to work with the jukebox device.

- When copying older application objects (backed up with a pre-A.05.50 version of Data Protector), one of the following conditions must be fulfilled:
  - Perform object copy with the target MA running on the same platform where the original backup was made.

    or

  - Perform object copy and always retain at least one of the copies or the original in the IDB (catalog protection permanent)
- An object copy session containing many objects (more than 200) or complex object media relations (see below) may hang. Workarounds:
  - Change the device mapping so that only one device is used to read the copy source media per media type (DLT or LTO) and try again.
  - Split the original object copy session into multiple sessions and restrict each session to copy objects from one backup session only.
  - Split the original object copy session into multiple sessions and restrict the session to copy as few media as possible in a single session.

  Hangs are commonly caused by copying objects from one (source) media which were created by different backup sessions using different (logical) devices.

- When backing up Macintosh files on a Windows system, certain characters in file names can cause problems. If file names contain characters considered invalid on a Windows filesystem (typically '*' or '?'), or contain characters mapped to such invalid characters (for example, Macintosh bullet character), it is possible that individual files are not backed up or that the Disk Agent aborts ungracefully.

Workaround: Rename the problematic files.

Integration related issues

Common issues

- At the end of a Data Protector integration backup preview session, the backup statistics report that gets displayed contains irrelevant information. The following statistics always equal zero: `Completed Media Agents`, `Failed Media Agents`, `Aborted Media Agents`, `Media Agents Total`, `Mbytes Total`, and `Used Media Total`.

  Workaround: None.

Microsoft Exchange Server

- ZDB of Microsoft Exchange 2000 Server (which was upgraded to SP3) fails with the following error: `[Normal] From: SNAPA@tuljan.ipr.com <mailto:SNAPA@tuljan.ipr.com> "" Time: 7/24/2002 10:26:52 AM Executing the split pre-exec script. (omniex2000.exe -dismount -storage_group 'Accept' -appsrv vaexchg.ipr.com) [Critical] From: SNAPA@tuljan.ipr.com <mailto:SNAPA@tuljan.ipr.com> "" Time: 7/24/2002 10:26:53 AM [224:501] Split links pre-exec command failed with exit code -1.`

  Workaround: When Exchange 2000 Server is upgraded to SP3, `omniex2000.dll` must be unregistered and registered again. From `Data_Protector_home\bin` directory on the Exchange 2000 Server system, run the `regsrv32.exe` command:

  to unregister: `regsvr32 /u omniex2000.dll`

  to register: `regsvr32 omniex2000.dll`

- In the Data Protector GUI, the tape device you want to use for a Microsoft Exchange Server restore cannot be changed from the device originally used by backup.

  Workaround: To change the device for restore, in the Data Protector GUI, click the **Change** button. You cannot change the device by just deselecting the default device and selecting the desired device.

- For the purpose of remote administration, to be able to run the omniex2000SM.bat script from a Windows client that does not have the Microsoft Exchange Integration software component installed, you must copy the omniex2000SM.bat to such a client.
- By default, Data Protector does not support a restore to a recovery storage group on an Exchange Server 2003. However, if you enable recovery storage groups, restore will fail.

  Workaround: Remove the recovery storage group or set the Recovery Storage Group Override registry key. For details, see the Microsoft Knowledge Base Article 824126.

Microsoft Exchange Single Mailbox

- When configuring the Microsoft Exchange Single Mailbox integration, the following issues may occur:
  - The CLI configuration finishes without reporting an error, but the configuration actually fails. When creating a backup specification, the configuration dialog displays. If the backup is started from the CLI, or from the GUI where the configuration was not performed in GUI, the session finishes immediately without backing up any data.
  - If the integration was configured using the GUI and you run the configuration check from the CLI, the check will fail with *RETVAL *8561.

  Workaround:

  - Use the GUI to configure the integration and to check the configuration.
  - Set/export the environment variable OB2BARHOSTNAME on the client system

    set OB2BARHOSTNAME=*client_name* (Windows) or

    export OB2BARHOSTNAME=*client_name* (Unix)

    and repeat the configuration using the CLI.

- When configuring the Microsoft Exchange single mailbox integration for a Microsoft Exchange cluster, Data Protector uses the active node instead of the Exchange virtual hostname. As a result, you can only backup and restore on the node which was active during the configuration. If a failover occurs, the backup or restore will fail.

  Workaround: Switch the nodes back before performing a backup or restore. The issue will be resolved with a patch in the first patch release.

Microsoft SQL Server

- In the Data Protector GUI, the tape device you want to use for a Microsoft SQL Server restore cannot be changed from the device originally used by backup.

  Workaround: To change the device for restore, in the Data Protector GUI, click the **Change** button. You cannot change the device by just unselecting the default device and selecting the desired device.

SAP R/3

- SAP backup fails, when '`-u`' option is specified in the command line when using `brbackup` or `brarchive` commands.

  Workaround: If you specified '`-u`' in the command line of `brbackup` or `brarchive`, it should be followed by *`username/password`*.

- A split mirror restore of the SAP R/3 integration using the Data Protector GUI on the backup system is done as a regular filesystem restore, during which split mirror agents (SYMA, SSEA) mount disks on `/var/opt/omni/tmp` (by default). Since this is a restore of an application integration, VRDA restores files to the original mount points. Therefore, the restore is not done to EMC/XP disks, but to the root partition.

  Workaround: Set the following `omnirc` variable in the`/opt/omni` directory on the backup system:

  - `SYMA_PRESERVE_MOUNTPOINTS=1`, for the EMC Symmetrix integration
  - `SSEA_PRESERVE_MOUNTPOINTS=1`, for the StorageWorks XP integration

Oracle

- Restore of an Oracle9i database on Linux fails with the error message `Binary util_orarest failed.`

  Workaround: Replace the `util_orarest.exe` file with the `util_orarest9.exe` file (both located in the `/usr/omni/bin` directory on Linux). To do so, rename the `util_orarest.exe` to `util_orarest.exe.orig` and `util_orarest9.exe` to `util_orarest.exe`.

- The `ZDB_ORA_INCLUDE_CF_OLF`, `ZDB_ORA_INCLUDE_SPF`, and `ZDB_ORA_NO_CHECKCONF_IR` `omnirc` variables were not set and database recovery after instant recovery fails with the following error:

  ```
  ORA-00338: log name of thread num is more recent than
  control file
  ```

The above error message means that the control file was overwritten during instant recovery. This happens if the location where the Oracle control file is installed was specified as the `control_file_location` parameter which defines the location of the control file copy.

Workaround: Perform recovery using a backup of the control file.

Ensure that `control_file_location` does not point to the location where the Oracle control file is installed.

- If you restore a backup, performed using the proxy-copy method and perform a database recovery, RMAN may try to use the channel allocated for restoring proxy-copy backups to recover the database. As a result, the recovery will fail.

  Workaround: Start a database recovery only session from the Restore context or by using RMAN scripts.

- When restoring to another client, the list of backup objects is not updated after the new client is selected.

  Workaround: In the **Restore action** drop-down list, select a different restore action to refresh the list:

  - If you selected **Perform Restore**, **Perform Restore & Recovery**, or **Perform Recovery Only**, select **Perform RMAN Repository Restore** and then again the previous selected action.
  - If you selected **Perform RMAN Repository Restore**, select **Perform Restore** and then again **Perform RMAN Repository Restore**.

Volume Shadow Copy Service

- If you select the **Non-strict** configuration check mode, and your database configuration files and directories are not installed directly on a drive (for example, `C:\`) but in a directory on this drive, the configuration check during backup or instant recovery fails. Consequently, the backup or instant recovery session also fails. The check fails even if all directories belong to the writer components.

  Workaround:

  - Use only the **Strict** and **Disabled** configuration modes.
  - Install the database directly on a drive.

Informix Server

- When reconfiguring the Informix Server Integration using the Data Protector GUI, the configuration data already known to Data Protector is not displayed in the GUI.

  Workaround: Enter the configuration data manually.

- Restore of an Informix Server database cannot be started from the CLI with the `omnir` command.

  Workaround: The restore can be started with `ob2onbar.pl` or with the Informix Server command `onbar.exe`.

- Restore of Informix Server objects from backups done before upgrade to Data Protector A.06.10 hangs if backup was done using a file device, a file library, or a jukebox device and if the default block size setting was used with the media in such devices. This is due to the change of the default block size for file devices, file libraries, and jukebox devices from 16kB to 64kB during the upgrade to Data Protector A.06.10.

  Workaround: Change the block size setting for the devices used with the media needed for the restore from the default (64kB) to 16kB.

Sybase

- When reconfiguring Sybase Integration using the Data Protector GUI, the configuration data already known to Data Protector is not displayed in the GUI.

  Workaround: Enter the configuration data manually.

Disk array integrations

- The configuration requirements for ZDB of Oracle or SAP R/3 databases have changed in the following cases:
  - if Oracle is used as a part of an Oracle ZDB integration and you intend to perform instant recovery sessions
  - if Oracle is used as a part of an SAP R/3 ZDB integration and you intend to perform instant recovery sessions

  In these cases, the Oracle database needs to be reconfigured. For more information on configuration requirements, refer to the `ZDB_ORA_INCLUDE_CF_OLF` `omnirc` variable in the HP Data Protector zero downtime backup administrator's guide.

Cluster related issues

Common issues

- If backup server is in a cluster environment and the backup is performed using the actual hostname, instant recovery fails if you try to recover using the secondary host.

Workaround: To avoid this problem, use a virtual hostname.

- If a backup session stops responding during a cluster failover, and all session agents fail, a timeout will be reported but the session itself will not abort. The default session timeout occurs after 7200 seconds (two hours). As long as the session is not responding, another session using the same backup specification cannot be started.

  Workaround: Manually abort the backup session at any time and restart the session.

- If a cluster failover occurs during a Data Protector backup session in which an application database that resides on the cluster is being backed up with the appropriate integration agent, particular problem may occur after the failover which prevents the session from succeeding.

  Under such circumstances, in Monitoring context of the Data Protector GUI, two backup sessions are displayed: the backup session that was restarted after the failover, and another, unknown session. Output of the unknown session contains messages similar to the following:

  ```
  [Critical] From: BSM@ClusterNode01Name
  "BackupSpecificationName" Time: Date Time
  [12:1243] Device not found.
  [Critical] From: OB2BAR_VSSBAR@ClusterNode02Name "MSVSSW"
  Time: Date Time
  Failed VSSBAR agent.
  [Major] From: OB2BAR_VSSBAR@ClusterNode02Name "MSVSSW"
  Time: Date Time
  Aborting connection to BSM. Abort code -1.
  [Critical] From: BSM@ClusterNode01Name
  "BackupSpecificationName" Time: Date Time
  None of the Disk Agents completed successfully.
  Session has failed.
  ```

  The root cause of the problem is unsuccessful identification of the restarted backup session after a cluster failover. The involved integration agent is not notified about the backup session restart. Depending on the particular situation, the integration agent either starts a new backup session or connects to the restarted backup session manager (BSM) process. In both cases, such behavior of the integration agent is wrong.

  Workaround: None.

Issues with MC/ServiceGuard

- After failover on the secondary Application System (application is in MC/ServiceGuard) instant recovery may fail with the following error message, if the **Check data configuration consistency** option is selected:

  ```
  [Critical] From: SSEA@wartburg.company.com"" Time: 11/8/2001
  11:43:09 AM
  ```

  ```
  Data consistency check failed!
  ```

  ```
  Configuration of volume group /dev/vg_sap has changed since
  the last backup session!
  ```

  Two workarounds are possible:

  - Make sure that the `vg` configuration on the system is not changed, deselect the **Check data configuration consistency** option and restart the instant recovery.
  - When setting up the cluster, make sure that all disk device files are identical by use of the `ioinit` command.

- If you export a physical node from the MC/ServiceGuard cluster, you cannot import it back, as the `cell_server` file will be deleted. This file is shared among all nodes of a cluster, so you need to recreate it.

  Workaround: Run `/opt/omni/sbin/install/omniforsg.ksh -primary -upgrade`.

Issues with Microsoft Cluster Server

- When restoring the Cluster Database on a Microsoft Cluster Server, you should stop the cluster service on all inactive nodes before starting the restore. If cluster service is active on any other node at the time of the restore, the restore API will fail and may cause a failover.
- When the Cell Manager is installed on a Microsoft Cluster Server and you start a restore of the Cluster Database, the restore session will stop responding. This is because the cluster service is stopped by the restore API causing the Restore Session Manager to lose the connections to the IDB and the MMD.

  Workaround: Wait for the VRDA to complete and then abort the session. You then need to restart the GUI (or reconnect to the Cell Manager). Also, when starting a Cluster Database restore make sure that this is the only item you are restoring and that no other sessions are running.

Disk Array XP integration issues in a cluster environment

- In a cluster environment, if an instant recovery is performed on a different node than backup (in case of a failover between the ZDB and instant recovery sessions), the instant recovery fails with a similar error:

  ```
  [Warning] From: SSEA@x64-node2.x64ring.com "" Time:
  2/19/2008 2:35:46 PM Failed to get command device from XPDB
  for LDEV 8690.
  ```

  The issue appears if different command devices are configured for each node.

  Workarounds:

  - Ensure that the same command device is used on both nodes.
  - Use the `omnidbxp` command to manually add the missing command device. See the *HP Data Protector command line interface reference* for details on how to add a command device using `omnidbxp`.

Other known issues

- If you consolidate object versions that have already been consolidated, selecting the session in the **Restore** context results in a message that the session contains no valid restore objects. This is because the session is treated as a copy and consequently cannot be selected for restore.

  Workaround: Either select the session in which the objects were originally consolidated, or select the objects under **Restore Objects**.

- To prevent object consolidation sessions from using too much system resources, the number of object versions that can be consolidated in one session is limited to 500 by default. If more object versions match the selection criteria, the session is aborted.

  Workaround: Either tighten the selection criteria, for example, by limiting the time frame, the number of backup specifications, and so on, or increase the value of the global variable `CopyAutomatedMaxObjects`.

- If you perform interactive object consolidation of objects that span more than one medium and the number of consolidation devices used is smaller than the number of objects being consolidated, the object consolidation session may hang.

  Workaround: Either increase the number of consolidation devices, or select the object versions for consolidation in the order in which their full backups were performed.

- If full backups for multiple objects reside multiplexed on a device which is different than the file library hosting the corresponding incremental backups for these objects (e.g. on a tape library), it may happen that some of the file writers (file library drives) needed as targets for the consolidation session get aborted because of a failure on the source Media Agent side (e.g. in case of a media error, an incorrect block size, a canceled mount request, and similar). This may result in a hanging object consolidation session, in case there are not enough file writers remaining to complete the consolidation for other objects. Once all remaining objects are consolidated, all file writers will be freed up again at the end of the session.

Workaround: Ensure that the number of file library drives used as consolidation devices is equal or higher than the number of objects being consolidated. If the number of configured file library drives is smaller than the number of objects to be consolidated, it is suggested to split the consolidation of multiple objects into more than one session.

- If you have different logical devices for the same physical device and you use a different logical device for backup every day, the lock name concept prevents collisions between different logical devices assigned to the same physical device.

  When trying to perform a restore, where several logical devices but only one physical device was used for different backups (full, inc1, inc2, inc3...), Data Protector does not check the lock name, and therefore does not recognize that the same physical device was used for all backups. An error message that the restore session is waiting for the next device to get free is displayed.

  Workaround: Remap all logical devices to the same physical device by following the steps below:

  1. In the Context List, click **Restore**.
  2. In the Scoping Pane, expand the appropriate data type and desired client system and object for restore.
  3. When the Restore Properties window opens, select the files that you would like to restore.
  4. In the Devices tab, select the original device and click **Change**.
  5. When the Select New Device window opens, select the physical device name and click **OK**.

- Command `omnistat -session [session ID] -detail` sometimes displays Restore started and Backup started incorrectly. This can result in both parameters appearing to be identical.
- The following applications are not recommended to be installed together with Data Protector on the same system: WebQoS, CyberSitter 2000, NEC E-border AUTOSOCKS.

Coexistence of Data Protector Media Agent and Storage Allocator may cause unexpected results. For most recent patch information, refer to the HP Web page: http://www.itrc.hp.com

- Data Protector instant recovery fails when the filesystem is busy.

  Workaround: List processes which occupy filesystem by using the `fuser` command. For example, if the filesystem `/oracle/P01` is busy, run: `fuser -kc /oracle/P01`.

- If a backup is performed on one node and then instant recovery attempted to another node with the **Check data configuration consistency** option selected, the following error message is displayed: `Volume group configuration has changed`. This message is displayed because the `vgdisplay` command detects that the LUN configuration on one client is different than that of the other client.

  Workaround: If the `ext_bus` instance is the same, this message is not displayed. Alternatively, it is not displayed if the **Check data configuration consistency** option is not enabled.

- A backup may fail, if the snapshot backup specification contains an invalid `rdsk` object in the first place.

  Workaround: Change the order of the rdsk objects so that a valid rdsk is in the first place.

- Data Protector services my not be running after EADR/OBDR.

  Workaround: In the Control Panel, go to Administrative Tools, Services and change the startup type for Data Protector services from Manual to Automatic. Start the services after you have changed the startup type.

- If more than one `omnidbutil -purge` session is started, `omnidbutil` reports that it cannot communicate with the Cell Manager. To avoid this, do not start more than one session.

- On HP OpenVMS, a restore session may be ceaselessly completed with reported errors due to an unusual delay while unloading a tape drive.

  Workaround: Set the Cell Manager global parameter `SmPeerID` to 10 and restart all Data Protector services on your Cell Manager.

- When using SNMP traps on a Windows Cell Manager, Data Protector uses the default community name "public". This applies to both the SNMP send method with Data Protector notifications or reporting and the SNMP traps for System and Application management applications.

  Workaround: In the registry key `HKEY_LOCAL_MACHINE\SOFTWARE\Hewlett-Packard\OpenView\OmniBackII\SNMPTrap` create a value named `Community` and set it to the community name you want to use. Note that all SNMP traps will be sent with the same community name and to the destinations associated with it in the Windows Control Panel.

- On Linux systems, when sending a report using the e-mail send method, the mail does not have a subject and contains "root" in the **From** field. The correct **From** and **Subject** entries are inside the mail body.

  Workaround: Use sendmail to send the mail reports.

  For example, to use sendmail instead of `/usr/bin/mail`, create the following link:

  ```
  ln -s /usr/sbin/sendmail /usr/bin/mail
  ```

  Note that on some Linux distributions `/usr/bin/mail` already exists. It is not advisable to remove this existing path since some applications may rely on it.

Known non-Data Protector issues and workarounds

Non-Data Protector issues related to installation or upgrade

- After installation or upgrade to Data Protector A.06.10, Windows may report that some application is not installed or that a reinstall is required. The reason is an error in the Microsoft Installer upgrade procedure. Please read the Microsoft Knowledge Base article Q324906 to solve the problem.
- On rare occasions, Windows may incorrectly report free disk space for an NTFS volume that is mounted at a directory on an NTFS filesystem: instead of the NTFS volume free space the amount of free space on the NTFS filesystem is reported. In such cases, if you try to install Data Protector to the mounted NTFS volume, the Data Protector Setup Wizard will not start the installation if the amount of free space on the NTFS filesystem is smaller than the minimum disk space installation requirement.

  Workaround: free enough additional disk space on the NTFS filesystem by removing unnecessary files.

- On Windows XP, an additional dialog window may pop up during the uninstallation of the CORE patch, displaying an error.

  For details about the problem and a possible resolution, see the InstallSheild KB article Q107094 http://support.installshield.com/kb/view.asp?articleid=Q107094

- If you start a local installation from a mapped drive through Windows Remote Desktop, the installation may fail with the following error message:

  ```
  Error 2755. Server returned unexpected error 3 attempting
  to install package MappedDrive:\i386\DataProtector.msi.
  ```

The Windows Installer service is running in a different session than the user account and therefore has different drive mappings. As a result, the installation fails.

Workarounds:

- Do not start the installation from a mapped drive. Use the UNC path specification instead (for example `\\server.company.com\`*`shared_folder`*).
- Use VNC for installing instead of Windows Remote Desktop.
- Start the installation from a console login.

- On Linux systems, the `rpm` utility does not correctly uninstall Data Protector packages if you specify several packages in one command. For example, if you use `rpm -qa | grep OB2 | xargs rpm -e`, the `rpm` utility does not resolve dependencies in the correct order.

  Workaround: Remove the Data Protector packages one by one.

Non-Data Protector Issues Related to User Interface

- When using CLI on UNIX, the characters may be displayed incorrectly.

  Different encoding systems (Latin, EUC, SJIS, Unicode) cannot be used in the desktop environment and in the terminal emulator. For example, you start the desktop environment in EUC-JP, open a terminal emulator and change the locale to SJIS. Due to an OS limitation, if you use any CLI command, the characters can be displayed incorrectly. To eliminate this problem, start the desktop in your desired locale.

- Due to known Java issues with modality, if two or more modal dialogs are opened in the Data Protector Java GUI, the latest opened dialog must be closed first.

  Workaround: Close the dialogs in the opposite order as you opened them.

Non-Data Protector issues related to media agent and disk agent

- Erase operation on magneto-optical drive connected to HP-UX fails with the following error: `[Major] From: MMA@lada.com "MO-lada" Time: 5/6/2002 3:52:37 PM [90:90] /dev/rdsk/c2t0d1 Cannot erase disk surface ([22] Invalid argument) => aborting`
- If Physical Address Expansion (PAE) is specified for Windows 2000, Data Protector is not able to perform correctly with devices such as Ultrium. Device operations fail with the following error: `error 87 cannot write to device the parameter is incorrect` This happens if the tape that is being restored was created while running Windows 2000 without the Physical Address Extensions (PAE) option enabled.

Workaround: Set the registry key value `MaximumSGList` to 17. `MaximumSGList` should be located in `HKEY_LOCAL_MACHINE\System\CurrentControlSet\Services\<adapter>\Parameters` where *`<adapter>`* represents the ID of a SCSI interface used for controlling the device (e.g. aic78u2 for Adaptec).

- If the LSI Logic 53C1010-66 card is used on an HP Server rx2600 Itanium 2 client with Windows 2003 Enterprise Edition, restore may fail with an internal error.
- Breece Hill's Saguaro libraries use the stack mode for entering and ejecting cartridges. One mail slot has two SCSI addresses, one for the enter operation and the other for the eject operation. For Data Protector to work in this mode, the following `omnirc` command variables must be set:
  - `OB2LIB_STACKEXP` must contain the SCSI address of the export slot
  - `OB2LIB_STACKIMP` must contain the SCSI address of the import slot
- Data Protector Media Agent cannot coexist with CA ArcServe installed on the same Windows client system, as this can lead to data loss.
- Due to a Microsoft Windows 2000 known issue the backup of the Active Directory can fail, especially if there are several backup runs within a short period of time.

  Workaround: Install the Microsoft Windows 2000 Service Pack 2. For more information refer to the Microsoft Knowledge Base on http://support.microsoft.com/support/kb/articles/Q282/5/22.ASP.
- Cannot import media or omnimlist using a DLT8000 (StorageWorks_E DLT Library). Getting errors...

  ```
  [Major] From: MMA@hkgbkup3 "HKGBKUP3_1m" Time: 10/31/01
  19:52:35
  [90:182] Cannot forward segment. ([5] I/O error)
  [Major] From: MMA@hkgbkup3 "HKGBKUP3_1m" Time: 10/31/01
  19:52:35
  [90:53] /dev/rmt/1m Cannot seek to requested position ([5]
  I/O error)
  ```

  Resolution:

  Quantum has confirmed that there is a problem with the controller firmware. There is a cumulative slip occurring in the tach relative to the tape. This coupled with seeing the BOT marker causes the drive to reconstruct its internal directory. This happens only on tapes with LOTS of data.

  Please consult with your HP Support representative before you perform any of the following: The DLT8000 drive FW must be upgraded to V51. This can be done by accessing the FW Upgrade page and following the directions:

http://www.hp.com/cposupport/swindexes/hpsurestor18551_swen.html

More details of the fix in Service Note A5597A-27

- On UNIX systems, the original creation timestamp of a symbolic link is not preserved during a restore. The timestamp is set to the current system time. Due to a limitation of the system call `utime()`, the creation timestamp of a symbolic link cannot be changed after the link creation.

  Workaround: None.

- After backing up a volume containing long filenames with associated 8.3 short filenames, the short filenames previously associated with the long filenames may not be retained after a restore. This happens due to a Windows limitation described in the Microsoft Knowledge Base Article 176014. This can cause certain applications to fail if specific 8.3 short filenames are incorrectly associated with long filename files. The problem most likely affects Microsoft SQL Server users because Microsoft SQL Server keeps paths to its databases stored in the 8.3 short filename notation.

  Workaround: After restoring the directory containing the files that are not correctly associated with the 8.3 short filenames, move those files temporarily to another directory and then move them back to the original directory in exactly the same order as they were initially created. This way, the same 8.3 short filenames will be assigned to those filenames as before the restore.

- Due to Windows filesystem limitations, files that were backed up on UNIX and whose names contain the backslash ("\") character may be restored to a wrong location and with the wrong file name on Windows. Windows interpret the backslash in a file name as a directory separator. For example, if a file named `back\slash` file was backed up on UNIX and restored to a Windows client, it will be restored into the `back` directory with the file name `slash`.
- On AIX 5.2, devbra cannot retrieve serial numbers of the devices connected through the CAMBEX driver. As a consequence, device autoconfiguration and automatic discovery of changed SCSI addresses do not work.

  Workaround: Configure the devices manually. Do not use automatic discovery of changed SCSI addresses for devices connected through the CAMBEX driver on AIX 5.2.

- Backup of a filesystem may finish with error messages similar to the following one:

  ```
  Cannot open attribute directory /BC/fs/VxVM/UFS/Test6.doc:
  read-only filesystem! Extended attributes not backed up.
  ```

  Workaround: Set the `omnirc` variable `OB2SOL9EXTATTR` to `0`, to disable the backup of extended attributes on Solaris 9.

- Due to a known issue in `TSAFS.NLM` module on Novell NetWare systems, the following error is reported during the restore on Novell NetWare with the `Trustee only restore` option enabled:

  ```
  The program was processing a record or subrecord and did
  not find the Trailer field.
  ```

  The restore is performed successfully and the error message can be ignored.

  Workaround: The fix is not available at the moment. Check for Novell NetWare support patches.

Non-Data Protector issues related to integrations

Microsoft Exchange Server

- If a Microsoft Exchange backup fails with an error message like "`...cannot wait for synchronization event`", the reason could be that the backup was run concurrently with a defragmentation process.

  Consult the Microsoft support article ID: Q183675.

- Due to MAPI behavior, if the subject line of a backed up message begins with a sequence of up to 4 non-space characters followed by a space, and any of these non-space characters is a colon ("`:`"), the message, once restored, will have a wrong subject line. For example, a message with the original subject line `ABC: hala` will get the subject line `ABC: ABC: hala`. after the restore.

  This does not apply to standard prefixes for e-mail subjects, such as `Re:`, `Fwd:`, and so on, if they are generated automatically by your e-mail client (for example, by pressing the **Reply** button in Microsoft Outlook).

Microsoft SQL Server

- Due to Microsoft SQL Server 7.0 known issue 53787 in cluster support with VDI, set the `_VIRTUAL_SERVER_NAME_` environment variable in the `omnirc` file prior to invoking IClientVirtualDeviceSet::Create().
- If installed as a cluster-aware application, Microsoft SQL Server 7.0 needs the Microsoft SQL Server 7.0 Service Pack 1.
- When performing a Microsoft SQL Point-in-time restore, the warning `Invalid value specified for STOPAT parameter` is shown. It happens when transactional log is being restored. The database remains in an unrecovered state as if the RESTORE LOG operation was run with the `Leave the database non-operational` option.

  Workaround: The database can be recovered to the latest point in time:

- by using the Microsoft SQL Query Analyzer. To recover the database, run the following T-SQL command: `RESTORE DATABASE` *`database_name`* `WITH RECOVERY`

  or

- by restarting restore session without the 'Point in time' option specified

- Instant Recovery of Microsoft SQL Server system databases fails.

  Workaround: Follow the instant recovery procedure in the HP Data Protector zero downtime backup integration guide. As stated there, you need to restart the services of the SQL Server instance after the instant recovery completes. If this does not automatically start a recovery of all system databases:

  1. Start the SQL Server instance in single-user mode.
  2. Manually start a recovery of the master database.
  3. Start a recovery of every other system database (SQL Server instance must be started in single-user mode).
  4. Restart the services of the SQL Server instance.

SAP R/3

- SAP R/3 brtools version 4.6C has problems backing up datafiles on Solaris platform. Database backup and tablespace backups however work fine.
- Backing up an SAP R/3 database using the zero down time backup functionality and Oracle Recovery Manager together fails.

  During the SAP R/3 (Oracle) integration backup, the following error may occur:

  ```
  BR002I BRARCHIVE 4.6D (17) BR252E Function fopen() failed
  for '/oracle/YP1/817_64/saparch/adhjhzoc.cpd' at location
  main-4 BR253E errno 2: No such file or directory BR121E
  Processing log file /oracle/YP1/817_64/saparch/adhjhzoc.cpd
  failed sh: 12312 Memory fault [Warning] From: OB2BAR@sv005
  "OMNISAP" Time: 02/20/02 10:54:03 BRARCHIVE
  /usr/sap/YP1/SYS/exe/run/brarchive -d util_file -scd -c
  returned 35584
  ```

  Workaround: Add the Oracle `NLS_LANG` environmental variable into the SAP R/3 configuration file: `NLS_LANG=AMERICAN_AMERICA.WE8DEC SAPDATA_HOME=/oracle/YP1`

- Offline SAP R/3 ZDB to disk (SPLITINT) on Solaris fails with the following error message:

  ```
  BR0253E errno 4: Interrupted system call
  ```

Workaround: None. The problem may be solved with a newer version of SAP BRTOOLs.

SAP DB

- Backup completes with errors if filenames contain spaces.

  Workaround:

  - On Windows: Change the RUNDIRECTOY parameter to short (8+3) path names and edit filenames in the registry key `HKEY_LOCAL_MACHINE\SOFTWARE\SAP\SAP DBTech\IndepData`. Restart the database.
  - On HP-UX and Linux systems: Create a symbolic link to the directory with a space in the name and adjust the RUNDIRECTORY parameter of the database to use the symbolic link. Adjust the values of the `IndepData` parameter in the ini file `/usr/spool/sql/ini/SAP_DBTech.ini` (on Linux) or `/var/spool/sql/ini/SAP_DBTech.ini` (on HP-UX).

Oracle

- Tablespace names must not be RMAN reserved names on the Oracle integration for Windows platforms. In such case the backup fails when Oracle8 RMAN parses the command script. Also, a tablespace called LEVEL cannot be created due to the Oracle8 internal error.
- An Oracle backup session on the Windows platform waits for 20 sec. before it ends. This waiting time occurs because Oracle does not notify that the API session is complete. If you run a backup from RMAN and use the Data Protector library (`orasbt.dll`) to perform that task, you must wait at least 20 sec. between two backups with the same backup specification name. If not so, all the backup objects will be within one backup session.
- In case the backup system is low on resources (CPU, memory, etc.), the following error is reported by the Oracle Server Manager in the Data Protector Monitor context for the Oracle HP StorageWorks XP integration: `ORA-12532: TNS: invalid argument.`

  Workaround: Configure the backup system in such a way that it has sufficient resources to run the Oracle Instance and perform a backup at the same time.
- While performing a backup set ZDB, the following warning is displayed for each database datafile:

  ```
  RMAN-06554: WARNING: file n is in backup mode
  ```

The processing of each message may take up to 20 seconds. This causes a considerable slow down for backups of databases with a large number of datafiles (200 or more datafiles).

Informix Server

- Due to an Informix Server known issue, the point in time restore for Informix Dynamic Server 7.31 TC8 on Windows 2000 does not work.

  Workaround: Contact Informix Server support for an appropriate patch .
- On Informix Dynamic Server 7.3x 64-bit, the `$INFORMIXDIR/bin/onbar` binary does not work properly.

  Workaround: Copy the `$INFORMIXDIR/bin/onbar` shell-script from 32-bit version of Informix Dynamic Server 7.3x. If you do not have this script, contact Informix Server Support.
- When you perform a recovery and then a restore in Informix Server, Data Protector always reports that the ON-Bar process exits with the return code 0.

  Workaround: Check the Informix Server log file `/tmp/bar_act.log`, for the real return code value.
- Due to an Informix Server known issue, you cannot perform an Informix Server restore by a logical log number on Windows 2000 with the Informix Dynamic Server 7.31.TC2.
- If you are using a version of Informix Server that is older than 8.3x version, it can happen that the Informix Server log files cannot be backed up.

  Workaround: Edit the `/opt/omni/lbin/ob2onbar.pl` script so that every option "-b -l" is replaced with "-l".

Sybase

- Aborting a Sybase backup session on Solaris and Windows 2000 hangs the system.

  Workaround: Kill the `$SYBASE_HOME_DIR/bin/sybmultbuf` process from the command-line interface to abort the backup session.

Disk array integrations

- The integration between HP Data Protector and HP StorageWorks EVA provides instant recovery by using snapclones. The creation of a snapclone takes time and requires resources from the disk array. The performance impact depends on factors such as disk management, configuration, I/O load and disk usage.

Therefore, it is strongly recommended to do some benchmarking in performance sensitive environments before deciding to use this functionality.

Data Protector also provides some built-in performance boosting functionality. For example:

- You can allocate snapclones to a different disk group than the one used for the original virtual disks, thus redirecting read and write operations on a replica from the original disk group to a replica disk group, or allocating a replica to low-performance disks.
- During a ZDB to disk+tape or ZDB to tape, you can delay the backup to tape until the snapclones are fully created, thus preventing degradation of the application data access times during the phase of backup to tape.
- You can create an "Instant Recovery" of a snapclone, which is not yet created.

Please contact HP consulting for assistance.

- If performing a snapshot backup on HP StorageWorks EVA (Windows systems), the following message may occurs:

  ```
  [Normal]Starting drive discovery routine.[Major]Resolving of filesystem fsname has
  ```

  Workaround: Install Secure Path version 4.0B and patch v4.0B-3. The patch is available on http://www.itrc.hp.com.

  Additionally, set the following `omnirc` variables to minimize the probability of the problem to occur:

  `EVA_EMAPI_MAX_RETRY`

  `EVA_EMAPI_RETRY_DELAY`

  Predefined values of these variables should fit most of your configurations. However, if the specified settings do not solve the problem, you should enlarge the values as needed.

- When using the SecurePath 4.0C driver, the backup system occasionally crashes.
- When HP StorageWorks EVA is used as a VSS Hardware Provider, the option `Snapshot Type` is ignored by the provider. (HSLco41930)

  Workaround: Use the EVA configuration tool to select the desired type of a shadow copy, for example snapshot, vsnap, or snapclone.

- When HP StorageWorks EVA is used as a VSS Hardware Provider, sometimes VSSBAR reports that shadow copies creation was started, and then the EVA provider consumes 99% of the CPU and hangs. The session can not be aborted.

  Workaround: None. To stop the CPU consumption and abort the backup session proceed as follows:

  1. Stop the provider service using the Service Manager.
  2. If the service can not be stopped, kill its process using the Task Manager.

3. Stop the VSS and VDS services. Delete the VSS Snapshot Database. To locate the VSS Snapshot Database files, use the registry editor to find the value of the following registry keys:

   ```
   HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\BackupRestore\FilesNotToBackup\VSS
   Service DB
   HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\BackupRestore\FilesNotToBackup\VSS
   Service Alternate DB.
   ```

4. Connect to the management appliance, identify the shadow copies (if any) and delete them.
5. Retry the backup. If the same error persists, repeat the procedure and reboot the system.

- The hardware shadow copy provider can fail with a message similar to the following:

  ```
  INFO: HardwareProvider::LocateLuns() - Failed.INFO:
  HSV_ElementMgr::enableAccess() - FAILED errorMsg =
  '\Hosts\VSSQA\levstik:Api The presented unit already exists.
  Command ignored' cellName = 'EVA-4 (Kolosej)' unitID =
  '1f200710b4080560ff4e0100001001000000e54e' unitName =
  \Virtual Disks\VSSQA\Levstik\LevstikExch7\CPQHWP-3f38d17d
  LUN ID = '21'
  ```

  Workaround: None. To clean up the system, restart the provider, delete the provider information from the VSS Snapshot Database on the backup server, and delete the snapshots on the EVA.

  To get the provider ID, use the command `vssadmin list providers`. To locate the VSS Snapshot Database files, use the registry editor to find the value of the following registry keys:

  ```
  HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\BackupRestore\FilesNotToBackup\VSS
  Service DB
  HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\BackupRestore\FilesNotToBackup\VSS
  Service Alternate DB
  ```

- If an HP StorageWorks Disk Array XP split mirror backup session is started on a Solaris system with the GUI **Leave the backup system enabled** option or CLI `leave_enabled_bs` option set, and the `.omnirc` file `SSEA_MOUNT_PATH` variable is changed after the session is finished, the next split mirror backup or split mirror restore session for the same mount point will fail.

  Workaround: To avoid the failure, manually unmount the old backup system mount point and (re)start the session.

Volume Shadow Copy service

- The following MSDE writer components cannot be restored while the SQL server is online: master, model, and msdb.
- When restoring the MSDE writer while the SQL server is offline, the restore completes with error messages similar to the following :

  ```
  Major] From: OB2BAR@concord.ipr2.hermes.si "MSVSSW" Time:
  8/7/2003 1:49:49 PMComponent 'master' reported:
  'CSqlRestor::PrepareToRestore failed with HRESULT =
  0x8000ffff'.
  ```

  Workaround: None. The problem may be resolved in a future Microsoft Windows Server 2003 Service Pack release.
- When restoring the MSDE writer while the SQL server is offline, the restore completes with error messages similar to the following:

  ```
  Major] From: OB2BAR@concord.ipr2.hermes "MSVSSW" Time:
  8/7/2003 1:49:49 PM Component 'master' reported:
  'CSqlRestor::PrepareToRestore failed with HRESULT =
  0x8000ffff'.
  ```

  Workaround: None. The problem may be resolved in a future Microsoft Windows Server 2003 Service Pack release.
- A snapshot backup of an Exchange Server 2003 database fails, and event ID 9607 is logged. See Microsoft Knowledge Base article ID 910250 for information on how to resolve this problem.
- On Enterprise Virtual Array, a backup session can fail if there are more than 4 source volumes (original virtual disks) in a snapshot set.

  Workaround: None. Make sure that the number of source volumes in a backup specification does not exceed 4 and that the next snapshot starts no earlier than 30 minutes after the last snapshot was deleted.
- During a VSS Transportable Backup the following error is reported by the VSSBAR on the backup server: `Import failed`.

  If the backup server is inspected after the failed session, the snapshots are actually visible as new disks in the Device Manager, as well as in the "Disk Manager". In the Disk Manager window the volumes may even be visible (together with the volume labels), but the Windows `mountvol` CLI tool does not detect and show them. All subsequent backup sessions fail.

  Workaround: Delete the VSS Snapshot Database on the backup server and reboot the server. To locate the VSS Snapshot Database files, use the registry editor to find the value of the following registry keys:

```
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\BackupRestore\FilesNotToBackup\VSS
Service DB
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\BackupRestore\FilesNotToBackup\VSS
Service Alternate DB
```

Non-Data Protector issues related to reporting

- When using Outlook XP (2002) or Outlook 2003, the following problem appears: when you add a report to a report group specifying e-mail as the send method, and then try to start the report group, the CRS service stops responding and must be restarted (HSLco35048). The same happens if you configure a notification and select the e-mail send method. This problem also occurs if you install the latest security update for Outlook 2000 or Outlook 98 (Microsoft Knowledge Base article IDs: Q262617, Q267319, Q262700). The cause of the problem is that Outlook requires user interaction before sending an e-mail notification.

  To prevent this behavior, customize security settings so that you set the **When sending items via Simple MAPI** option to **Automatically approve**. For information on how to customize security settings for Outlook 2000 or Outlook 98, refer to Administrator Information About the Outlook E-mail Security Update (Microsoft Knowledge Base article ID: Q263296). For Outlook XP (2002) or Outlook 2003, refer to the respective Office Resource Kit.

  Additionally, Outlook Express can be used as an alternative to Outlook, as it does not require any user intervention for sending e-mails. Data Protector is able to send reports in HTML format if used in combination with Outlook Express. Otherwise an HTML report is sent as an attachment.Outlook Express is installed by default on Windows 2000 and newer versions and is the default MAPI handler on these systems. If you plan to use Outlook Express, do not install any other e-mail software (including Outlook) since it typically replaces the default MAPI handler. If you are using Microsoft Office, ensure that you do not select Microsoft Outlook during Microsoft Office installation.Outlook Express supports only the SMTP protocol as e-mail carrier. If you plan to use Outlook Express with Microsoft Exchange servers, the **SMTP Mail Connector** option must be enabled on the Microsoft Exchange Server. See Microsoft Knowledge Base article ID 265293 for more details on how to configure SMTP on Microsoft Exchange.

- If a Data Protector Cell Manager and Microsoft Exchange Server 2003/2007 coexist on the same system, e-mail reporting using MAPI does not work. This is because Microsoft does not support installing Outlook on a system with Microsoft Exchange Server 2003/2007 installed.

  Workaround: Use the e-mail SMTP send method for reports and notifications.

- Due to the operating system limitations, international characters in localized E-mail notifications and reporting can be displayed incorrectly on UNIX if they are passed between systems using a different locale.
- When viewing web reporting using Netscape Navigator, after resizing the browser window, the applet does not adjust its size to fit within the new dimension.

  Workaround: Start the Netscape Navigator manually, resize the window to the desired size and then open the `WebReporting.html` file.
- When using web reporting in localized UNIX environments with SJIS or EUC Japanese locale set, the non-UTF-8 Web Reporting input data is converted into UTF-8 (Unicode) before being written to the Data Protector configuration files. Such characters will not be displayed correctly when using web reporting.
- When you are backing up Data Protector clients not configured for Data Protector report, the report lists all clients from a specified network range. In case you specify a C-class network that is in another subnet, then the report can take quite a lot of time before it is created.
- If you use Data Protector reporting and the output format is HTML, a Unicode file is produced. Some older browsers do not support local viewing of Unicode files. However, if you view the same file through a Web server using the same browser, it is displayed correctly.
- If you receive localized Data Protector e-mail notifications containing Japanese characters on the host where Japanese is not the default locale, the output of the notifications may be correctly displayed.

  Workaround:

  1. If you have this problem with the Microsoft Outlook, save the message in the HTML format, then open it in a web browser and follow the next step.
  2. If you use a web browser, select the Japanese locale, Shift-JIS, EUC, or UTF-8. For example, select **View** > **Character Encoding** > **More Encodings** > **East Asian-Japanese (Shift_JIS)**.

Other non-Data Protector issues

- When mounting CIFS share on a UNIX system, the directory size is not calculated correctly and Data Protector backup statistics consequently report a wrong backup size at the end of the backup session. The reason are inter-operability problems between Windows and UNIX platforms.
- Backup on UNIX systems may fail because of the shared memory shortage with the following error:

```
Cannot allocate shared memory pool (IPC Cannot Create Shared
Memory Segment System error: [22] Invalid argument ) =>
aborting
```

Workaround: The actions are different for different operating systems. After you have applied the changes, you need to reboot the system.

On HP-UX

Set the `OB2SHMEM_IPCGLOBAL` variable to 1 in the global options file: `/opt/omni/.omnirc`.

On Solaris

Set the kernel parameters in the `/etc/system` file as follows:

```
set shmsys:shminfo_shmmax=4294967295 set
shmsys:shminfo_shmmin=1 set shmsys:shminfo_shmmni=100 set
shmsys:shminfo_shmseg=10 set semsys:seminfo_semmni=100 set
semsys:seminfo_semmsl=100 set semsys:seminfo_semmns=256
set semsys:seminfo_semopm=100 set
semsys:seminfo_semvmx=32767
```

If the problem persists, the parameters can be increased.

On SCO UnixWare

Increase the value of the `SHMMAX` kernel variable using the `scoadmin` command. The minimum value required by Data Protector can be calculated using the following equation:

minimum value for SHMMAX = (Disk Agent buffers * Block size in KB * 1024) + 16You can get the values of Disk Agent buffers and Block size from the Advanced Options dialog box for the target backup device. It is recommended that the `SHMMAX` value is set to larger number.

- If an IRIX 6.5 disk is connected to the second SCSI controller, there might be a problem detecting if the disk is mounted.

  Workaround: Ensure that the disk is not mounted before you perform disk image (rawdisk) restore.

- Data Protector uses host name resolution to communicate between hosts. This is done either via DNS servers or via `/etc/hosts or /etc/lmhosts` file. If the DNS service is not available or correctly configured on the Windows clients, you can edit the `hosts (lmhosts`) file, which are located in the *`%SystemRoot%`*`\System32\drivers\etc` directory. Use the `hosts` file if you want to map IP addresses to hostnames and `lmhosts` file if you want to map IP addresses to computer (NetBIOS) names. Additional information on how you can edit these files is found in the beginning of these two files. After you have done editing, terminate the Data Protector GUI and restart it for changes to take effect. You must ensure that the name resolution is consistent throughout the Data Protector cell.

- When connecting a Windows 2000 GUI client to a Cell Manager, the following error may occur:

  ```
  You do not have access to any Data Protector functionality
  ...
  ```

  The issue can be that the system name (including the domain suffix) is set at two places on Windows 2000 systems. You have to ensure that the fully qualified hostnames in the (**system properties**->**Network-Tab**->**properties**->**more**->**Primary DNS suffix**...) and (**local area connection properties**->**TCP/IP**->**Advanced**->**DNS-Tab**->**DNS-suffix**...) settings on the Windows 2000 GUI client are identical and are the same as the system name (including the DNS suffix) defined in the Data Protector **User Context**.

- Secure path on HP-UX external device filename may change after reboot. This changes the mapping to volume managers. Raw device backups can fail due to a different device file being specified in the backup specification.
- When creating a file system backup for a Windows Vista or Windows Server 2008 system , Data Protector GUI does not list `TerminalServiceDatabase` among Windows configuration objects available for backup.

  Workaround: To enable backup of the `TerminalServiceDatabase` configuration object, install the Terminal Server Licensing service on the system which will be backed up.

6 Installation requirements

This chapter gives a description of Cell Manager, Installation Server, and client installation requirements. It also provides a list of upgrade requirements.

General installation requirements:

- Free TCP/IP port: 5555 by default
- If you want to install Java GUI Server, have the port number 5556 free.
- The TCP/IP protocol must be installed and running. The protocol must be able to resolve all hostnames in the Data Protector Cell.

Cell Manager requirements

The Data Protector Cell Manager does not support the IDB on a filesystem that is mounted as NFS type.

On systems running HP-UX 11.11, 11.23, and 11.31

The Cell Manager must meet the following minimum requirements:

- The Soft File Limit per Process on the Cell Manager should be at least 1024.
- 256 MB of RAM (512 MB recommended)

  For each parallel backup session 40 MB of RAM are required and 5 - 8 MB per data segment size. This means that, for example, if you want to run 60 parallel backup sessions 3 GB of RAM plus 512 MB for data segments are needed.
- 240 MB of disk space + approximately 2% of planned data to be backed up (for use by the IDB).
- It is recommended to modify the kernel parameters as follows:
  - set `maxdsiz` (Max Data Segment Size) or `maxdsiz_64` (for 64bit systems) to at least 134217728 bytes (128 MB).
  - set `semmnu` (Number of Semaphore Undo Structures) to at least 256.

  After committing these changes, recompile the kernel and reboot the machine.

- For Java GUI Client, Java Runtime Environment (JRE) 1.5_06 or later minor version (for example, 1.5_07) is required.

On systems running Solaris 8/9/10

The Cell Manager must meet the following minimum requirements:

- 256 MB of RAM (512 MB recommended)

  For each parallel backup session 40 MB of RAM are required and 5 - 8 MB per data segment size. This means that, for example, if you want to run 60 parallel backup sessions 3 GB of RAM plus 512 MB of data segments are needed.
- 240 MB of disk space + approximately 2% of planned data to be backed up (for use by the IDB)
- The following values of kernel parameters are recommended: SEMMNI (maximum number of semaphore sets in the entire system) = 100 SEMMNS (maximum semaphores on the system) = 256

  A system restart is necessary for kernel changes to take effect.
- For Java GUI Client, Java Runtime Environment (JRE) 1.5_06 or later minor version (for example, 1.5_07) is required.

On systems running Windows 2000/XP

The Cell Manager must meet the following minimum requirements:

- 256 MB of RAM (512 MB recommended). For each parallel backup session 40 MB of RAM are required. This means that, for example, if you want to run 60 parallel backup sessions 3 GB of RAM are needed.
- Windows 2000, Service Pack 3 or later
- Windows XP Professional, Service Pack 1
- 190 MB of disk space + approximately 2% of planned data to be backed up (for use by the IDB)
- `2 × `*`size_of_the_biggest_package_to_be_installed`*` + 5MB` of disk space needed on system drive
- Microsoft Internet Explorer 5.x or later
- For Java GUI Client, Java Runtime Environment (JRE) 1.5_06 or later minor version (for example, 1.5_07) is required.

On systems running Windows Server 2003 and Windows Server 2008

The Cell Manager must meet the following minimum requirements:

- 256 MB of RAM (512 MB recommended). For each parallel backup session 40 MB of RAM are required. This means that, for example, if you want to run 60 parallel backup sessions 3 GB of RAM are needed.
- 190 MB of disk space + approximately 2% of planned data to be backed up (for use by the IDB)
- `2 × `*`size_of_the_biggest_package_to_be_installed`*` + 5 MB` of disk space needed on system drive
- Microsoft Internet Explorer 5.x or later
- For Java GUI Client on Windows Server 2003 systems, Java Runtime Environment (JRE) 1.5_06 or later minor version (for example, 1.5_07) is required.
- For Java GUI Client on Windows Server 2008 systems, BEA JRockit 5.0 1.5_06 or later minor version (for example, 1.5_07) is required.
- On Windows Server 2008 systems, the firewall must be configured to accept "Remote Service Administration" (NP) connections (port 445) and Data Protector connections (port 5555).
- On Windows Server 2008 systems, administrative privileges are required to install Data Protector A.06.10.

On systems running Linux

The Cell Manager must meet the following minimum requirements:

- 256 MB of RAM (512 MB recommended)

  For each parallel backup session 40 MB of RAM are required and 5 - 8 MB per data segment size. This means that, for example, if you want to run 60 parallel backup sessions 3 GB of RAM plus 512 MB for data segments are needed.
- 240 MB of disk space + approximately 2% of planned data to be backed up (for use by the IDB).
- If the version of libstdc++ on the system is not 5 (for example libstdc++.so.6 instead of libstdc++.so.5) you need to install the compatibility package `compat-2004` or `compat-libstdc++`.
- For Java GUI Client, Java Runtime Environment (JRE) 1.5_06 or later minor version (for example, 1.5_07) is required.

- To install the Java GUI Server on RedHat Enterprise Linux 4.0, the `libstdc++-4.0.2-8.fc4.x86_64.rpm` package is required. If your system does not already contain a 64–bit version of `libstdc++.so.5` then you must install it with `libstdc++-3.3.3-7.x86_64.rpm`.
- To run the Java GUI Server on SuSE Linux Enterprise Server 9 (64–bit), the package `compat-libstdc++-lsb-4.0.2_20050901-0.4.x86_64.rpm` is required.

Installation Server requirements

On systems running HP-UX

The Installation Server must meet the following minimum requirements:

- 64 MB of RAM
- 750 MB of disk space

On systems running Solaris 8/9/10

The Installation Server must meet the following minimum requirements:

- 64 MB of RAM
- 750 MB of disk space

On systems running Windows 2000/XP

The Installation Server must meet the following minimum requirements:

- 64 MB of RAM (Windows 2000 Professional)
- 250 MB of disk space
- Microsoft Windows 2000 Service Pack 3 or later
- Windows XP Professional, Service Pack 1
- Microsoft Internet Explorer 5.x or later

On systems running Windows Server 2003 and Windows Server 2008

The Installation Server must meet the following minimum requirements:

- 64 MB of RAM
- 250 MB of disk space

- Microsoft Internet Explorer 5.x or later
- Administrative privileges are required to install Data Protector A.06.10.
- For Java GUI Client on Windows Server 2008 systems, BEA JRockit 5.0 1.5_06 or later minor version (for example, 1.5_07) is required.
- On Windows Server 2008 systems, you must configure the `inst_srv_user` whose credentials will be used during remote installation.

On systems running Linux

The Installation Server must meet the following minimum requirements:

- 64 MB of RAM
- 800 MB of disk space

Client system requirements

On systems running UNIX

The prerequisite for remote installation of the Data Protector client is the following:

- The `inetd` daemon must be up and running on the remote client system.

The prerequisite for viewing online Help on the Data Protector client is the following:

- A web browser that is able to run under the same account as Data Protector must be installed on the client system:
  - On HP-UX, the Mozilla web browser is supported. HP recommends using Mozilla 1.7, but you can also use any other Mozilla version that is officially supported on this platform. For a list of supported Mozilla versions and their installation packages, see the web site http://www.hp.com/products1/unix/java/mozilla/index.html.
  - On Solaris, Mozilla 1.7, Netscape 7.0, and Netscape Navigator 4.7x are supported. HP recommends using Mozilla 1.7. You can download it at http://www.sun.com/software/solaris/browser/index.xml and http://www.mozilla.org/releases/#1.7.12.
  - On Linux, Mozilla 1.7 is supported. You can download it at http://www.mozilla.org/releases/#1.7.12.
- For Java GUI Client, Java Runtime Environment (JRE) 1.5_06 or later minor version (for example, 1.5_07) is required.

Disk space and RAM requirements for Data Protector UNIX clients

The following table shows the minimum disk space and RAM requirements for the various Data Protector clients:

Client System	RAM (MB)	Disk Space (MB)
User Interface	256[1]	200[2]
Disk Agent	64 (recommended 128)	10
Media Agent	64 (recommended 128)	20
Integration Modules	64 (recommended 128)	20
English documentation and online Help	N/A	50

[1] Memory requirements for the GUI system vary significantly with the number of elements that need to be displayed at a time. This consideration applies to the worst case (like expanding a single directory). You do not need to consider all directories and file names on a client, unless you want to expand all directories while viewing. It has been shown that 2 MB memory are required per 1000 elements (directories or file names) to display plus a base need for about 50 MB. 128 MB of RAM should therefore be sufficient to display the maximum number of file names.

[2] Regarding the disk space, keep in mind that the page file alone should be able to grow to about 3 times the physical memory.

These figures are the requirements for the components only. For example the "disk space" figure does not include space allocation for the OS, page file or other applications.

The Data Protector A.06.10 HP-UX and Solaris GUI are based on Windows emulation software and therefore require higher graphical processing power. It is recommended to use a midrange (or better) workstation system with considerable graphics power. Usage over dial-up line is not feasible.

HP-UX systems

When installing or upgrading remotely, the available disk space in the folder `/tmp` should be at least of the same size as the biggest package being installed.

Solaris system

When installing a Media Agent, make sure that the following entry is in the file `/etc/system`: `set semsys:seminfo semmni=100`

When installing or upgrading remotely, the available disk space in folders `/tmp` and `/var/tmp` should be at least the size of the biggest package being installed.

The Solaris installation DVD-ROM is in the pkg stream format, which is not recognized by the standard tar utility. That is why the HP-UX, and not the Solaris installation DVD-ROM must be used for the local installation/upgrade of Solaris clients.

Linux systems

The RPM module must be installed and enabled on a Linux Debian client system, as Data Protector uses the rpm package format for installing.

On systems running Windows

The prerequisites for Windows user interface installation and remote installation on the client are:

- Microsoft Windows 2000 with Service Pack 2
- Microsoft Windows XP Professional, Service Pack 1
- Microsoft Windows 2003 with Service Pack 1
- Have Microsoft Internet Explorer 5.0 or higher installed on the system.
- For Java GUI Client, Java Runtime Environment (JRE) 1.5_06 or later minor version (for example, 1.5_07) is required.

The following table shows the disk space and RAM requirements for Data Protector Windows clients:

Client System	RAM (MB)	Disk Space (MB)
User Interface[1]	256[2]	150[3]
Disk Agent	64 (recommended 128)	10
Media Agent	64 (recommended 128)	20

Client System	RAM (MB)	Disk Space (MB)
Integration Modules	64 (recommended 128)	20

[1] The documentation (.pdf files, 55 MB) is included.

[2] Memory requirements for the GUI system vary significantly with the number of elements that need to be displayed at a time. This consideration applies to the worst case (like expanding a single directory). You do not need to consider all directories and file names on a client, unless you want to expand all directories while viewing. It has been shown that 2 MB memory are required per 1000 elements (directories or file names) to display plus a base need for about 50 MB. So the 256 MB of RAM are enough to display about the maximum number of file names.

[3] With regard to the disk space, keep in mind, the page file alone should be able to grow to about 3 times the physical memory.

The figures indicate requirements from the agent only. For example the "disk space" figure does not include space allocation for the OS, page file or other applications.

Windows XP Service Pack 2 and Windows Server 2003 Service Pack 1

Windows XP Service Pack 2 and Windows Server 2003 Service Pack 1 introduce an improved version of the Internet Connection Firewall (ICF), under a new name as Microsoft Firewall. Contrary to Service Pack 1, the firewall is turned on by default. During the installation of a new Data Protector client using the Installation Server, the installation agent is started on the remote computer. The Installation Server then connects to this agent through the Data Protector cell port (by default 5555). However, if Microsoft Firewall is running, the connection cannot be established and the installation fails. To resolve this, perform one of the following steps:

- Configure Windows Firewall to allow connection through a specific port.
- If the `omnirc` variable `OB2FWPASSTHRU` is set on the Installation Server, the installation agent automatically registers itself with Windows Firewall and the installation continues normally.

Java web reporting

Java VM 1.5_06 or later minor version (for example, 1.5_07) must be installed on the system and enabled in the Web browser. The supported browsers are Netscape Navigator 4.7.x, Netscape 7.x, Mozilla 1.7 and Microsoft Internet Explorer 6.0 or later.

You can download a Java VM plug-in for Internet Explorer and Netscape Navigator browsers at http://java.sun.com/products/plugin/.

Novell NetWare

- Any Novell system that is part of a Data Protector cell must have TCP/IP version 3.1 or later installed.
- Novell Netware 6.5 must have the Support pack 1 or later installed.

Local client installation

UNIX clients are installed locally using the installation script `omnisetup.sh`. You can install the client locally from the HP-UX DVD-ROM or Installation Server installation CD-ROM and import it to the Cell Manager using automated procedure.

For the installation procedure refer to the *HP Data Protector installation and licensing guide*.

MPE/iX, Novell NetWare, and HP OpenVMS clients can be installed locally. Remote installation is not supported.

Upgrade

The procedures for upgrading to Data Protector A.06.10 from Data Protector A.05.10, A.05.50, and A.06.00 are documented in the *HP Data Protector installation and licensing guide*. To upgrade from an even earlier version, you need to first upgrade to Data Protector A.05.10, and then upgrade to Data Protector A.06.10 following the procedures in the *HP Data Protector installation and licensing guide*.

Requirements for Data Protector services on Windows Server 2003 and Windows Server 2008

Data Protector uses four services:

OmniInet	Backup client service
CRS	Cell Manager service
RDS	Cell Manager Database service
UIProxy	User Interface proxy service

By default, OmniInet and RDS services are running under the Local System account, and CRS and UIProxy services are running under the Administrator's account.

You can change the account information for any of these services. However, the following are minimum requirements that must be met by the new accounts:

Service	Resource	Minimum resource permission required by service
RDS	*Data_Protector_home*\db40 HKLM\SOFTWARE\Hewlett-Packard\OpenView\OmniBackII	Full access Read
CRS	*Data_Protector_home* HKLM\SOFTWARE\Hewlett-Packard\OpenView\OmniBackII	Full access Full access
OmniInet	Backup and Restore Take Ownership	- -
UIProxy	- HKLM\SOFTWARE\Hewlett-Packard\OpenView\OmniBackII	- Read

Files Installed in the %systemroot%\system32 folder

The following files are placed (depending on the components selected) into `system32` folder on Windows systems:

`BrandChgUni.dll`	This is a resource library. It is used only internally; however, it also contains the path to registry settings, so it must be located in a well-known location where it can be accessed by integration libraries.
`libarm32.dll`	This is a NULL shared library for ARM instrumentation. It may be replaced by third-party monitoring software.

`ob2informix.dll`	This library is used to integrate with the Informix Server database.
`snmpOB2.dll`	This library is used to implement system SNMP traps.

7 Required patches

For Data Protector patches, please consult http://support.hp.com for the latest information. For systems running Windows, contact the Microsoft Corporation for the latest Microsoft Windows Service Pack. For patches on systems running the HP-UX operating systems please consult http://www.itrc.hp.com or http://www.software.hp.com/SUPPORT_PLUS/qpk.html for the latest information or check with the Response Center to get the current patch numbers. Install the latest patches before calling support. The Patches listed can be replaced with newer patches.

We recommend that you regularly install the Extension Software Package delivered for HP-UX. This is a collection of recommended patches, some of which are listed below. Contact HP Support for the current version of the HP-UX Extension Software Package.

HP-UX system patches required by Data Protector

HP-UX 11.11

The following HP-UX 11.11 patch bundles are required by Data Protector:

Service Pack	Bundle Name	Description
SP0312-11.11 (or later)	GOLDQPK11i	Current patch bundle for HP-UX 11.11
SP0312-11.11 (or later)	HWEnable11i	Required hardware enablement patches

The following HP-UX 11.11 individual patches are recommended to be installed on any Data Protector system:

Patch Name	Hardware Platform	Description
PHCO_27408	s700_800	LVM commands cumulative patch
PHKL_26785	s700_800	SCSI Tape (stape) cumulative
use latest	s700_800	MC/Service Guard patches for the version you use
PHSS_33033	s700_800	ld(1) and linker tools cumulative patch

HP-UX 11.23

The following HP-UX 11.23 patch bundles are required by Data Protector:

Service Pack	Bundle Name	Description
Use latest	QPK1123	Current patch bundle for HP-UX 11.23

The following HP-UX 11.23 individual patches are recommended to be installed on any Data Protector system:

Patch Name	Hardware Platform	Description
PHKL_32272 [1]	s700_800	Changes to fix intermittent failures in getacl/setacl.

[1] This patch is required to support the access control list (ACL) functionality.

HP-UX 11.31

The following HP-UX 11.31 patch bundles are required by Data Protector:

Service Pack	Bundle Name	Description
Use latest	TBD	Current patch bundle for HP-UX 11.31

The following HP-UX 11.31 individual patches are recommended to be installed on any Data Protector system:

Patch Name	Hardware Platform	Description
TBD	TBD	TBD

System patches for the Data Protector GUI on HP-UX

The following HP-UX individual patches are highly recommended for Data Protector GUI clients: TBD

System patches required by MPE/iX system

Operating System	Description
MPE/iX 6.5 system	PowerPatch I, TurboSTORE/iX's patch MPELXG2A (C.65.13)
MPE/iX 7.0 system	PowerPatch I

Solaris system patches required by Data Protector

Operating System Patch: Use the latest kernel patch from Sun Microsystems. Sun provides patch information at: http://sunsolve.sun.com.

In order to start the Data Protector GUI the following patches are required:

OS Version	Patch	Description
Solaris 8	108434-13	32-bit Shared library patch for C++ for SunOS 8
Solaris 8	108773-18	IIIM and X Input & Output Method patch for SunOS 8
Solaris 8	111721-04	Math Library (libm) patch for SunOS 8

Novell NetWare patches required by Data Protector

Use the latest recommended patches on Novell NetWare clients:

- the latest filesystem patch (NSS)
- TSAx.NLM patches
- the latest Support Pack

See patch information at Novell NetWare Web page: http://support.novell.com.

SUSE Linux Enterprise Server system patches required by Data Protector

Use the latest recommended system patches provided by SUSE.

Red Hat Enterprise Linux system patches required by Data Protector

Use the latest recommended system patches provided by Red Hat.

Tru64 system patches required by Data Protector

To support the access control list (ACL) functionality, the following Tru64 patch is required:

- QAR 98885

8 Obsolete platforms and integrations in Data Protector A.06.10

The relevant version information regarding supported platforms is in the support matrices (see Support matrices, page 147).The information in this chapter is provided for your convenience but may be not exhaustive.

Obsolete platforms

The following platforms are no longer supported in the Data Protector A.06.10:

- HP-UX 11.0

Obsolete clients

The following clients are no longer supported in the Data Protector A.06.10:

- Solaris 7.0
- Tru64 5.0A, 5.1, 5.1A
- SCO OpenServer 5.0.6, 5.0.7

Obsolete integrations

The following integrations are no longer supported in the Data Protector A.06.10

- Lotus Domino/Notes R5
- VMware ESX Server 2.x (scripting solution)

Obsolete original Data Protector GUI

The original Data Protector GUI is no longer supported on UNIX and Solaris systems. It remains supported on Windows systems.

9 Data Protector documentation

Documentation set

Other documents and online Help provide related information.

Guides

Data Protector guides are available in printed format and in PDF format. Install the PDF files during the Data Protector setup procedure by selecting the `English documentation and Help` component on Windows or the `OB2-DOCS` component on UNIX. Once installed, the guides reside in the *`Data_Protector_home`*`\docs` directory on Windows and in the `/opt/omni/doc/C/` directory on UNIX.

You can find these documents from the Manuals page of the HP Business Support Center website:

http://www.hp.com/support/manuals

In the Storage section, click **Storage Software** and then select your product.

- *HP Data Protector concepts guide*

  This guide describes Data Protector concepts and provides background information on how Data Protector works. It is intended to be used with the task-oriented online Help.

- *HP Data Protector installation and licensing guide*

  This guide describes how to install the Data Protector software, taking into account the operating system and architecture of your environment. This guide also gives details on how to upgrade Data Protector, as well as how to obtain the proper licenses for your environment.

- *HP Data Protector troubleshooting guide*

This guide describes how to troubleshoot problems you may encounter when using Data Protector.

- *HP Data Protector disaster recovery guide*

  This guide describes how to plan, prepare for, test and perform a disaster recovery.

- *HP Data Protector integration guides*

  These guides describe how to configure and use Data Protector to back up and restore various databases and applications. They are intended for backup administrators or operators. There are four guides:

  - *HP Data Protector integration guide for Microsoft applications: SQL Server, SharePoint Portal Server, Exchange Server, and Volume Shadow Copy Service*

    This guide describes the integrations of Data Protector with the following Microsoft applications: Microsoft Exchange Server, Microsoft SQL Server, and Volume Shadow Copy Service.

  - *HP Data Protector integration guide for Oracle and SAP*

    This guide describes the integrations of Data Protector with Oracle, SAP R3, and SAP DB.

  - *HP Data Protector integration guide for IBM applications: Informix, DB2, and Lotus Notes/Domino*

    This guide describes the integrations of Data Protector with the following IBM applications: Informix Server, IBM DB2, and Lotus Notes/Domino Server.

  - *HP Data Protector integration guide for Sybase, Network Node Manager, Network Data Management Protocol, and VMware*

    This guide describes the integrations of Data Protector with Sybase, Network Node Manager, Network Data Management Protocol, and VMware.

- *HP Data Protector integration guide for HP Service Information Portal*

  This guide describes how to install, configure, and use the integration of Data Protector with HP Service Information Portal. It is intended for backup administrators. It discusses how to use the OpenView applications for Data Protector service management.

- *HP Data Protector integration guide for HP Reporter*

  This manual describes how to install, configure, and use the integration of Data Protector with HP Reporter software. It is intended for backup administrators. It discusses how to use the applications for Data Protector service management.

- *HP Data Protector integration guide for HP Operations Manager for UNIX*

This guide describes how to monitor and manage the health and performance of the Data Protector environment with HP Operations Manager software software and HP Service Navigator on UNIX.

- *HP Data Protector integration guide for HP Operations Manager for Windows*

  This guide describes how to monitor and manage the health and performance of the Data Protector environment with HP Operations Manager software software and HP Service Navigator on Windows.

  There are two versions of the guide:

  - for OVO 7.1x, 7.2x
  - for OVO 7.5

- *HP Data Protector software integration guide for HP Performance Manager software and HP Performance Agent software*

  This guide provides information about how to monitor and manage the health and performance of the Data Protector environment with HP Performance Manager (PM) software and HP Performance Agent (PA) software on Windows, HP-UX, Solaris and Linux.

- *HP Data Protector zero downtime backup concepts guide*

  This guide describes Data Protector zero downtime backup and instant recovery concepts and provides background information on how Data Protector works in a zero downtime backup environment. It is intended to be used with the task-oriented *HP Data Protector zero downtime backup administrator's guide* and the *HP Data Protector zero downtime backup integration guide*.

- *HP Data Protector zero downtime backup administrator's guide*

  This guide describes how to configure and use the integration of Data Protector with HP StorageWorks Virtual Array, HP StorageWorks Enterprise Virtual Array, EMC Symmetrix Remote Data Facility and TimeFinder, and HP StorageWorks Disk Array XP. It is intended for backup administrators or operators. It covers the zero downtime backup, instant recovery, and the restore of filesystems and disk images.

- *HP Data Protector zero downtime backup integration guide*

  This guide describes how to configure and use Data Protector to perform zero downtime backup, instant recovery, and standard restore of Oracle, SAP R/3, Microsoft Exchange Server, and Microsoft SQL Server databases. The guide also describes how to configure and use Data Protector to perform backup and restore using the Microsoft Volume Shadow Copy Service.

- *HP Data Protector MPE/iX system user guide*

  This guide describes how to configure MPE/iX clients and how to back up and restore MPE/iX data.

- *HP Data Protector Media Operations user guide*

  This guide provides tracking and management of offline storage media. It is intended for network administrators responsible for maintaining and backing up systems. It describes the tasks of installing and configuring the application, performing daily media operations and producing reports.

- *HP Data Protector product announcements, software notes, and references*

  This guide gives a description of new features of HP Data Protector A.06.10. It also provides information on supported configurations (devices, platforms and online database integrations, SAN, and ZDB), required patches, and limitations, as well as known problems and workarounds. An updated version of the supported configurations is available at http://www.hp.com/support/manuals

  There are also four other *Product announcements, software notes and references*, which serve a similar purpose for the following:

  - HP Operations Manager software software UNIX integration
  - HP Operations Manager software software Windows integration
  - HP Service Information Portal and HP Reporter software
  - HP Performance Manager software and HP Performance Agent integration
  - HP Media Operations

Online help

Data Protector provides context-sensitive (F1) Help and Help Topics for Windows and UNIX platforms.

You can access the online help from the top-level directory on the installation DVD without installing Data Protector:

- ***Windows***: Unzip `DP_help.zip` and open `DP_help.chm`.
- ***UNIX***: Unpack the zipped tar file `DP_help.tar.gz`, and access the online help system through `DP_help.htm`.

Documentation map

Abbreviations

Abbreviations in the documentation map that follows are explained below. The guide titles are all preceded by the words “HP Data Protector”.

Abbreviation	Guide
CLI	Command line interface reference
Concepts	Concepts guide
DR	Disaster recovery guide
GS	Getting started guide
Help	Online Help
IG-IBM	Integration guide—IBM applications
IG-MS	Integration guide—Microsoft applications
IG-O/S	Integration guide—Oracle, SAP R/3, and SAP DB/MaxDB
IG-OMU	Integration guide—HP Operations Manager software software, UNIX
IG-OMW	Integration guide—HP Operations Manager software software, Windows
IG-PM/PA	Integration guide—Performance Manager and Performance Agent software
IG-Report	Integration guide—HP Reporter software
IG-SIP	Integration guide—HP Service Information Portal
IG-Var	Integration guide—Sybase, Network Node Manager, NDMP and VMware
Install	Installation and licensing guide
MO GS	Media Operations getting started guide
MO RN	Media Operations product announcements, software notes, and references
MO UG	Media Operations user guide
MPE/iX	MPE/iX system user guide
PA	Product announcements, software notes, and references
Trouble	Troubleshooting guide

Abbreviation	Guide
ZDB Admin	ZDB administrator's guide
ZDB Concpt	ZDB concepts guide
ZDB IG	ZDB integration guide

Map

The following table shows where to find information of different kinds. Shaded squares are a good place to look first.

Integrations

Look in these guides for details of the following integrations:

Integration	Guide
HP Operations Manager software software	IG-OMU, IG-OMW
HP Performance Manager software	IG-PM/PA
HP Performance Agent software	IG-PM/PA
HP Reporter Light	IG-OMW
HP Reporter software	IG-R
HP Service Information Portal	IG-SIP
HP StorageWorks Disk Array XP	all ZDB
HP StorageWorks Enterprise Virtual Array (EVA)	all ZDB
HP StorageWorks Virtual Array (VA)	all ZDB
IBM DB2 UDB	IG-IBM
Informix	IG-IBM
Lotus Notes/Domino	IG-IBM
Media Operations	MO User
MPE/iX System	MPE/iX
Microsoft Exchange Server	IG-MS, ZDB IG
Microsoft Exchange Single Mailbox	IG-MS
Microsoft SQL Server	IG-MS, ZDB IG
Microsoft Volume Shadow Copy Service (VSS)	IG-MS, ZDB IG
NDMP Server	IG-Var
Network Node Manager (NNM)	IG-Var

Integration	Guide
Oracle	IG-O/S
Oracle ZDB	ZDB IG
SAP DB	IG-O/S
SAP R/3	IG-O/S, ZDB IG
Sybase	IG-Var
Symmetrix (EMC)	all ZDB
VMware	IG-Var

Localization

NOTE:

Only a subset of printed manuals is localized for Beta %1.

The following manuals are localized into Japanese:

- *HP Data Protector installation and licensing guide*
- *HP Data Protector concepts guide*
- *HP Data Protector product announcements, software notes, and references*
- *HP Data Protector getting started guide*

The following manuals are localized into French:

- *HP Data Protector concepts guide*
- *HP Data Protector zero downtime backup concepts guide*
- *HP Data Protector getting started guide*

A List of enhancements and issues fixed in Data Protector A.06.10

The list of enhancements and fixed defects can be found on any Data Protector DVD in the `\DOCS` directory, in the file `DP61_Enhancements_Resolved_Defects.pdf`.

B Filename conversion performance

This appendix shows the impact of file name conversion in the IDB on backup performance.

HP Data Protector installation and licensing guide provides more information on conversion of file names in the IDB. Among other aspects, it covers the following:

- Which cell configurations require file name conversion in the IDB.
- How to skip the conversion and what are the consequences.
- Which other conversion options are available and what is their purpose.

Filename conversion performance on a UNIX Cell Manager

The following table presents the results of the backup performance measurements during conversion and non-conversion backups. The figures help you estimate the time needed for the first full backup of Windows clients after the upgrade to Data Protector A.06.10.

Filesystem conditions on the windows client			Data Protector A.05.10		Data Protector A.06.10			
Total no. Of files (in 1000)	No. Of files / dir	% of non - ASCII file names	1st backup duration	2nd Backup Duration	Conversion backup			2nd backup duration
					Duration	Time per 1000 files	Ratio to the 1st Data Protector A.05.10 backup (%)	
150	10	100	09:00.7	06:58.3	08:46.0	3.51	77	05:04.6
		50	09:50.6	07:07.6	06:42.6	2.68	68	05:26.7
		10	09:41.9	06:58.8	05:25.9	2.17	56	05:16.6
		0	10:10.8	07:06.3	05:22.8	2.15	53	05:23.6
150	1000	100	06:07.6	03:45.8	51:08.5	20.46	835	02:39.3
		50	05:01.4	03:43.7	25:11.4	10.08	501	02:31.8
		10	05:01.5	03:47.7	07:39.4	3.06	152	02:39.3
		0	05:24.9	03:49.6	02:35.1	1.03	48	02:40.1
2000	100.000	50	1:46:38.0	1:35:10.0	16:30:10.0	29.01	929	1:09:19.0
		10	2:10:02.9	1:40:58.9	14:19:27.4	25.18	661	1:10:23.4
		0	2:18:29.1	1:47:17.1	2:03:27.9	3.62	89	1:40:43.9

The tests were performed on systems with the following hardware and operating system configuration:

	Hardware model	CPU	RAM	Operating system
Cell Manager	HP 9000/800/A5005X	PA 8600 CPU Module 3.1, 550 MHz	1024 MB	HP-UX B.11.11 U
Client	PC	Intel Pentium III, 1266 MHz	1024 MB	Windows 2000 SP4 (Japanese)

The client and Cell Manager were the only systems connected in an isolated 100 Mb network.

The time needed to perform the conversion, which is done during the first full client backup (**conversion backup**) on a client per client basis, depends on several factors. Typical directory structures on clients (less than 200 directories), should not significantly extend the conversion backup time. However, the conversion backup of large directories and numerous file names containing non-ASCII characters can take considerably more time than a subsequent full backup of the same client.

The impact on the duration of the conversion backup depends on the following factors:

- The percentage of file names in the IDB originating from Windows clients. Bigger percentage means longer conversion backup. File names from non-Windows clients do not need a conversion and thus do not prolong the conversion backup time.
- The number of files in directories:
  - Medium size directories (containing more than 200 files): the impact depends on the number of files in a directory and the percentage of file names that need to be converted. The conversion backup will take longer than a normal full backup with Data Protector A.05.10 if there are many files in a directory with more than 10% of the file names containing non-ASCII characters.
  - Large directories (containing more than 10.000 files): the conversion backup takes significantly longer than a normal full backup with Data Protector A.05.10 if there are large directories on the system containing non-ASCII characters.

NOTE:

After the conversion backup all subsequent backups are faster than comparable backups performed with Data Protector A.05.10.

File name conversion performance on a Windows Cell Manager

Raw estimates for the duration of IDB conversion of file names for your specific configuration is displayed at the end of the upgrade process on a Windows Cell Manager. The impact on duration of the IDB conversion mainly depends on the number of file names in the IDB originating from non-Windows clients.

C Support matrices

The support matrices can also be found on any Data Protector DVD in the \DOCS directory. The following support matrices are available in the Adobe Acrobat format:

support_matrices/Platform_Integrtn_SptMtx.pdf

support_matrices/Device_Support_Matrix.pdf

support_matrices/HPXP_SupportMatrix.pdf

support_matrices/HPVA_SupportMatrix.pdf

support_matrices/HPEVA_SMIS_SupportMatrix.pdf

support_matrices/EMC_SupportMatrix.pdf

support_matrices/HPDR_SupportMatrix.pdf

support_matrices/Device_Support_Index.pdf

support_matrices/HPSAN_Compat_Matrix.pdf

support_matrices/VSS_SupportMatrix.pdf

support_matrices/NAS_support_matrix.pdf

support_matrices/Direct_Backup_Support_Matrix.pdf

For the latest list of support matrices on the Web, please refer to:

http://www.hp.com/support/manuals