

HP Data Protector 8.00

Product Announcements, Software Notes, and References

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Publication history

Table 1 Edition history

Version	Date	Description
1.0	June 2013	Initial revision
1.0.1	June 2013	Updated revision published on the Web
1.0.2	July 2013	Updated revision published on the Web
1.0.3	July 2013	Updated revision published on the Web
1.0.4	August 2013	Updated revision published on the Web

About this guide

This guide provides information about:

- Product announcements
- Limitations and known issues
- Installation requirements (such as hardware, operating system 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: "Document conventions" (page 9)	Cross-reference links and e-mail addresses
Blue, underlined text: http://www.hp.com	Website addresses
Bold text	<ul style="list-style-type: none">• Keys that are pressed• Text typed into a GUI element, such as a box• GUI elements that are clicked or selected, such as menu and list items, buttons, tabs, and check boxes
<i>Italic</i> text	Text emphasis
Monospace text	<ul style="list-style-type: none">• File and directory names• System output• Code• Commands, their arguments, and argument values
<i>Monospace, italic</i> text	<ul style="list-style-type: none">• Code variables• Command variables
Monospace, bold 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.

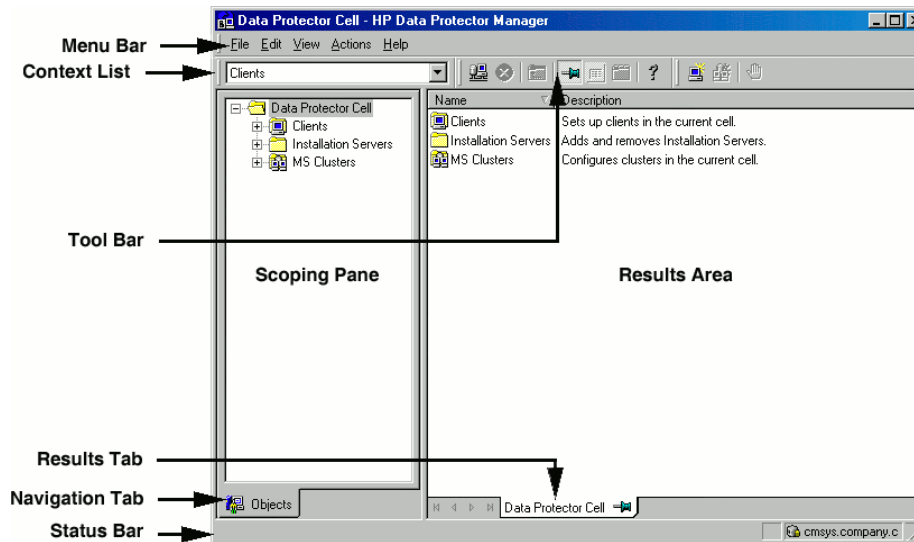
NOTE: Provides additional information.

 **TIP:** Provides helpful hints and shortcuts.

Data Protector graphical user interface

Data Protector provides a graphical user interface for Microsoft Windows operating systems. For information about it, see the *HP Data Protector Help*.

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://support.openview.hp.com/selfsolve/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 with the subject line `Feedback on Data Protector documentation` to AutonomyTPFeedback@hp.com. All submissions become the property of HP.

1 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 solutions. Data Protector delivers innovation and performance at a much lower cost than competitive solutions, while offering flexibility, scalability, and performance. Data Protector is an important member of the fast-growing HP 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 latest version: Data Protector 8.00.

Upgrades

Upgrade information is available in the *HP Data Protector Installation and Licensing Guide*. Procedures for upgrading from Data Protector versions A.06.11, 6.20, and 7.00 to Data Protector 8.00 are described.

-
- ❗ **IMPORTANT:** Before deciding to upgrade, consider the following:
- If you have been using HP Data Protector Media Operations, note that this base product's complement is not available with Data Protector 8.00. Using earlier Data Protector Media Operations versions with Data Protector 8.00 is not supported as well.
 - If you have been using the HP Data Protector integration with HP Operations Manager, note that this integration is not available with Data Protector 8.00. Using earlier versions of the Data Protector integration with HP Operations Manager in combination with Data Protector 8.00 is not supported as well.
 - If you have been using a localized version of HP Data Protector and want to continue using localized product interfaces and documentation, do not upgrade to Data Protector 8.00 yet. The latter is currently only available in English. Localized versions will be available later.
-

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 installation DVD-ROM in the `\DOCS\support_matrices` directory. The following support matrices are available in Portable Document Format (PDF):

- *HP Data Protector 8.00 3PAR Support Matrix*
- *HP Data Protector 8.00 Device Support Matrix*
- *HP Data Protector 8.00 Disaster Recovery Support Matrix*
- *HP Data Protector 8.00 Network Attached Storage (NAS) Support Matrix*
- *HP Data Protector 8.00 Platform and Integration Support Matrix*
- *HP Data Protector 8.00 Virtualization Support Matrix*
- *HP Data Protector 8.00 VSS Integration Support Matrix*
- *HP Data Protector 8.00 Zero Downtime Backup and Instant Recovery Support Matrix for HP P6000 EVA Disk Array Family Using SMI-S Agent*
- *HP Data Protector 8.00 Zero Downtime Backup and Instant Recovery Support Matrix for HP P9000 XP Disk Array Family*
- *HP Data Protector 8.00 Zero Downtime (Split-Mirror) Backup Support Matrix for EMC Arrays*

For the latest version of support matrices on the Web, see <http://support.openview.hp.com/selfsolve/manuals>.

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

Commands of the Data Protector command-line interface (CLI) are documented in the *HP Data Protector Command Line Interface Reference*.

Licensing

Data Protector 8.00 leverages the product numbers from earlier Data Protector releases. All existing Data Protector licenses can be used with Data Protector 8.00 and retain their original functionality. However, depending on new functionality, you may have to install new product licenses.

Starting with Data Protector 8.00 all new generated passwords are based on a new license technology with stronger encryption resulting in longer password keys. The new licenses cannot be used with previous versions of Data Protector. The existing license passwords are not migrated to the new format.

For more information, see the *HP Data Protector Installation and Licensing Guide*, chapter *Data Protector licensing*.

Support for earlier agent versions

Wherever possible, Data Protector components on all clients in a Data Protector cell should be upgraded to version 8.00 during the regular upgrade process. This ensures that customers can benefit from the full feature set of Data Protector 8.00 on all systems in a cell.

Nevertheless, Disk Agent and Media Agent components of an earlier Data Protector version (A.06.11, 6.20, or 7.00) are supported in a 8.00 cell with the following constraints:

- The earlier product version is still supported by HP as an independent product. To check the announced end-of-support dates for HP products, see the webpage <http://support.openview.hp.com/encore/products.jsp>.
- Support is limited to the feature set of the earlier Data Protector version.
- If you are performing operations involving clients on different systems, all agents of the same type (for example Media Agents) must be of the same version.
- Earlier Media Agent component versions are not supported in combination with NDMP servers.
- If one Data Protector component on a client is upgraded to 8.00, all other components have to be upgraded to 8.00 as well.

If you encounter problems establishing a connection with agents of an earlier product version, consider upgrading to 8.00 as the first resolution step.

Updated information

For the latest information about the product, see the Data Protector website <http://www.hp.com/go/dataprotector>.



IMPORTANT:

For the latest version of the Data Protector documentation set, including corrections and last-minute updates due to known issues, see <http://support.openview.hp.com/selfsolve/manuals>.

2 Product features and benefits

Below is a summary of the benefits provided by Data Protector 8.00:

- New Data Protector Internal Database
- Data Protector solutions for virtualization environments:
 - Enhanced Data Protector Virtual Environment integration
 - Enhanced Data Protector Granular Recovery Extension for VMware vSphere
- Data Protector solutions for Microsoft applications:
 - Integration with Microsoft Exchange Server 2013
 - Granular recovery of Microsoft Exchange Server 2013
- Data Protector Granular Recovery Extensions:
 - Enhanced Data Protector Granular Recovery Extension for VMware vSphere
 - Granular recovery of Microsoft Exchange Server 2013
- Enhanced disaster recovery:
 - Support for Windows 8 and Windows Server 2012
 - Improved support for recovery to both dissimilar hardware and virtual machines
 - Remote creation of EADR images and OBDR backup images
 - Additional enhancements
- Enhanced Backup to Disk Devices and data deduplication:
 - Support for data deduplication on HP-UX systems
 - Additional features for Backup to Disk devices
- Enhanced replica management and extended disk array support:
 - Support for HP 3PAR StoreServ Storage

The rest of the chapter gives a more detailed description of these Data Protector 8.00 features and major changes in comparison to the previous Data Protector version.

New Data Protector Internal Database

Data Protector 8.00 introduces a new embedded database (Internal Database, IDB) that overcomes scalability and concurrency limits of the previously used database engine. It addresses increased scalability needs and higher performance requirements in individual Data Protector cells as well as Data Protector Manager-of-Managers (MoM) environments, resulting in:

- Different Cell Manager platform coverage
A documented migration procedure helps you migrate your Cell Managers from no longer supported platforms. For details, see the *HP Data Protector Installation and Licensing Guide*.
- Increased Cell Manager hardware and software requirements
Check the details in [“Installation requirements” \(page 81\)](#).

- Minor changes in the Data Protector installation and upgrade processes
For installation and upgrade instructions, see the *HP Data Protector Installation and Licensing Guide* and the *HP Data Protector Help*.
- IDB architectural changes
For more information on the IDB architecture, see the *HP Data Protector Concepts Guide* and the *HP Data Protector Help*. For details on the new IDB directory layout, see the *HP Data Protector Command Line Interface Reference*.
- Adjustments in IDB backup and restore processes
For IDB backup, restore, and recovery procedures, see the *HP Data Protector Help* and the *HP Data Protector Disaster Recovery Guide*. For description of the Data Protector commands that can be used for these purposes, see the *HP Data Protector Command Line Interface Reference*.
- One Button Disaster Recovery (OBDR) method being no longer available for Cell Managers
See the *HP Data Protector Disaster Recovery Guide* and the *HP Data Protector Help*.

For general scalability and concurrency limitations, see [“Limitations and recommendations” \(page 19\)](#).

Data Protector solutions for virtualization environments

Enhanced Data Protector Virtual Environment integration

Support for VMware vSphere 5.1

Data Protector 8.00 introduces support for VMware vSphere 5.1 (ESXi and vCenter). Besides supporting the already existing features, it offers changes in the Data Protector GUI and CLI, as well as omnirc option modifications which enable you to improve browsing and the backup and restore performance with your VMware vSphere objects.

For more information, see the *HP Data Protector Integration Guide for Virtualization Environments*.

Support for Hyper-V virtual machines on Windows SMB 3.0 file shares

Data Protector 8.00 introduces support for backing up and restoring Hyper-V virtual machines (VMs) that reside on Windows SMB 3.0 file shares on Windows Server 2012 systems. To enable support for SMB file shares, you need to configure the File Server role on the SMB server and properly set up the SMB file share permissions.

For more information, see the *HP Data Protector Integration Guide for Virtualization Environments*.

Enhanced Data Protector Granular Recovery Extension for VMware vSphere

See [“Enhanced Data Protector Granular Recovery Extension for VMware vSphere” \(page 16\)](#).

Data Protector solutions for Microsoft applications

Integration with Microsoft Exchange Server 2013

Data Protector 8.00 adds basic support for Microsoft Exchange Server 2013 using the enhanced Data Protector Microsoft Exchange Server 2010 integration. All backup and restore functionality available for Microsoft Exchange Server 2010 is also available for Microsoft Exchange Server 2013.

For more information, see the *HP Data Protector Integration Guide for Microsoft Applications: SQL Server, SharePoint Server, and Exchange Server*.

Granular recovery of Microsoft Exchange Server 2013

See “Granular recovery of Microsoft Exchange Server 2013” (page 16).

Data Protector Granular Recovery Extensions

Enhanced Data Protector Granular Recovery Extension for VMware vSphere

Data Protector 8.00 introduces the enhanced Data Protector Granular Recovery Extension for VMware vSphere by offering granular recovery of files residing on Linux virtual machines in addition to Windows virtual machines.

This enhancement enables you to recover files from the restored:

- Linux virtual machine disks—on Linux mount proxy systems
- Windows virtual machine disks—on Linux mount proxy systems

For details, see the *HP Data Protector Granular Recovery Extension User Guide for VMware vSphere*.

For a list of supported file systems, operating systems on mount proxy systems, and partition types, see the latest support matrices at <http://support.openview.hp.com/selfsolve/manuals>.

Granular recovery of Microsoft Exchange Server 2013

Data Protector 8.00 adds basic support for Microsoft Exchange Server 2013 with the Data Protector Granular Recovery Extension for Microsoft Exchange Server. All recovery functionality for Microsoft Exchange Server 2010 is now also available for Microsoft Exchange Server 2013.

For more information, see the *HP Data Protector Granular Recovery Extension User Guide for Microsoft Exchange Server*.

Enhanced disaster recovery

Data Protector 8.00 adds support for new Windows operating systems and provides additional enhancements that enable you to more efficiently prepare for and perform disaster recovery in a complex environment.

For details, see the *HP Data Protector Disaster Recovery Guide*.

Support for Windows 8 and Windows Server 2012 systems

You can perform disaster recovery of a Data Protector Windows 8 or Windows Server 2012 client using the Enhanced Automated Disaster Recovery or One Button Disaster Recovery method, as well as perform recovery to dissimilar hardware.

Improved support for recovery to both dissimilar hardware and virtual machines

Improved network configuration during the DR OS setup simplifies recovery to dissimilar hardware. Data Protector documentation lists additional prerequisites that you need to fulfill for recovery from physical systems to virtual machines.

Remote creation of EADR images and OBDR backup images

Data Protector 8.00 introduces an option to start EADR image creation and OBDR backup sessions from a remote client with the Data Protector `User Interface` component installed.

Additional enhancements

Data Protector 8.00 also provides the following enhancements:

- Password protection of your DR OS images to protect them from unauthorized use
- Support for multipath configurations

- Support for systems with iSCSI disks or locally attached iSCSI backup devices
- Support for network teaming configurations

Enhanced Backup to Disk devices and data deduplication support

Support for data deduplication on HP-UX systems

Data Protector 8.00 introduces support for data deduplication on Media Agent clients installed on HP-UX 11.23 (Itanium) and HP-UX 11.32 (Itanium) systems. Deduplication is available on General Media Agent and NDMP Media Agent Data Protector clients.

Additional features for Backup to Disk devices

Data Protector 8.00 introduces additional options to manage Backup to Disk devices in your network:

- Backup size and store size soft quota
By setting the appropriate soft quota, Data Protector displays a warning if the size of the backed up data exceeds the backup size quota or if the space occupied by deduplicated data in the store exceeds the store size quota.
- Network bandwidth throttling
By setting a network bandwidth limit for B2D gateways, you can ensure sufficient network bandwidth is available for other services.

For details, see the *HP Data Protector Deduplication* technical white paper and the *HP Data Protector Help*

Enhanced replica management and extended disk array support

Support for HP 3PAR StoreServ Storage

With its native disk array integration agent for HP-UX systems on the Itanium platform, Data Protector 8.00 extends the existing support for HP P10000 Storage Systems to the entire HP 3PAR StoreServ Storage disk array family and to HP-UX operating system at the same time. With this agent, the zero downtime backup type available is ZDB to tape, meaning you can only restore the backed up data using conventional restore. For more information, see the *HP Data Protector Zero Downtime Backup Administrator's Guide* and the *HP Data Protector Help*.

For details on the supported operating systems, storage system models, and versions of the storage systems' administrative software, see the latest support matrices at <http://support.openview.hp.com/selfsolve/manuals>.

Additional changes and improvements

Enhanced NDMP integration

Data Protector 8.00 introduces media copying and automated media copying support for the NDMP Server integration.

For details, see the *HP Data Protector Integration Guide for Sybase and Network Data Management Protocol Server* and the latest support matrices at <http://support.openview.hp.com/selfsolve/manuals>. For related limitations, see "NDMP limitations" (page 30).

License management

Improved licensing technology carries a stronger encryption algorithm and allows you to bind new licenses to IPv6 addresses. In case Data Protector 8.00 retains the license keys from an earlier product version, the upgraded Cell Manager is unable to run in pure IPv6 environment. Alternatively,

you can take advantage of the Data Protector 8.00 licensing technology by converting the license keys from earlier product versions to the Data Protector 8.00 keys. In order to convert the keys, follow the procedures provided by the password delivery center.

Maintenance improvements

Data Protector 8.00 introduces features that simplify maintenance tasks:

- Global options setting in the Data Protector graphical user interface
For more information, see the *HP Data Protector Troubleshooting Guide*.

- Maintenance mode

This mode prepares your environment for maintenance tasks on the Cell Manager, such as Data Protector upgrades, installation of patches and critical fixes, hardware or operating system upgrades, and other operations that require you to prevent changes of the Internal Database contents.

For more information, see the *HP Data Protector Installation and Licensing Guide*.

3 Limitations and recommendations

Limitations

Scalability limitations

Backup infrastructure scalability

Backup infrastructure metric	Limit
Clients in a Data Protector cell	5000
Cell Managers (cells) in a Data Protector Manager-of-Managers (MoM) cell	50
Total number of clients in a MoM environment	50 000 ¹

¹ In MoM environments, the total number of clients does not scale linearly.

Internal Database scalability

Specific limits, which are marked as such in the following tables, can be reconfigured by adjusting the Data Protector global options. For details, see the *HP Data Protector Troubleshooting Guide* and the *HP Data Protector Help*.

Basic Internal Database capacity	Limit
Data Protector sessions stored in the Internal Database (IDB)	100 million (100 000 000)
Filenames with metadata referenced in the IDB	1 trillion (10 ¹²)
Backup objects referenced in the IDB	1 million (1 000 000)
Backup object versions referenced in the IDB	50 million (50 000 000)

Detail Catalog Binary Files capacity	Maximum configurable limit (Predefined default limit)
Detail Catalog (DC) directories	100 (50)
Size per DC directory	2047 TB ^{1, 2} (200 GB)
Files per DC directory	500 000 (100 000)
DC binary file size	n/a ³
DC directory low space (minimum difference to the effective limit on the directory size)	n/a ⁴ (2 GB)

¹ The underlying file system limitations or settings may prevail over this limit.

² In the Data Protector GUI, you are only allowed to set amounts up to 10 240 GB (10 TB). You can use the Data Protector `omnidbutil` command for setting bigger amounts.

³ The effective limit depends on the underlying file system limitations or settings.

⁴ The effective limit for a particular DC directory depends on the configured Data Protector limit for its maximum size.

Media Management Database capacity	Limit
Backup media in the Media Management Database (MMDB)	50 million (50 000 000)
Total number of backup media in all MMDBs (or in the CMMDB ¹) in a MoM environment	2.5 billion (2 500 000 000)
Backup media in a media pool	200 000

¹ Centralized Media Management Database.

Concurrency limitations

Backup session concurrency metric	Maximum configurable limit (Predefined default limit)
Concurrent ¹ backup sessions	1000 (100)
Total number of concurrent backup sessions in a MoM environment	50 000 ²
Backup sessions in a day	99 999 ²

¹ In this context, “concurrent” means “running concurrently in a Data Protector cell”.

² This limit cannot be changed.

Backup device concurrency metric	Limit
Disk Agent concurrency (device concurrency)	32 ¹
Backup devices (drives) used in a backup, object copy, object consolidation, or restore session	100 ²
Concurrent ³ physical drives (DLT7000 and lower performing models)	1000
Concurrent physical drives (DLT8000, SDLT, LTO)	500
Concurrent virtual drives (LTO—where drive concurrency is set to 1)	1000

¹ This is the maximum configurable limit. The effective limit for a particular device depends on the configured concurrency for that device in the device configuration or session specification.

² This is the maximum configurable limit.

³ In this context, “concurrent” means “used concurrently in a Data Protector cell”.

Intrasection concurrency metric	Limit
Backup objects processed concurrently in a session	3200 ¹
Backup media imported at the same time	100

¹ This is the maximum configurable limit. It depends on the effective limits for the Disk Agent concurrency and the number of backup devices that can be used in a session.

Prerequisites for increasing the limit on concurrent backup sessions

If you increase the value of the `MaxBSessions` global option to a certain amount (for example, near 1000), you may have to modify specific system parameters on the Cell Manager that limit the number of concurrent sessions in general. After such modifications, restart the local Data Protector services with the Data Protector `omnisv` command. The modifications are as follows, and depend on the Cell Manager's operating system.

Windows systems:

The default non-interactive desktop heap size is sufficient for approximately 100 parallel sessions. Therefore, you need to increase the size of the non-interactive desktop heap.

Update the Windows value in the Windows Registry key `HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\SessionManager\SubSystems` by changing the third numerical value in the parameter `SharedSection=1024,20480,768` from 768 to 10240.

For example:

```
Windows="%SystemRoot%\system32\csrss.exe ObjectDirectory=\Windows
SharedSection=1024,20480,10240 Windows=On SubSystemType=Windows
ServerDll=basesrv,1 ServerDll=winsrv:UserServerDllInitialization,3
ServerDll=winsrv:ConServerDllInitialization,2 ProfileControl=Off
MaxRequestThreads=16"
```

HP-UX systems:

You need to adjust the operating system kernel parameters `nproc` and `nkthread`, and possibly other dependent parameters as well. You can perform the adjustments using the `kmtune` command or the System Administration Manager (SAM) application. For instructions, see the HP-UX operating system documentation.

Linux systems:

You need to add the following line into the preconfigured service `omni` parameter group in the file `/etc/xinetd.d/omni`:

```
cps = 1100 10
```

Enhanced incremental backup

- Each new enhanced incremental database can support a maximum of 40 billion files per mount point and a maximum of 40 million files per directory.
- The maximum memory consumption is determined by the largest number of files within one single directory. The approximate maximum memory consumption is 130 MB per 1 million files within one directory.
- Data Protector supports enhanced incremental backup of the following number of files per directory:

Windows systems (32-bit):

10 million files

HP-UX systems:

5 million files

Linux systems (32-bit):

5 million files

Size of file depots used for file library

HP recommends that you use the default file depot size (5 GB). Increasing the size may cause certain performance degradation. The maximum supported file depot size is 2 TB.

Installation limitations

- Data Protector cannot be installed if the installation path:
 - Contains non-ASCII characters
 - Contains the characters "@" or "#"
 - Contains a directory that ends with the character "!"
 - Is longer than 80 characters

If you are upgrading from a path that has any of the above characteristics, you must migrate the installation to a different directory. See the troubleshooting chapter of the *HP Data Protector Installation and Licensing Guide*.

Upgrade limitations

- A backup of the Internal Database, created with previous versions of Data Protector, cannot be restored with Data Protector 8.00. After upgrading the Cell Manager, backup the Internal Database before you continue using Data Protector.
- If you are upgrading from Data Protector A.06.11 on Windows, HP-UX, and Linux systems, the enhanced incremental backup database cannot be migrated to the new version. The old enhanced incremental backup repository is deleted from the `Data_Protector_home\enhincrdb\mount_point` directory. During the first full backup after the client upgrade, a new repository is created at the same location. Notice, that the first backup after the upgrade should be full, otherwise incremental backups will fail with a warning message.
- If you want to use the object consolidation functionality after upgrading from Data Protector A.06.11, you must run full backups for all backup specifications that were backed up by using enhanced incremental backup.

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.

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.
- 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 the other way round. 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 operating systems.
- 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 can display a maximum 64 000 items (files in one directory, slots in a library, and so on) in a tree view.
- File names containing quotation marks are not supported.

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.

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 8.00 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` global option to 0. All media then have to be initialized manually.

- Cleaning tape recognition in DDS libraries does not function.

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 backup and restore 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.
- Cross-platform restore of ACLs between 32-bit and 64-bit Linux operating systems is not supported.
- On Linux systems, before you restore a symbolic link whose owner is not the `root` user, ensure that all directories in the path where the link will be restored have execute permission set for the link owner. Otherwise, the restore session will fail.
- Disaster recovery (Enhanced Automated Disaster Recovery) is not supported if SELinux is enabled.

Mac OS X limitations

- The Internet Protocol version 6 (IPv6) is not supported on Mac OS X operating system.
- Cross file system restore of ACL (Access Control List), extended ACLs, and file attributes is not supported (for example, ACL's backed up from the HFS+ file system cannot be restored to the UFS file system and the other way round).
- Encrypted control communication is not supported on Mac OS X operating system.

Windows limitations

- Windows directory share information can only be restored to a Windows system with a Data Protector 8.00 Disk Agent or later. 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.
- Remote installation using secure shell (SSH) is not supported on Windows platforms.
- Local 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.
- The name of the file cluster resource used during the installation of the Data Protector Cluster Integration on Windows must not be `omniback`. For details, see 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.
- On Windows Vista, Windows 7, Windows 8, Windows Server 2008, and Windows Server 2012 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`). In a cluster environment, users must be configured on both nodes.
- On Windows Vista, Windows 7, Windows 8, Windows Server 2008, and Windows Server 2012, the broadcast message send method is not supported.
- Backed up directory share information of directories which were located on a 32-bit Windows system cannot be restored to a 64-bit Windows system and the other way round. In such restore scenarios, the selected directories and their contents will be restored as expected, but without their share information.
- VSS disk image backup of the logical volumes can be used for disaster recovery only on Windows Vista, Windows 7, and Windows Sever 2008 systems.
- You can boot the target system over the network only on Windows Vista, Windows 7, and Windows 2008 Server systems.
- The HP Data Protector Disaster Recovery GUI is available only on Windows Vista, Windows 7, and Windows 2008 Server systems. On other Windows systems, a console interface is available.
- IPv6 addresses cannot be used in share names when backing up network share volumes.
- Data Protector `Inet` service cannot be started if the Windows system is started in *Safe Mode with Networking*.

Windows 32-bit limitations

- On Windows systems, 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.

Windows 64-bit limitations

- The original Microsoft Windows installation CD-ROM 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 8.00 does not support Java web reporting on Windows systems based on the Itanium 2 processor architecture, since Java runtime environment is not supported on this platform.
- 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 XP and Windows Server 2003 limitations

- In order to perform Data Protector remote installation if any of the clients are running Windows XP or Windows Server 2003, the Installation Server and the clients must have IPv4 protocol enabled.

Although both systems natively support IPv6, there is a limitation:

- The Windows Remote Procedure Call (RPC) provider does not provide IPv6 support on these systems. As a consequence, accessing remote network shares on systems using IPv6-only configuration may not be possible.

Network shares are used by Data Protector remote installation in order to install the initial services when performing a clean client installation, as well as accessing the installation depot from the client.

Windows Server 2012 limitations

- Filesystem backup of volumes formatted with the Resilient File System (ReFS) is not supported. Use disk image backup instead.
- Backup of network shared disks is supported without using the VSS for SMB File Shares functionality.

Novell Open Enterprise Server (OES) limitations

- Data Protector 8.00 cannot back up or restore any GroupWise system files.
- The Internet Protocol version 6 (IPv6) is not supported for OES cluster configurations.

HP OpenVMS limitations

- The OpenVMS client must be installed locally on the OpenVMS system. There is no support for 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
```

- Patch level display is not available on OpenVMS.
- 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.
- Disk backup is not available on OpenVMS. There is no equivalent to "BACKUP/IMAGE" or "BACKUP/PHYSICAL".
- When the data backed up from an OpenVMS Alpha system is restored or migrated to an OpenVMS Integrity system using Data Protector, some of the default file attributes (such as creation time, last revised time, version limit and some of the file record attributes) may get lost. This also applies to the data restore or migration from Itanium to Alpha.
Workaround: Manually reset the attributes using the DCL command line.
- 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.
/SYS\$MANAGER/DP_SAVE1.COM is an example of a valid specification.

- 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.
- The `omnirpt -email` command is not supported on OpenVMS. You can use the `-log` option to create a local dump of a report file and use the native OpenVMS mail utility to send an e-mail with this file as an attachment.
- 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.
- If an OpenVMS file is restored to a non-OpenVMS platform, file attributes specific to OpenVMS may not be retained (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. For a complete list of tape drives, see the OpenVMS Software Product Description (SPD).
- HSJ connected tape libraries cannot be autoconfigured. Use manual configuration methods to add these devices to Data Protector.
- Maximum block size for Media Agent on OpenVMS is 63.5 kB. If a device/drive is configured with a bigger block size, it will be changed to 63.5 kB.
- Data Protector file library is not supported on OpenVMS ODS-2 disks.
- 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 on 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 backup 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 log file collector is used on OpenVMS, the following applies:
 - The OpenVMS ODS-2 disk structure file name can contain a 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 executed 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. All available logs are collected instead.
- The Oracle environmental variables and omnirc options OB2_RMAN_COMMAND_TIMEOUT and OB2_SQLP_SCRIPT_TIMEOUT, which help improving Oracle Server backup session handling, are not supported on OpenVMS systems.
- The Internet Protocol version 6 (IPv6) is not supported on HP OpenVMS.
- Encrypted control communication is not supported on HP OpenVMS.
- Enhanced incremental backup is not supported.

Limitations on clusters

MC/ServiceGuard limitations

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

Limitations on licensing

General licensing limitations

- Both licensing models, the capacity based and traditional cannot coexist in the same Data Protector cell.
- In a MoM environment, you cannot mix both licensing models – all Cell Managers must use the same licensing method.

License upgrading limitations

- Limitations on advanced backup to disk licensing:
 - The library capacity (VTLCAPACITY) of a virtual tape library, which was created with a previous version of Data Protector, is after the upgrade to Data Protector 8.00 by default set to 1 TB. You must enter the estimated library capacity value manually through the graphical user interface (GUI) or via the command-line interface (CLI). See the advanced backup to disk example in the *Data Protector licensing* chapter of the *HP Data Protector Installation and Licensing Guide*, and the `omniupload` man page or the *HP Data Protector Command Line Interface Reference*.

Internet Protocol version 6 (IPv6) networking limitations

- Licenses acquired with versions earlier than Data Protector 8.00 only support IPv4 and dual IP stack environments and require the Cell Manager to have an IPv4 address. In order to use Data Protector in an IPv6 only environment, the licenses acquired with versions earlier than Data Protector 8.00 should be converted to the Data Protector 8.00 licensing technology. To convert the keys, follow the procedures provided by the password delivery center.
This limitation does not apply to licenses acquired with or after the Data Protector 8.00.

Limitations on license reporting in a traditional licensing model

- In a cell with Data Protector 8.00 Cell Manager and a client that is not upgraded to Data Protector 8.00, Media Agent on a client cannot send the information about the used disk capacity to the Cell Manager. Consequently, the license checker does not receive the needed information about disk space that is used and cannot report the actual license capacity in use. Therefore, the license checker reports an additional Advanced backup to disk for 1 TB license-to-use is required for such file library.
- Due to the migration of multi-drive server licenses to single-drive licenses, the license enforcement is stronger than the license checking. If a multi-drive server license is installed on a system that is not a drive server, the multi-drive license is not used and the backup may not be possible, although the license checker reports enough appropriate licenses installed.
- Due to the platform independent licenses for slot libraries, the license enforcement is stronger than the license checking. During the backup, Data Protector is checking the licenses for different platforms and the backup may not be possible because of the missing licenses for a specific platform, although the license checker reports enough appropriate licenses installed.
- Since the legacy ZDB and the IR licenses respectively are grouped into one generic license, the license enforcement is stronger than the license checking. During the ZDB backup, Data Protector is checking licenses for different storage arrays and the backup may not be possible due to the missing licenses for a specific storage array, although the license checker reports enough of the zero downtime backup extension and instant recovery extension licenses-to-use (LTU) installed.

Limitations on encryption

Limitations on data encryption

- Consolidation of objects backed up with software encryption is not supported.

Limitations on encrypted control communication

- Communication between the client, which is using plain control communication and the client with enabled encrypted control communication is not supported. This means, that Data Protector operations will not be executed (for example, remote installation from an Installation Server,

which is using plain control communication to the client with enabled encrypted control communication will not succeed).

However, the Cell Manager can communicate with both types of clients in the Data Protector cell.

- End user authentication is not supported.
- To satisfy U.S. Export Regulations, encrypted control communication uses only export ciphers. Key lengths are limited to 64 bits for symmetric and 512 bits for asymmetric encryption. These regulations are enforced on a code level.

Limitations on Data Protector MoM environments

- Debug log collection is not supported in MoM environments.

Device and media limitations

- Device filtering during a backup session is only supported for Data Protector Oracle Server integration and Data Protector Microsoft Exchange Server 2010 integration.

The device filters are defined by the `OB2DEVICEFILTER omnirc` option. For details, see the `omnirc.tpl` template.

Device filtering can be enabled by setting the `global` option `EnableDeviceFilters`.

For details on setting `omnirc` and `global` options, see the *HP Data Protector Help*.

NDMP limitations

- Only filesystem backup and restore are available.
- The NDMP integration can handle backup sessions involving 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 option must be set to 0.
- Only `Full` and `Incr1` backup types are supported.
- Maximum device concurrency is 1.
- Device selection as well as filesystem browsing is not possible.
- 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.
- Copying of NDMP backup objects and object mirroring in NDMP backup sessions are not supported.
- Medium header sanity check is not supported on NDMP clients.
- The data that was backed up from an NDMP Server of a particular type (for example, NDMP-NetApp) cannot be restored to an NDMP Server of another type (for example, NDMP-Celerra).

- When restoring to another NDMP Server, the device to restore from must be connected directly to the target NDMP Server, must be of the same type, and selected or specified as the restore device in the Data Protector GUI or CLI.
- Restore preview is not supported.
- Restoring data using the Data Protector `Restore by Query` functionality is not supported.
- Data Protector does not support IPv6 for NDMP backup sessions, therefore the NDMP servers should have IPv4 protocol enabled.
- On 64-bit Linux systems, the Data Protector NDMP Media Agent does not support ADIC/GRAU DAS library devices.

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.
- With the `SMTape` backup type, a backup image of a volume in a particular aggregate type cannot be used for restore to a volume in a different aggregate type.
- With the `SMTape` backup type, a backup image of a volume in a regular aggregate cannot be used for restore to a volume in a larger aggregate, and the other way round.
- The `SMTape` backup type offers only full backup (level-0 backup).
- The `SMTape` backup type enables you to only back up entire file systems. For example, you can back up `/ufs1`, but not `/ufs1/dir1`.

Celerra

- Media copying is not supported for NDMP-Celerra backup sessions.
- If you select both a directory and individual files from another directory and start the restore, only the selected files are restored. To restore both, use standard restore (set the NDMP environment variable `DIRECT` to `N`).
- Directory direct access restore (DDAR) cannot be used with backup images created with the NDMP volume backup (NVB) option selected.
- The `NVB` backup type enables you to only back up entire file systems. For example, you can back up `/ufs1`, but not `/ufs1/dir1`.
- The `NVB` backup type and file or directory filtering cannot be used together. If both are used, `NVB` takes precedence and the filters have no effect.

Limitations on enhanced incremental backups

- Limitations on enhanced incremental backups using Windows NTFS Change Log Provider:
 - Backup of FAT16 and FAT32 filesystems is not supported.
 - Data Protector does not have private access to the Windows Change Journal meaning that other applications might turn it off while Data Protector is using it.
- Limitations on the enhanced incremental database:
 - To maintain the optimal size of a new enhanced incremental database, Data Protector by default performs a regular check every 30 days. The objects that were deleted from the source volume or were not backed up for a period of 30 days are removed from the database. Thus, the objects that were not backed up for 30 days will be backed up in the Full mode. This is applicable only on HP-UX, Windows, and Linux systems.

Limitations on virtual full backups

- Virtual full backup is only supported for filesystem data. Data Protector integrations do not support the functionality.
As the distributed file media format is optimized for virtual full backups, do not use it when performing, for example, an Oracle or Microsoft SQL Server database integration backup. It will only reduce backup performance, without providing any beneficial results.

Limitations on object verification

General functionality limitations

- Object verification is applicable to backups stored in Data Protector tape format that can be restored using standard Data Protector network restore. It is not applicable to ZDB-to-disk, or the disk part of ZDB-to-disk+tape, which use instant recovery for restore.
- While the source media are being read for object verification, they are unavailable for restore.
- The use of Web Reporting with object verification is not supported.

Application integration limitations

- Object verification only verifies application integration objects from the Data Protector point of view: It can verify object data and delivery of that data to the required destination host. The object verification process does not communicate in any way with integrated applications and so cannot verify restore capability by the applications concerned.

Limitations on application integrations

For integration-specific limitations, 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 client system other than the one where the database originally resided, the instance name chosen on the new client system 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 even if the backup seems to complete without any problems reported.
- If an object is deleted from the RMAN Recovery Catalog database, these changes will not be propagated automatically to the IDB and the other way round.
- The Oracle backup set ZDB method is not supported if the database is installed on raw disks.
- Configuration of multiple Oracle databases using user created XLS (Microsoft Office Excel) and CSV (comma separated values) files is not supported on HP OpenVMS clients. Also, this feature cannot be used to configure standby databases and Oracle databases in ZDB environment. The Microsoft Office Excel 2007 Open XML Format is also not supported.
- Backing up Oracle control files with Oracle backup set ZDB method on IPv6-only clients is not supported.
- You cannot use the Data Protector GUI to configure an Oracle database whose files are managed by Automatic Storage Management (ASM) and for which any of the following ASM properties differs from its default value: home directory of the ASM instance, the authentication mode used by the Data Protector Oracle integration agent to connect to the ASM instance.

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_OLF omnirc` option is not set to 1, the backup will fail if the control file is not on the mirrored disk or in the snapshot that will be backed up.

Informix Server limitations

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

Microsoft SQL Server limitations

- Backup preview is not supported.
- Backup compression is supported only by SQL Server 2008 Enterprise and later.
- A data file belonging to a database which was backed up with the option **Concurrent streams** set to more than 1 cannot be restored. You can only restore the entire database.

Microsoft Exchange Server limitations

- Backup preview is not supported.

Microsoft Volume Shadow Copy Service limitations

Common VSS limitations

- Preview is not supported for any type of VSS sessions: backup, restore, zero downtime backup, and instant recovery.

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.

Microsoft SQL Writer

- Microsoft SQL Writer does not support Microsoft SQL database restore to another system. If you try to perform a restore, only files are restored.

VMware limitations

Data Protector VMware (Legacy) integration limitations

- *Datacenter path:* In VirtualCenter environments, the length of datacenter paths should not exceed 79 characters. For example, the path `/Mydatacenters/Datacenter1` is acceptable because it consists of only 27 characters.

In standalone ESX Server environments, datacenter paths cannot exceed 79 characters because they are always `/ha-datacenter`.

- *Virtual machine path:* The virtual machine path should not contain embedded double quotes. You cannot open a backup specification that references such virtual machines.
- *Backup methods:*
 - Normally, Data Protector aborts incremental and differential **Snapshot** sessions if they are started after a non-Data Protector snapshot has been created. However, if you start an incremental or differential backup session while the creation of a non-Data Protector snapshot is still in progress, Data Protector does not abort the session nor does it report any errors. Nevertheless, such a backup is corrupted.
 - The **VCBimage** and **VCBfile** backup methods are supported only for virtual machines that reside on SAN datastores.
- *Folder attributes:* When restoring a folder partially (that is, you exclude some files from the folder from restore), attributes of the folder and attributes of all parent folders up to the root folder are not restored.

For example, suppose you backed up the folder `C:\tmp\MyFolder` that contained two files `MyFile1.txt` and `MyFile2.txt`. If you restore the folder `C:\tmp\MyFolder` and exclude the file `MyFile2.txt` from restore, attributes of the folders `C:\tmp` and `C:\tmp\MyFolder` are not restored.

- *Reparse points*: Backup of reparse point directories is not supported. This means that the content of such a directory is not backed up during a **VCBfile** backup session. However, note that this does not affect the backup of other files.
- *File library*: If you create a file library on the backup proxy system while virtual machine disks are mounted to the backup proxy system, Data Protector offers the virtual machine disks as a possible storage location for the file library. However, this location should be ignored.

Non-Data Protector limitations:

- *Non-ASCII-7 characters*: VirtualCenter 2.0.x does not support non-ASCII-7 characters. If paths to virtual machine files contain non-ASCII-7 characters, the VirtualCenter Server terminates abnormally.

There are two different workarounds:

- Ensure that paths to virtual machine files (for example, `/vmfs/volumes/storage2/helios/helios_1.vmdk`) contain only ASCII-7 characters. For example, create virtual machines using only ASCII-7 characters and then rename them using non-ASCII-7 characters. In such cases, paths to virtual machine files remain unchanged (they still contain only ASCII-7 characters).
- If paths to virtual machine files contain non-ASCII-7 characters, do not connect to the VirtualCenter Server. Instead, manage such virtual machines by connecting to ESX Server systems (`/ha-datacenter`) directly. This workaround cannot be used for the **VCBfile** backup method.

Regardless of the workaround you select, for the **VCBfile** and **VCBimage** backup methods, you also need to install the corresponding language on the backup proxy system (**Control Panel > Regional and Language Options > Languages**) and set this language for non-Unicode programs (**Control Panel > Regional and Language Options > Advanced**).

Lotus limitations

- On Solaris and AIX systems, offline restore is available for Lotus Notes/Domino Server 7.0 and later versions.
- On Solaris systems, restore with recovery is not available for Lotus Notes/Domino Server 7.0 and later versions.

Limitations on disk array integrations

For additional integration-specific limitations not included in this section, see the *HP Data Protector Zero Downtime Backup Administrator's Guide*.

HP P4000 SAN Solutions limitations

- In a Microsoft server cluster environment, all volumes which are selected for zero downtime backup session must belong to the same cluster.
- Backup preview is not supported.
- Object copying and object mirroring are not supported for ZDB to disk.
- Although you can create replica sets, replica set rotation is not supported.

- A replica cannot be used for instant recovery under any of the following conditions:
 - A target volume of the replica has been automatically removed during an instant recovery session based on another ZDB backup specification.
 - Other entities exist on the disk array which depend on the source volume that was used to create a target volume of the replica:
 - A newer target volume exists, and a smartclone is attached to it.
 - A newer snapshot exists, and the snapshot was not created by Data Protector.
- The Data Protector `omniadb4000` command that you should use for configuring access to the CIMOM provider of the HP P4000 SAN Solutions is available only on Windows systems.

HP P6000 EVA Disk Array Family limitations

- The single-host (BC1) configuration based on Linux platform is not supported. In such a configuration, a single Linux system acts as the application system and the backup system. For a list of supported configurations, see the latest support matrices at <http://support.openview.hp.com/selfsolve/manuals>.
- 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 a system other than backup system.
- Data Protector does not allow ZDB to use an instant recovery object as a source volume.
- 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.
- When using the “switch of disks” instant recovery method with HP P6000 EVA Disk Array Family, 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, see the *HP Data Protector Zero Downtime Backup Administrator's Guide*.
- Routine maintenance tasks, including (but not limited to) hot-swapping HBAs/SCSI controllers, disk array controllers, FC switches, and online firmware upgrade during backup are not supported. Backup is a high-IO activity and should not be done at the same time as routine maintenance.
- The number of standard snapshots or vsnaps that can be created for a specific source volume is limited by the HP P6000 EVA Disk Array Family storage system. The actual limitation is determined by the storage system's firmware revision. For details, see the HP P6000 EVA Disk Array Family documentation. Consider the limitation when specifying a value for the option

Number of replicas rotated of a zero downtime backup specification. Note that the limitation does not apply to snapclones.

- In zero downtime backup sessions using multisnapping, only two snapshot types are supported by default: standard snapshot and snapclone. For information if your HP P6000 EVA Disk Array Family environment supports multisnapping using vsnaps, see your HP Command View (CV) EVA documentation. For instructions on how to enable support for the vsnap snapshot type in multisnapping ZDB sessions in Data Protector, contact HP technical support.

HP P9000 XP Disk Array Family limitations

- Asynchronous HP Continuous Access P9000 XP configuration is not supported.
- The single-host (BC1) configuration based on Linux platform is not supported. In such a configuration, a single Linux system acts as the application system and the backup system. For a list of supported configurations, see the latest support matrices at <http://support.openview.hp.com/selfsolve/manuals>.
- With the single-host (BC1) configuration, only filesystem and disk image backup is supported.
- Split-mirror restore (restore of data from the backup medium to a secondary volume and restore of data from the secondary volume to a primary volume afterwards) is supported for the filesystems and disk images in the HP Business Copy P9000 XP configuration. Database (application) split-mirror restore is not supported.
- Instant recovery is only available in HP Business Copy P9000 XP 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 P9000 XP Disk Array Family 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.
- Backup preview is 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, see 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 tasks, including (but not limited to) hot-swapping any field replaceable components like, disk array controllers, FC switches, and online firmware upgrade during backup are not supported. Backup is a high-IO activity and should not be done at the same time as routine maintenance.
- The maximum number of secondary volumes (mirrors, volumes to be used for snapshot storage) that can be created for a specific primary volume is limited by the HP P9000 XP Disk Array Family model used and its installed firmware revision. Note that the limitation for mirrors and the limitation for volumes to be used for snapshot storage differ. For details, see the HP P9000 XP Disk Array Family documentation.

HP 3PAR StoreServ Storage limitations

- Data Protector does not support the HP 3PAR StoreServ Storage iSCSI host interface.
- In a Microsoft server cluster environment, all volumes which are selected for zero downtime backup session must belong to the same cluster.

- Backup preview is not supported.
- Object copying and object mirroring are not supported for ZDB to disk.
- Instant recovery is only available in configurations where the application and backup systems are Windows systems on which the Data Protector HP 3PAR VSS Agent is installed.
- A replica cannot be used for instant recovery if it was created with a Data Protector version earlier than 7.00 or with Data Protector 7.00 without the patch bundle set installed.
- The Data Protector `omniadbzdb` command that you should use for configuring access to the CIMOM provider of the HP 3PAR StoreServ Storage is available only on Windows, HP-UX (Itanium), and Linux systems.

EMC Symmetrix disk array limitations

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

Disaster recovery limitations

- One Button Disaster Recovery (OBDR) method is not available for Data Protector Cell Managers.
- The Cell Manager recovery wizard is no longer available in the Data Protector GUI. As the Internal Database can only be backed up separately from the files systems, when preparing for disaster recovery of a Cell Manager, you need to ensure the backup images are created in the correct order: the Cell Manager filesystem backup image first, the Internal Database backup image second.
- When recreating volumes during Phase 1 of an automated disaster recovery process (Enhanced Automated Disaster Recovery, One Button Disaster Recovery), the original volume-compression flag is not restored (always saved to non-compressed).
Workaround: Restore the volume compression flag manually after restore.
- Disaster recovery functionality is supported only if the platform on which the Data Protector GUI is used and the platform of the system which will be recovered are the same. This means, for example, that you cannot use the GUI launched on a Windows 7 system to perform a Windows Server 2008 backup for Enhanced Automated Disaster Recovery (EADR).
- One Button Disaster Recovery (OBDR) functionality is available only locally on the system to which the OBDR device is connected.
- The path of DR image file is limited to 250 characters, if it is saved on the Cell Manager during backup.

User interface limitations

- 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.
- The Data Protector command-line interface (CLI) does not support logging of user-triggered events to the Data Protector event log.

Reporting limitations

- Information about physical devices, which is shown in the Device Flow report if the `RptDisplayPhysicalPath` global option is set to 1, is acquired 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 (multicell) 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.

Localization limitations

- This product version is not localized. Localized versions will be available later.

Other limitations

- 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: P6000 EVA or P9000 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 Server 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 the other way round.
- 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 `mknode` 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 the Cell Manager to Disk Agent clients must respond within 10 seconds or the session 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.
- Automatic device selection during restore and/or object copy is limited to libraries. Only a device in a library can be automatically replaced with another device from the same library and of the same media type (for example, LTO).
- Automatic device selection during restore cannot be disabled for the Data Protector integrations that cannot be restored using the Data Protector GUI or CLI (for example, Sybase integration).

- 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. 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 1024 files and/or directories can be selected, otherwise select the entire object. For details about backup objects, see the *HP Data Protector 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 supported if the Media Agent runs on Linux or 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 maximum pathname length supported by Data Protector is 1023 characters.
- Devices of file library type are not supported for filesystems that have compression turned on.
- The length of the pathnames of the directories that can be used for configuring devices of the file library type cannot exceed 46 characters.
- The length of the pathnames 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 systems, the recipient system for the trap that is configured in the GUI receives the traps.
 - On Windows systems, 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**.
- If Boot Configuration Data (BCD) is located on removable storage like floppy disk, USB flash drive, CD-ROM, or DVD-ROM, Data Protector cannot back up BCD registry entries.
- The Windows NTFS Change Log Provider cannot be used with Hierarchical Storage Management (HSM) solutions.
- The maximum size the Windows Change Journal is 4 GB. This space allows logging about 10 000 000 changes. After the maximum size is reached, a part of data is overwritten. In this time frame an incremental backup should be run.
- Automated System Recovery (ASR) cannot be used in IPv6-only environments. ASR can be used only in environments with a functioning DHCPv4 server.
- For Data Protector integration objects, the following actions cannot be restricted by using the `user_restrictions` file:
 - Start backup
 - Start backup specification
 - Start restore

Recommendations

Organizing Data Protector clients into cells

In small environments, the most simple approach is to manage all Data Protector clients within one Data Protector cell.

To efficiently hierarchically structure and manage large-scale environments, you can use the Data Protector Manager-of-Managers (MoM). An environment structured in such a way allows you to manage numerous clients from a central location; for MoM-related scalability limitations, see [“Backup infrastructure scalability” \(page 19\)](#). Furthermore, multiple MoM cells can be centrally managed using the HP System Management. Such a setup allows you to manage an unlimited number of Data Protector clients from one central location while distributing administrative and managerial rights to different Data Protector users and user groups.

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 fully qualified domain name registered in DNS or hosts file.

Large file support

- HP recommends that the file system where DC directories reside supports files larger than 2 GB, especially if drives with large capacity, for example LTO 6, are used, and more than 10 million files are backed up on tape. In addition, on Windows systems HP strongly recommends to use NTFS filesystem.

Recommendations on application integrations

VMware recommendations

Data Protector Virtual Environment integration recommendations

- HP recommends not to install any Data Protector components on VMware vCenter Server system, VMware vCloud Director, or VMware ESX(i) Server system.
- HP recommends not to use the Data Protector options Backup memory file and Use quiescence snapshots simultaneously.

Enhanced incremental backup

- To enable that Data Protector Disk Agent accesses more memory if needed for enhanced incremental backup on HP-UX, set the tunable kernel parameter `maxdsiz` as follows:

HP-UX 11.11 systems:

```
kmtune set maxdsiz=2147483648  
kmtune set maxdsiz_64bit=2147483648
```

HP-UX 11.23/11.31 systems:

```
kctune set maxdsiz=2147483648  
kctune set maxdsiz_64bit=2147483648
```

Object consolidation

- When consolidating a large number of objects from synthetic backup 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.
- Before starting an object consolidation session, ensure that the order of the objects is kept the same. Changing the order of the backed up objects may result in object consolidation failure.

Microsoft Exchange Single Mailbox integration

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

Microsoft Volume Shadow Copy Service integration

Shadow copy storage area and disk space recommendations

- When backing up volumes using VSS (either using the Disk Agent or the VSS integration), ensure that there is enough free space available for the shadow copy storage area.
By default, the initial size for the shadow copy storage area is set to 300 MB on Windows Server 2003 systems (100 MB if the hotfix KB826936 is not installed) and Windows Server 2008 systems, and 320 MB on Windows Server 2008 R2 systems. This means that for example on Windows Server 2008 R2 systems with the default settings there must be at least 320 MB of free space available on the volume that you are backing up.
If you encounter timeout errors during the shadow copy creation, you may also want to increase the initial size for the shadow copy storage area. For details, see the Microsoft Knowledge Base article at <http://support.microsoft.com/kb/826936>.

Regular maintenance of the VSS part of the registry

- Microsoft Windows operating systems maintain a record of mount operations in the registry. This process results in registry growth over time and eventually 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*.
To prevent the registry from growing excessively, HP recommends that you periodically perform registry management tasks with Microsoft Registry Management Tool.

Network Data Management Protocol Server integration

- 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.

Windows Server 2008 clients

- **Server roles and services on Windows Server 2008**
Similarly to previous Windows Server operating system releases, Microsoft extended the concept of server roles and services in Windows Server 2008. To enable backup of data belonging to the server roles and services introduced with Windows Server 2008, Data Protector 8.00 provides extended filesystem backup functionality for this platform. Among others, the following roles can be backed up using filesystem backup:
 - Active Directory Certificate Services (AD CS)
 - Active Directory Domain Services (AD DS)
 - Application Server (requires IIS 6 compatibility)
 - Dynamic Host Configuration Protocol (DHCP) Server
 - DNS Server

- Network Policy and Access Services
- Terminal Services
- Web Services (IIS) (requires IIS 6 compatibility)

When configuring a backup specification for data belonging to a particular server role or service, you should select either the entire volume on which the data resides or the entire client system that hosts the server role or service. Moreover, you should select the **Use Shadow Copy** option on the **WinFS options** property page of the **Filesystem Options** window. When selected, this option provides a consolidated, consistent state of the backed up data.

△ **CAUTION:** Additionally, if configuring a backup specification for disaster recovery purposes, clear the option **Allow Fallback**. Failing to do so may result in backup data unusable for disaster recovery.

- **System State backup and the CONFIGURATION object**

To perform a System State backup on Windows Server 2008, you should follow the above instructions for filesystem backup of the relevant volumes or the entire client system, instead of backing up the CONFIGURATION object.

- **Active Directory Domain Services restore**

On Windows Server 2008, only *offline* restore of Active Directory Domain Services is supported, which must be performed in Directory Services Restore Mode. Since the Active Directory Domain Services restore is a complete overwrite of the existing database, it does not preserve any new users which are created after the backup operation.

Windows Server 2012 clients

- When performing a filesystem backup or restore of a deduplicated volume, data is backed up and restored rehydrated (nonoptimized backup or restore). Therefore, consider the following:
 - Make sure that the target media and the restore target have enough storage space available:
 - Plan the storage space needs based on the original (logical) size of data, *not* the space occupied by deduplicated data on the volume. For example, if 100 GB of data occupies 40 GB of space on the volume, plan for 100 GB.
If you do not have enough free capacity, and you do not need to restore individual files, you can perform a disk image backup instead (optimized backup).
 - Data is always restored to the original (non-deduplicated) size, in the above example, it occupies 100 GB space after restore.
Schedule a periodic deduplication process at the restore target system to deduplicate the restored data again.
 - In case of a backup to a Backup to Disk device, HP recommends to use the Data Protector deduplication functionality (either StoreOnce software deduplication or the method provided by the device) to reduce the amount of space consumed by the backed up data. To reduce the network load, use source-side deduplication.
 - If you back up data with a high deduplication ratio, an optimized disk image backup is faster because less data needs to be transferred over the network.

UNIX system clients

- When performing a disk image backup, HP recommends to dismount disk partitions before the backup and mount them back later.

4 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

- Encryption keys are not migrated correctly when migrating the Cell Manager from 32-bit to 64-bit Windows systems. As a result, restore of encrypted backups fails after the migration. To ensure that encryption keys are correctly migrated, perform the following:
 1. Export all keys from the Key Management Server (KMS) on the 32-bit system using the `omnikeytool` command.
 2. After you perform the migration, *delete* all data (DAT) files from all key store folders from the directory `Data_Protector_program_data\server\db80\keystore` on the 64-bit system, except from the `catalog` folder. Do not delete the index files.
 3. Import all previously exported keys to the KMS on the 64-bit system. After the import, encrypted backup can again be restored.
- **HP-UX and Linux systems:** For Data Protector cluster-aware clients, the Data Protector Cell Manager will only update configuration information for their cluster virtual system during the upgrade process, but not for the corresponding cluster nodes (physical systems).
Workaround: The issue has no effect on the actual state of such clients, only their configuration data is not upgraded. After the upgrade, to update the configuration data and complete the upgrade process, execute the command `omnicc -update_host ClientName` for each cluster-aware client, where `ClientName` is the name of a particular cluster node.
- **HP-UX and Linux systems:** The Data Protector GUI enables you to remotely install the components to a virtual host, even though the components must not be added to the virtual host.
Workaround: None. Do not remotely install the components to the virtual host, but install the clients locally as described in the *HP Data Protector Installation and Licensing Guide*.
- Import of the cluster virtual host with Data Protector installed 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 an HP-UX 11.23 or HP-UX 11.31 system, the binaries of the Data Protector components that are not supported on HP-UX 11.23 or HP-UX 11.31 (for example, EMC Symmetrix Agent, DB2 Integration) are not removed. If you later uninstall Data Protector, the binaries are left on the system.
Workaround: Uninstall the earlier version of Data Protector before installing Data Protector 8.00.
- On Windows systems, desktop shortcuts for starting Data Protector that were created by the user, for example by dragging the menu item to the desktop, do not function after an upgrade.
Workaround: Recreate the desktop shortcuts after upgrading.

- On Windows systems, after an upgrade from Data Protector A.06.11 or from later versions of Data Protector if these versions were previously upgraded from Data Protector A.06.11, a restore of the IDB will complete with errors:

```
[Major] From: OB2BAR_POSTGRES_BAR@computer.company.com "DPIDB" Time:
5/20/2013 11:37:49 AM

The OS reported error while accessing
Data_Protector_program_data\config\server\Holidays.2009:

[5] Access is denied.

[Minor] From: OB2BAR_POSTGRES_BAR@computer.company.com "DPIDB" Time:
5/20/2013 11:37:49 AM

A non-essential file cannot be restored, restore continues
Workaround: Before you start an IDB restore session, remove the Read-only attribute from the
file Data_Protector_program_data\config\server\Holidays.2009.
```
- In a MC/ServiceGuard cluster for HP-UX PA-RISC, the installation check fails on the non-active node although Data Protector is correctly installed, because only the active node can access the Cell Manager configuration.

If the cluster fails over, the check on the now active node succeeds.
- If a remote UNIX or Linux client installation fails, and you restart the installation using the **Restart failed clients** option, the installation is either skipped or fails again, although the issue that caused failure of the first installation session is resolved.

Workaround: Locally uninstall the client and repeat the remote installation. For uninstallation details, see the *HP Data Protector Installation and Licensing Guide*.
- On Windows systems, the Data Protector installation might fail with the following error:

```
Error 1601. The Windows Installer Service could not be accessed.
This can occur if the Windows Installer is not correctly installed.
Contact your support personnel for assistance.

The root cause of the problem is the Windows Installer service that could not be started at the
beginning of the installation.

If the service cannot be started, the installation fails.

Workaround: In the Control Panel > Administrative Tools > Services, change the startup type
for the Windows Installer service from Manual to Automatic, start the service, and restart the
Data Protector installation.
```
- After upgrading the Data Protector Virtual Environment integration component without the installed patch bundle set 6.21 to the release version 8.00, passwords of all virtual environment hosts will no longer work. To solve this, execute the following command:

```
vepa_util.exe --upgrade -cell_info
```

This is needed due to a change in password encoding in the `cell_info` file. It will re-encode the passwords of all virtual environment hosts, first creating a `cell_info.bak` file.
- On HP-UX systems, the following message may be reported during installation of the Data Protector Cell Manager, but the installation succeeds nevertheless:

```
* "Hostname:/cdrom/hpux/DP_DEPOT": Cannot open the logfile on
this target or source. Possibly the media is read-only or
there is a permission problem. Check the daemon logfile and
"/var/tmp/swagent.log" on this host for more information

Workaround: None. You can safely ignore the message.
```

- During the installation, Data Protector setup will update only `Private` and `Domain Windows Firewall` profiles. The `Public` profile is not updated. As a result, communication between Data Protector components in the cell may not work properly, resulting in various issues.
Workaround: If you are using the `Public` profile, update the firewall rules manually. For more information about Data Protector and firewalls, see the *Data Protector Help index: "firewall support"*.
- On HP-UX systems, the HP Software Assistant (SWA) may report errors after installing General Release Patches:
ERROR: Patch PHSS_XXXXX is not recognized.
This occurs in cases where General Release Patches have been correctly installed on top of a Data Protector patch bundle, and the patches contained inside the bundle are not present in the catalog referenced by SWA.
Workaround: None. You can safely ignore the messages.
- On HP-UX systems, after you install a patch on the Cell Manager system, the GUI connection to the proxy service fails with an exception:
16:38:04,534 SEVERE [org.jboss.resteasy.core.SynchronousDispatcher]
(http--0.0.0.0-7116-4)
Failed executing GET /backupspec:
org.jboss.resteasy.spi.WriterException:
java.lang.IllegalStateException: Invalid JSON namespace:
http://www.hp.com/2011/software/im/dp/data_model at
org.jboss.resteasy.core.ServerResponse.writeTo(ServerResponse.java:262)
[resteasy-jaxrs-2.3.2.Final.jar:]
Workaround: After installing a patch, restart the Cell Manager.
- On Windows systems, the following message may be reported during installation of Data Protector, but the installation succeeds nevertheless:
{A37E26EF-E4F1-432B-ABA4-02268BC99B80}: related product unexpectedly found on the system. or/and "{30692C3E-7A60-4BD4-B021-213055B1810F}: related product unexpectedly found on the system."
The root cause of the problem are previously uninstalled Data Protector components `VMware Granular Extension Web Plug-In` and `VMware Granular Recovery Extension Agent`, which the uninstallation process did not remove.
Workaround: You can safely ignore the message. To properly uninstall the Data Protector Granular Recovery Extension for VMware vSphere, manually remove entire Data Protector (all installation components) from your system. For details on removing Data Protector, see the *HP Data Protector Help index: "uninstalling, Data Protector software"*.

User interface related issues

- When you are setting up a user account for the Data Protector Inet Service user impersonation using the Data Protector GUI, the configuration may fail with an error message similar to the following:
Failed to modify config information for user myuser@company.com.
Workaround:
1. Connect to the client where the issue appears.

2. Delete the user impersonation configuration for the specified client using the `omniinetpasswd` command:


```
omniinetpasswd -delete myuser@company.com
```
3. Reconfigure the user impersonation for the specified client using the `omniinetpasswd` command:


```
omniinetpasswd -add myuser@company.com
```

For details of the `omniinetpasswd` command, see the *HP Data Protector Command Line Interface Reference*.

- When using the Data Protector CLI on a Windows system to manage backups of data residing on clients running on 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 functionality to input filenames as they appear in code page 1252.

For internationalization limitations tables, see the *HP Data Protector Help* index: "internationalization".

- On Windows Server 2003 systems, after saving backup specifications whose names include non-Latin characters (for example, Russian or Greek), names of the backup specifications may appear corrupted in the Data Protector GUI.

Workaround: Install Windows Server 2003 Service Pack 2 on the system where Data Protector GUI is installed.

- On Linux systems, messages and notifications of the Data Protector CLI are only available in the English language.

Workaround: None.

Disk Agent related issues

- When attempting a parallel restore which uses more Disk Agents than the current Media Agent concurrency setting, 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 volume restore Disk Agent (VRDA) displays the mount points of the application system in the monitor. For example, instead of the restore target mount point `/var/opt/omni/tmp/computer.company.com/BC/fs/LVM/VXFS` it actually displays the corresponding application source mount point `/BC/fs/LVM/VXFS`.

- When restoring files to a different system 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: 27/09/10 16:58:40 Nothing restored
```

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

- When trying to back up directory structure with more than 100 directories (on HP-UX systems, 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@computer.company.com "C:" Time: 8/31/2010 11:04:52 AM
[81:74] File system too deep: (100) levels.
```
- When backing up a mount point that resides on a Windows system, if a subdirectory is deselected and therefore excluded from backup, the whole mount point might be backed up nevertheless.
- When trying to expand the empty Windows mount point in tree view, the following error is reported:


```
Cannot read directory contents.
```
- On Windows, the encrypt attribute of encrypted folders will be restored. However, only a user who logs on using the account under which the Inet service runs on the client or an Administrator will be able to remove the attribute.
- On Windows systems, when backing up Macintosh files, certain characters in file names may cause problems. If file names contain characters considered invalid on a Windows filesystem (typically '*' and '?'), or contain characters mapped to such invalid characters (for example, the Macintosh bullet character), it is possible that individual files are not backed up or that the Disk Agent terminates abnormally.

Workaround: Rename the problematic files.
- Data backed up from a shared network folder using Data Protector Disk Agent installed on a Windows Vista, Windows 7, Windows 8, Windows Server 2008, or Windows Server 2012 system cannot be restored to its original location, even though the user account which was used during the backup session is granted write permissions for the folder.

The problem occurs because Data Protector does not have impersonation capability for filesystem restore sessions.

Workaround: Using the `runas .exe` command, start the Data Protector GUI as the user whose account was used during the backup session, and only then start the restore session.
- On HP-UX systems, when performing a disk image backup, a warning message is displayed although the backup session succeeds:


```
Object is a mounted filesystem.
```

Workaround: None. Check if the disk or volume is mounted. If it is not mounted, you can ignore the warning message.
- If you schedule several replication sessions to run in parallel and the replication source are also replication sessions, the sessions may fail with an error similar to the following:


```
[Major] From: CSM@computer.company.com "QCTP2A53730" Time: 8.3.2013 11:08:29
[65:99] Import failed with possible cause:
this media already has valid copy in DB.
```

The issue is caused by objects with identical labels that appear in multiple backup specifications, for example, if you create multiple backup specifications for different directories of the same filesystem on the same client.

Workaround: Using the Data Protector GUI, provide different descriptions for the conflicting objects in the backup specifications that were the initial source for the replication specifications or make sure that replication sessions containing these objects are not started in parallel.

Media Agent related issues

- If during a backup session a shared StorageTek ACS tape library is used as a backup device, and intercommunication between a Disk Agent and a Media Agent is interrupted, the Utility Media Agent (UMA) may stop responding. Consequently, subsequent sessions that use the involved tape drive may fail.

Workaround: Use the `omnirc` option `OB2ACSUMATIMEOUT` to specify how long Data Protector should wait for the connection between the Disk Agent and the Media Agent to be restored before it terminates the UMA.

- Detection of the WORM tape is supported on Windows platforms only. On other platforms Data Protector does not recognize the tape as not rewritable and treats it as any other tape. When an attempt to overwrite data on a WORM medium fails, the medium is marked as poor.

Workaround: Set the backup protection for WORM media to Permanent. Keep WORM media and rewritable media in separate media pools.

- If during a backup, copy, or restore session, SCSI read or SCSI write errors are intermittently reported, there may be intercommunication problems between a Media Agent and a SCSI device connected to SAN.

Workaround: The problem may be solved by configuring the following `omnirc` options on the affected Media Agent system: `OB2MAREADRETRY`, `OB2MAXREADRETRIES`, `OB2MAREADRETRYDELAY`, `OB2MAWRITERETRY`, `OB2MAXWRITERETRIES`, and `OB2MAWRITERETRYDELAY`.

- In a cell where the Cell Manager is not installed on the cluster, 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.
- Cleaning tape drive functionality functions correctly only 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 function properly.
- When importing a range of tapes, Data Protector normally skips all invalid tapes (such as tar tapes, blank tapes, and so on) and continues with the next slot. When importing a range of tapes on NetApp Filer (Celerra) and when a NetApp tape is detected, Data Protector reports a major error and ends abnormally.
- If ACSLS library mount request occurs during backup or restore session (in case that library ran out of usable media), do not format or scan additional tapes with the tape device currently being used by the session. Use a different tape device in the library to perform this operation and confirm the mount request.
- During a backup session, if you restart the system that hosts a Data Protector Media Agent, the medium to which data is backed up with this Media Agent becomes corrupted, although Data Protector does not report any errors. Consequently, you may not be able to restore any backup data from this medium. Subsequent backup sessions to the corrupted medium will fail, too.
- 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 attempt to restore data by specifying this session, the restore fails and the following message is issued:

Object not found.

- 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 which contain 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 from recurring.

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

- An object copy session containing numerous objects (more than 200) or complex object media relations (see below) may become unresponsive.

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 restart the session.
- 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.

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

- When an external encryption controller is controlling encryption on a tape device, a failure to read the tape medium header of a previously encrypted medium can occur. This happens if the connection to the external encryption controller is not available or a decryption key is deleted from the external encryption controller.

Workaround:

Set the `OB2_ENCRYPT_FORCE_FORMAT` environment variable to force a format operation on the tape.

The following options are available:

- If the variable value is set to 0 then a format operation will be aborted.
- If the variable value is set to 1 then Data Protector Media Agent will force a format operation.
The default value is 0 (not set).

- When importing legacy NDMP media populated in a Data Protector version earlier than 8.00, there is a problem with imported UNIX file system backup objects: ownership flags (owner, group) of such objects are set to 0 0. The root cause of the problem is incorrect handling of the ownership of such objects in earlier Data Protector versions, where the ownership fields stored alongside the object data were misused for purposes other than object ownership.

Workaround: None.

- When a device required for restore is unavailable or disabled, the restore session fails.

Workaround:

Restore your data with an alternative device. For instructions, see the *HP Data Protector Help* index: "selecting, devices for restore".

- When more than 4 TB of backup data is stored to a single medium, its capacity and usage are incorrectly recorded in the IDB. Consequently, invalid figures are presented.

Workaround: None. Nevertheless, all the Data Protector operations such as backup and restore, function properly.

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

- 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.

Microsoft Exchange Single Mailbox

- When configuring the Microsoft Exchange Single Mailbox integration, the following issues may occur:
 - The CLI configuration session finishes without errors, 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 or export the environment variable `OB2BARHOSTNAME` on the client system with the command `set OB2BARHOSTNAME=client_name` (on Windows systems) or `export OB2BARHOSTNAME=client_name` (on UNIX systems) and repeat the configuration from the CLI.

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.
- When performing an object copy session where B2D devices are the source devices, Data Protector may not enforce the requirement that different source media are copied to different target media.
Workaround: To make sure that several data streams are not multiplexed to the same medium, configure a separate object copy specification for each database and set the following:
 - the number of devices must be the same as the number of streams of an object in the selected session
 - the minimum value for Load balancing must equal the number of the devices

- target device concurrency to 1.

To calculate the number of devices you need, multiply the maximum number of streams for any database in a session with the number of parallel object copy sessions from these specifications. For example, if there are a maximum of five data streams in a session and two parallel object copy sessions based on this session, you need 10 devices.

Microsoft Volume Shadow Copy Service

- The **Restore files to temporary location** mode is not available for the DPM *Database* writer components. Because the files were backed up by another writer (MSDE Writer in this case), they are not shown in the restore page.

Workaround: None. Only the **Restore components** mode is available in such cases.

- When backing up many writer components at once, the backup fails if a transportable backup is performed in parallel.

The issue appears if you select many writer components (for example SQL databases for SqlServerWriter or Hyper-V virtual machines for the Hyper-V writer) directly instead of their container (for example, the whole writer) and, at the same time, a transportable backup is performed.

Workarounds:

- Perform a local backup instead of a transportable backup. You can still use the VSS hardware provider if necessary. The writer components (databases, virtual machines, and so on) can be selected directly one by one.
- Select the whole container (for example an SQL instance for the SqlServerWriter or the entire Hyper-V writer) instead of individual components (for example SQL databases or virtual machines). In this case, you can use VSS transportable backup.

SAP R/3

- Backup of SAP R/3 data fails when the `-u` option is specified in the command line for the `brbackup` or `brarchive` command.

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 data using the Data Protector GUI on the backup system is executed as a regular filesystem restore, during which ZDB agents (SYMA, SSEA) mount disks on `/var/opt/omni/tmp` (the default mount point). Since this is a restore of application data, VRDA restores files to the original mount points. Therefore, the data is not restored to EMC Symmetrix or P9000 XP Array disks, but to the root partition instead.

Workaround: None.

Oracle Server

- On Windows system, Oracle backup sessions wait for 20 seconds before they end. 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 seconds between two backup sessions using the same backup

specification. In the opposite case, all the backup objects will be backed up within the same backup session.

- The `ZDB_ORA_INCLUDE_CF_OLF`, `ZDB_ORA_INCLUDE_SPF`, and `ZDB_ORA_NO_CHECKCONF_IR` omnirc options are 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 message indicates that the control file was overwritten during instant recovery. This happens if the Oracle control file location was specified for the `control_file_location` parameter which should define 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 located.

- If you restore backup data created 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 fails.

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

- In an Oracle Real Application Clusters (RAC) environment with Oracle version 11.2.0.2 or later, a Data Protector managed control file backup ends unexpectedly with the following message:

```
The database reported error while performing requested operation.
ALTER DATABASE BACKUP CONTROLFILE TO
'/var/opt/omni/tmp/ctrl_dbpp.dbf' REUSE sqlcode 245 error occurred
at line 1.
```

```
ORA-00245: control file backup operation failed
```

By default, Data Protector backs up the Data Protector managed control file from the directory `/var/opt/omni/tmp` (UNIX systems) or `Data_Protector_home\tmp` (Windows systems).

Workaround: The directory to back up the control file from must be located on a shared disk and be accessible from all RAC nodes. Define an appropriate directory by setting the `OB2_DPMCTL_SHRLOC` environment variable for the control file copy, and restart the session.

- If you are configuring a backup set ZDB backup specification that involves a disk array of the HP 3PAR StoreServ Storage family, Data Protector may incorrectly detect that the chosen database files are managed by an Oracle ASM instance, in case it is running on the same Oracle Server system. Since the atomic snapshot feature is a prerequisite for backing up Oracle ASM-managed data with Data Protector, but the HP 3PAR StoreServ Storage disk arrays do not support it, sessions based on such a backup specification fail.

Workaround: Before you start configuring a Data Protector ZDB backup specification for Oracle Server backup, shut down the running Oracle ASM instance and start it up again after you have saved the backup specification. Data Protector will successfully back up correct data that you have selected for backup.

VMware (Legacy)

- In a VirtualCenter environment with VirtualCenter Server 4.0, configuration of the VMware (Legacy) integration using any of the four methods (Suspend, Snapshot, VCBFile, VCBIImage) may fail with the following error:

The database reported error while performing requested operation.

Workaround: On the VirtualCenter client, perform the following steps to add Data Protector to the VirtualCenter client list.

1. On the VirtualCenter client, go to the folder `C:\Documents and Settings\All Users\Application Data\VMware\VMware VirtualCenter`.
2. Edit the file `vpxd.cfg` and add the variables `maxBufferedResponseBytes` and `agentsNeedingContentLength`:

```
<config>
...
  <vmacore>
    <threadPool>
      <TaskMax>30</TaskMax>
    </threadPool>
    <http>
      <maxBufferedResponseBytes>104857600</maxBufferedResponseBytes>
      <agentsNeedingContentLength>VMware-client|DataProtector/6.1
      </agentsNeedingContentLength>
    </http>
  </vmacore>
...
</config>
```

3. Save the changes.
4. Right-click **My Computer** and choose **Manage**.
5. Double-click **Services and Applications** in the **Name** column on the right.
6. Double-click **Services** in the **Name** column on the right.
7. Right-click **VMware VirtualCenter Server** in the **Name** column on the right, and choose **Restart**.
8. After restarting verify that the change has taken effect by verifying the VirtualCenter log as follows:

- a. Go to the folder `C:\Documents and Settings\All Users\Application Data\VMware\VMware VirtualCenter\Logs`
- b. Find the log file `vpxd-MM.log` (where `MM` is the latest number).
- c. Open the log file and look for the following two lines:

```
Loaded agentsNeedingContentLength:
'VMware-client|DataProtector/6.1'
"Max buffered response size is 104857600bytes"
```

VMware

- When restoring a virtual machine with a virtual Raw Device Mapping (vRDM) disk to a directory using the option **Restore to Directory**, the restore succeeds and you can import or upload the files to a vCenter. However, starting such a virtual machine fails.

Workaround: None. Do not use the Restore to Directory option when restoring a virtual machine with a vRDM disk.

- During creation of a backup specification on Linux, a fail may occur, when browsing virtual machines that contain Chinese, Japanese, or Korean (CJK) characters in their names.

Workaround: Make sure there are no Chinese, Japanese, or Korean characters in the virtual

machine names or create a backup specification on Windows host instead.

- When restoring an incremental or differential backup using a Linux backup host, in some specific circumstances the restore may finish without reporting an error but only data from the full backup is restored without data from the incremental or differential backup.

Workaround: Use a Windows backup host to perform the restore.

- On Windows systems, when backing up VMs from a vCenter installed on a French-language version of the operating system, the backup fails with the following error:

```
[Major] From: VEPALIB_VMWARE@coputer.company.com "/Nouveau centre de données"
```

```
Time: 24/04/2013 14:13:16
```

```
Virtual Machine 'vm_2': Could not backup disk scsi0:0 ...
```

```
[Major] From: VEPALIB_VMWARE@coputer.company.com "/Nouveau centre de données"
```

```
Time: 24/04/2013 14:13:16
```

```
Virtual Machine 'vm_2': No disk backed up ...
```

If you back up the same VM from a vCenter installed on an English-language version of the operating system, the backup finishes successfully. After that, a backup from a French-language operating system host is also successful. The issue is caused by UTF-16 characters in the VDDK temporary directory path, which is by default set to %TEMP%\vmware-%USERNAME%.

Workaround: Set a different temporary directory in the file

Data Protector Program data\Config\client\vepa_vddk.config, for example:
tmpDirectory=c:\tmp.

- Creating a virtual machine snapshot, either when the virtual machine is being migrated using VMotion migration or when such migration is not taking place, may fail with one of the following errors:

```
[Major] From: BSM@computer.company.com "Barlist-BackupRestore-1054"
```

```
Time: 4/13/2013 7:16:59 PM
```

```
[61:3003] Lost connection to OB2BAR Backup DA named "ERROR" on host computer.company.com.
```

```
Ipc subsystem reports: "IPC Read Error System error: [10054] Connection reset by peer"
```

```
[Normal] From: VEPALIB_VMWARE@computer.company.com ""
```

```
Time: 4/12/2013 5:30:04 PM
```

```
Creating Virtual Machine 'jeos-e10x-001' ...
```

```
Datacenter: /ESX5.0_Testing_Vepa
```

```
Host/Cluster: cluster.company.com
```

```
Datastore: VMData_env39 wamsler
```

```
2013-04-12T17:30:35.651+02:00 [04048 trivia 'ThreadPool']
```

```
PrepareToWait: Starting new thread
```

```
2013-04g45280-12T17:30:35.806+02:00 [02928 trivia 'ThreadPool']
```

```
PrepareToWait: Starting new thread
```

```
2013-04-12T17:30:35.899+02:00 [02928 trivia 'ThreadPool']
```

```
PrepareToWait: Starting new thread
```

```
2013-04-12T17:30:35.902+02:00 [03184 trivia 'ThreadPool']
```

```
PrepareToWait: Starting new thread
```

```
2013-04-12T17:30:35.902+02:00 [02852 trivia 'ThreadPool']
PrepareToWait: Starting new thread
2013-04-12T17:30:35.902+02:00 [03184 trivia 'ThreadPool']
PrepareToWait: Starting new thread
[Major] From: RSM@computer.company.com ""
Time: 4/12/2013 5:31:00 PM
[61:3003] Lost connection to OB2BAR restore DA named "" on host
computer.company.com.
Ipc subsystem reports: "IPC Read Error System error: [10054]
Connection reset by peer"
Workaround: Restart the backup session.
```

Lotus Notes

- In case the Data Protector application specific pre-exec script is specified for the Lotus integration backup on Solaris, the backup may fail with the following error:
Data Protector Lotus Agent cannot back up object *objectname*.
Workaround:
Disable the Data Protector application specific pre-exec script and restart the backup.
- During a point-in-time restore of the Lotus Notes database, the following error may occur:
Lotus Notes C API 'NSFRecoverDatabases' returned error 5099: Recovery Manager: Backup was later than recovery point in time.
The problem occurs if the specified point in time is earlier than the time when the source backup was performed.
Workaround:
Specify a different point in time or a different source backup, so that the point in time is later than the time when the source backup was performed.

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 Oracle ZDB integration and you intend to perform instant recovery sessions,
 - if Oracle is used as a part of 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, see description of the `ZDB_ORA_INCLUDE_CF_OLF_omnirc` option in the *HP Data Protector Zero Downtime Backup Administrator's Guide*.
- Database recovery after instant recovery for the Microsoft Exchange Server and Microsoft SQL Server integrations cannot be performed from the Command Line Interface (CLI).
Workaround: Perform the recovery using the GUI.
- The Data Protector `omnicreatedl` command cannot be used for creating Microsoft Exchange Server ZDB backup specifications for ZDB sessions involving P6000 EVA Array or P9000 XP Array.
Workaround: None.

Disaster recovery issues

- An encrypted backup of the Internal Database (a prerequisite for Cell Manager disaster recovery) fails unless an active encryption key was created prior to the backup.

Workaround: Create an active encryption key prior to invoking an encrypted backup of the Internal Database. For details, see the `omnikeytool` man page or the *HP Data Protector Command Line Interface Reference*.

- On Windows Server 2003 systems, when performing EADR on a ProLiant BL460c system, the DR OS cannot find the network card and a restore cannot be started.

Workaround:

Enable the safe boot mode:

- Edit the `drm.cfg` file *before* creating the ISO image:

1. Open the file `drm.cfg.tpl` in `\\OmniBack\bin\drim\config`
2. Edit the variable `safe_boot`:

```
safe_boot = normal
```
3. Save the file `drm.cfg.tpl` and rename it to `drm.cfg`.
4. Create the ISO image.

The disaster recovery process should now start normally.

- Or, if you are already performing disaster recovery, edit the `boot.ini` file and restart the system.
 1. Once the DR OS boots and the Disaster Recovery Wizard starts, abort the countdown.
 2. Start a command prompt and launch Notepad.
 3. Open the file `C:\boot.ini` and search for the string `/SAFEBOOT:NETWORK`.
 4. Remove the string from the `boot.ini` file and save it.
 5. Restart the computer and leave boot sequence to start from the disk (do not boot from CD-ROM again).
 6. When the system logs on, proceed with the standard disaster recovery procedure.
- If the `omnidr` command is started with invalid parameters, a message to press the F8 key in the next 10 seconds is displayed instead of the command synopsis. After pressing any key, the command properly displays the command synopsis.

Cluster related issues

Common issues

- When backup system is in a cluster environment and the backup session is performed using the name of the cluster node, instant recovery fails if you try to perform recovery using the other cluster node.

Workaround: To avoid this problem, use the name of the virtual host for configuration of the backup specification.

- If a backup session stops responding during a cluster failover, and all Backup 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 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 application

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 the 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 in MC/ServiceGuard

- After failover on the secondary application system (application runs on the MC/ServiceGuard cluster) 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: 11/8/2010 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, use the `ioinit` command to ensure that all disk device files are identical.
- If you export a physical node from an MC/ServiceGuard cluster, you cannot import it back as the `cell_server` file is deleted. This file is shared among all nodes of a cluster, so you need to recreate it.

Workaround: execute the command `/opt/omni/sbin/install/omniforsg.ksh -primary -upgrade`.

Issues in Microsoft server cluster

- When restoring the Cluster Database of 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 eventually cause a failover.
- When the Cell Manager is installed on 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). Additionally, when starting a Cluster Database restore, make sure that this is the only item you are restoring and that no other sessions are running.

Reporting related issues

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

Workaround: Use `sendmail` to send reports using the e-mail send method. 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. HP dissuades you from removing this existing path since some applications may rely on it.

Other known issues

- Data Protector is unable to detect duplicate IP addresses within a cell or MoM environment and cannot report them as such. If a duplicate IP address is assigned to a system with the Data Protector software installed, Data Protector reports such network misconfiguration with the message `Cell Manager host IP is not in IP range` in the GUI and CLI as follows:
 - In the About Data Protector Manager or About Data Protector MOM dialog box in the GUI, in the Remark column of the Passwords info property page
 - In the Remark lines of the Data Protector `omnicc -password_info` command output

Under these circumstances, Data Protector licensing is no longer covered. Until you resolve the problem, you can expect session and operation failures in the affected Data Protector cells.

Workaround: Reconfigure your network by assigning a unique IP address to the problematic system.

- 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 option `ConsolidationAutomatedMaxObjects`.

- 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 become unresponsive.

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 (for example, 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 (for example, 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, HP suggests to split the consolidation of multiple objects into more than one session.

- When restoring to a new location from a medium that contains a consolidated object on HPUX 11.31 Itanium, the restore session fails with errors. For example:

```
[Minor] From: VRDA@computer.company.com CONSO2 Time: 03/04/13
09:34:03 /tmp
```

Workaround: If the buffer size is less than 8, set it to 8 (the default value) and restart the restore session. For instructions, see the *Data Protector Help*, index: "setting, advanced options for devices and media".

- 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, Incr1, Incr2, Incr3, ...), 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**.

- 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 HP OpenView Storage Allocator may cause unexpected results. For most recent patch information, see the HP webpage <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, execute the command `fuser -kc /oracle/P01`.
- If a backup is performed on one node and then instant recovery attempted on another node with the **Check data configuration consistency** option selected, the following error message is displayed:
Volume group configuration has changed.
The 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 may not be running after EADR or OBDR.
Workaround: In the **Control Panel > Administrative Tools > Services**, change the startup type for Data Protector services from Manual to Automatic. Start the services after you have changed the startup type.
- On HP OpenVMS systems, a restore session may become ceaseless and report 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 Control Panel.
- Data Protector performance on Red Hat Enterprise Linux (RHEL) is negatively affected if the Name Server Caching (`nscd`) daemon is disabled.
Workaround: Enable Name Server Caching on RHEL, or switch to a local DNS, and then execute the `omnisv -start` command.

- The command `omnistat -session [session ID] -detail` may incorrectly display a message `Restore started` or `Backup started`. This may result in both parameters appearing to be identical.
- When you collect the debug files matching a specific debug ID, using the Data Protector GUI or CLI, the relevant debug logs may not be collected.

Workaround: When you are collecting and saving the debug files, make sure you also specify all known source debug directory paths.

- If you use the Data Protector CLI, execute:


```
omnidlc -did debugID -debug_loc Dir1
```
- If you use the Data Protector GUI:
 1. In the Context List, click **Clients**.
 2. In the Scoping Pane, expand **Data Protector Cell** and then **Clients**.
 3. Right-click the client and click **Collect debug files**.
 4. In the Debug File Collector – Directories page, enter the paths for all known non-default debug directories and click **Add**.
 5. Click **Next** as many times as needed to reach the last page of the wizard.
 6. Click **Finish** to exit the wizard.
- When performing a point-in-time restore from a client system which is in a different time zone than the Cell Manager, the restore fails. If started from the Cell Manager, the restore succeeds. The issue arises because the Cell Manager does not store the time zone of the client system during the backup.

Workaround: If you are performing a restore from a client system, account for the time zone difference when selecting the point in time to which to restore. For example, if the Cell Manager is in the time zone UTC+1 and the client is in UTC+5, and you performed the backup at 5:00 as seen on the client system, enter the time as it was on the Cell Manager at the time of the backup, that is 1:00.

- The object version properties in the GUI and CLI only display information about the Data Protector software encryption. In case that only drive-based encryption was used, the object version is displayed as not encrypted.

Workaround: Drive-based encryption is not related to object version. To check for the object's drive-based encryption, use the `omnimmm -media_info Medium -encryptioninfo` command.

- When you run a restore to another location (using the `Restore into` option) of the multiple filesystem objects that are located in different subdirectories of the same top level directory, the following error may occur:

```
[Minor] From: VRDA@computer.company.com "OBJECTNo1" Time: 03/04/13
09:34:03 /tmp/RestoreDir Cannot create: ([17] File exists).
```

The restore finishes successfully.

Workaround: None. You can safely ignore the message.

- Some delay may occur during the object copy operation.
- Workaround: None. Wait until the session finishes.

Known non-Data Protector issues and workarounds

Non-Data Protector issues related to installation or upgrade

- On Windows systems, the operating system might incorrectly report free disk space for an NTFS volume that is mounted to 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, the Data Protector Setup Wizard will not start the installation to the mounted NTFS volume if the amount of free space on the NTFS filesystem is smaller than the minimum disk space installation requirement.

Workaround: free disk space on the NTFS filesystem by removing unnecessary files until the installation requirement is met.

- On Windows systems which do not have the G5 root certificate issued by the VeriSign Class 3 Public Primary Certification Authority installed, verification of the binaries signed with the new Authenticode signing certificate may fail.

For more information on the root cause of this problem, see the related VeriSign Knowledge Center article published on the web at https://knowledge.verisign.com/support/ssl-certificates-support/index?page=content=AR1747=search=en_US

- On Windows systems, if you start local installation from a mapped drive through Remote Desktop Client, 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 under a different user account than the user account under which the mappings were created, 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 `\\computer.company.com\shared_folder`).
 - For installation, use VNC instead of Remote Desktop Client.
 - Start the installation on the console.
- On Windows Server 2003 systems, the installation fails if the installation destination directory is a virtual drive, created for example with the `subst` command. The following error message is displayed:

```
Error: 1320. The specified Path is too long.
```

The Windows Installer service is running under a different user account than the `subst` command. As a result, the installation fails.

Workarounds:

- Use the UNC path specification (for example, `\\computer.company.com\shared_folder`) instead of the virtual drive. This is the preferred solution.
 - Execute the `subst` command under the Local System user account.
- On Linux systems, the `rpm` utility does not correctly remove Data Protector components if you specify several installation packages in the same command line. 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 components one by one.

Non-Data Protector issues related to user interface

- When using CLI on UNIX systems, 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 operating system limitation, if you use any CLI command, the characters can be displayed incorrectly.
Workaround: To eliminate this problem, start the desktop in your desired locale.

Non-Data Protector issues related to Disk Agent

- If the LSI Logic 53C1010-66 card is used on an HP Server rx2600 Itanium 2 client with Windows Server 2003 Enterprise Edition, restore may fail with an internal error.
- 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.
- On Windows systems, 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 problem occurs due to a Windows limitation described on the Microsoft webpage <http://support.microsoft.com/kb/176014>. It may 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.
- On Windows systems, due to filesystem limitations, files that were backed up on UNIX systems and whose names contain the backslash ("`\`") character may be restored to a wrong location and with the wrong file name. Windows operating system interprets the backslash in a file name as a directory separator. For example, if a file named `back\slash` file was backed up on a UNIX system and restored to a Windows system, it will be restored into the `back` directory with the file name `slash`.
- On Windows systems, when backing up several objects at once and with the option **Use shadow copy** selected, backup of some objects may fail with the following error message:

```
[Major] From: VBDA@ host-name"ObjectName" Time: SystemTime  
It was not possible to create volume snapshot for 'Mountpoint'.  
System error: 'VSS Snapshot creation failed'.
```

The issue can appear if there is not enough disk space available for storing multiple shadow copies or due to high disk I/O load. For details, see <http://www.microsoft.com/technet/support/ee/transform.aspx?ProdName=Windows%20Operating%20System&ProdVer=5.2.3790.1830&EvtID=12298&EvtSrc=VSS&LCID=1033>.

Workarounds:

- Run the backup session again.
- Provision enough dedicated storage space on a separate volume, reserved only for shadow copy storage.

You can allocate additional shadow storage space using the command `vssadmin add shadowstorage`. For details, see [http://technet.microsoft.com/en-us/library/cc788051\(v=ws.10\).aspx](http://technet.microsoft.com/en-us/library/cc788051(v=ws.10).aspx).

Recommendation:

HP recommends that you allocate separate storage space to store shadow copies. This storage space should not be on the volumes that are backed up.

- On Solaris 9 systems, filesystem backup may fail with error messages similar to the following:
Cannot open attribute directory /BC/fs/VxVM/UFS/Test6.doc: read-only filesystem! Extended attributes not backed up.

Workaround: Set the `omnirc` option `OB2SOL9EXTATTR` to 0 to disable the backup of extended attributes.

Non-Data Protector issues related to Media Agent

- Erase operation on magneto-optical drive connected to an HP-UX system fails with the following error:

```
[Major] From: MMA@lada.com "MO-lada" Time: 5/6/2010 3:52:37 PM
[90:90] /dev/rdisk/c2t0d1 Cannot erase disk surface ([22] Invalid
argument) => aborting
```

- 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 function properly in this mode, the following `omnirc` command options must be configured as follows:
 - `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. Such setup may lead to a data loss.

- When a DLT8000 (DLT library is used, media cannot be imported and the `omnimlist` command does not function properly. In this case, the following errors are reported:

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

Quantum has confirmed a problem with the controller firmware. There is a cumulative slip occurring in the tach relative to the tape. When such a slip occurs and the drive detects the BOT marker, the drive reconstructs its internal directory. The problem occurs only when tape media containing large amounts of data are used.

Workaround: Consult your HP support representative before you proceed. You need to upgrade the DLT8000 drive firmware to version V51. More details about the firmware changes can be found in Service Note A5597A-27.

- On AIX 5.2 systems, the `devbra` utility 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 function properly.
Workaround: Configure the devices manually. Do not use automatic discovery of changed SCSI addresses for such devices.
- If during a backup session that writes backup data to a tape library, a medium is unloaded from this tape drive and another medium is loaded, a Media Agent running on an AIX system may not appropriately handle the latter. As a result, the backup session fails.
The problem occurs due to an AIX operating system limitation in shared memory allocation functionality, and is more frequent when a relatively high Disk Agent concurrency is used.
Workaround: Enable the AIX extended shared memory model by setting the `omnirc` option `EXTSHM` to the value `ON`.
- If an LTO 4 device is connected to a SmartArray 6i controller, drive based encryption may fail due to an issue with the SmartArray 6i firmware.
Workaround: Check if a newer version of the firmware resolves the issue or use a different SCSI controller.
- When configuring a StoreOnce Backup system device, if the Client ID field contains any of the characters "`_`", "`-`", "`.`", or "`+`", the following error is displayed:
`Could not get information for host Hostname using gateway GatewayName...`
Workaround: None. Do not use the above mentioned characters for client IDs.

Non-Data Protector issues related to integrations

Microsoft Exchange Server

- 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: ha1a will get the subject line ABC: ABC: ha1a. 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).

Workaround: None.

Microsoft SQL Server

- Instant recovery of Microsoft SQL Server databases fails.
Workaround: Follow the instant recovery procedure in the *HP Data Protector Zero Downtime Backup Integration Guide*. You need to restart the services of the SQL Server instance after the instant recovery completes. If this action does not automatically start a recovery of all system databases, perform the following:
 1. Start the SQL Server instance in the single-user mode.
 2. Manually run a recovery of the master database.
 3. Run a recovery of every other system database. SQL Server instance must still be running in the single-user mode.
 4. Restart the services of the SQL Server instance.

Microsoft Volume Shadow Copy Service

- The following MSDE Writer and Microsoft SQL 2005 writer components cannot be restored while the Microsoft SQL Server is online: `master`, `model`, and `msdb`.
- A snapshot backup of an Exchange Server 2003 database fails, and event ID 9607 is logged.
Workaround: For information on how to resolve this problem, see the Microsoft webpage <http://support.microsoft.com/kb/910250>.
- With HP P6000 EVA Disk Array Family, a backup session may fail if there are more than 4 source volumes (original 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 creation starts no earlier than 30 minutes after the last snapshot was deleted.
Also ensure that you upgrade firmware and HP Command View (CV) EVA to the latest version.
- With HP P6000 EVA Disk Array Family, a backup session that uses software provider fails, reporting that shadow copies could not be created.
Workaround: Install the latest HBAs firmware and start a new backup session.
- With HP P9000 XP Disk Array Family with hardware providers configured, the client system fails abnormally every second or third backup. This may be caused by particular versions of HP MPIO DSM for HP P9000 XP Disk Array Family.
Workaround: Ensure that you are using a supported version of HP MPIO.
- When using the HP Business Copy (BC) P9000 XP functionality of the Disk Array XP1024 or XP128 together with the P9000 XP Array VDS hardware providers, backup fails with an error,

stating that there is no VDS provider installed. The issue occurs with P9000 XP Array hardware provider version 5.00.00.

Workaround: Contact your HP support representative to request a hardware provider version that fixes the defect, "QXCR1000903367: The HWP does not work for XP1024/XP128 arrays".

- The full path of any virtual disk in the HP Command View (CV) EVA Virtual Disks hierarchy should not exceed 650 characters in length.

Workaround: None. A future release of the hardware provider may remove this limitation.

- With the VSS P9000 XP Array hardware provider on Windows Server 2008 systems, warning messages are logged to the Application Event Log during each shadow copy import. The issue does not appear on Windows Server 2008 R2 systems.

Workaround: None. A future release of the VSS P9000 XP Array hardware provider may remove this issue.

- When using the P6000 EVA Array hardware provider on Windows Server 2008 systems, during a transportable backup when Data Protector tries to break the shadow copy set, the following errors are reported:

```
[Minor] From: OB2BAR_VSSBAR@tpc211.company.com "MSVSSW" Time:
11.01.2011 10:17:31 Failed to break Shadow Copy Set of session
'2011/01/11-4:tpc211'.
```

```
[Warning] From: OB2BAR_VSSBAR@tpc211.company.com "MSVSSW" Time:
11.01.2011 10:17:31 [145:714] Rescanning system due to Break Shadow
Copy Set failure.
```

```
[Minor] From: OB2BAR_VSSBAR@tpc211.company.com "MSVSSW" Time:
11.01.2011 10:17:40 Failed to disable backup '2011/01/11-4:tpc211'
```

The issue appears if the P4000 SAN Solutions hardware provider is also installed on the same system. The issue does not appear on Windows Server 2008 R2 systems.

Workaround: Remove the P4000 SAN Solutions hardware provider or use a different client as the backup system. A future release of the P4000 SAN Solutions hardware provider may remove this issue.

- On Windows Server 2008 R2 systems with the VDS hardware provider installed, when performing an instant recovery with the Switch of disks method and using a P6000 EVA Array with a large number of LUNs, the operation may fail.

Workaround: Use the Copy of replica data method instead of the Switch of disks method.

Recommendation: To avoid the problem in future, remove the VDS hardware provider. Note that there are use cases which require the VDS hardware provider to be installed. For details, see the *HP Data Protector Integration Guide for Microsoft Volume Shadow Copy Service*.

- If two command devices are configured for a disk array of the HP P9000 XP Disk Array Family which supports authorization verification, one operating in the user authentication mode and the other in the conventional mode, a problem may occur when you run a ZDB or IR session if no or wrong user credentials exist in the ZDB database (XPDB). In such circumstances, the problem occurs if the HP P9000 XP Agent first connects to the command device with enabled

authentication, and after failing to start the requested operation, it connects to the command device with disabled authentication. At this point the session fails unexpectedly.

Workaround: Do one of the following and restart the session afterwards:

- Using the `omnidbxp -user` command, add correct user credentials to the XPDB or update the existing ones appropriately.
For command syntax and usage examples, see the `omnidbxp` reference page in the *HP Data Protector Command Line Interface Reference* or the `omnidbxp` man page.
- Disable the user authentication mode on the command device.
- Prevent the HP P9000 XP Agent from connecting to the command device operating in the user authentication mode using either method:
 - Unpresent the command device from the application system and the backup system.
 - Follow the steps:
 1. On the application system and the backup system, set the `SSEA_QUERY_STORED_CMDDEVS omnirc` option to 1.
 2. Remove the data belonging to the command device from the XPDB using the `omnidbxp -cm -remove` command.

Microsoft SharePoint Server

- When the number of site collections of the backed up content database equals to the value of the parameter `Site Level of Warning`, during the restore the values of the `Site Level of Warning` and the `Maximum Number of Sites` parameters increases as follows:

`Site Level of Warning` = number of site collections + 500

`Maximum Number of Sites` = number of site collections + 1000

- After a restore of the configuration database, the data in the Microsoft SharePoint Server filesystem caches on front-end Web Server systems might not be consistent with the data in the newly-restored configuration database.

Workaround: Clear the Microsoft Office SharePoint Server file system cache on all server systems in the farm and retry the restore. For details, see the Microsoft web page <http://support.microsoft.com/kb/939308>.

SAP MaxDB

- Backup completes with errors if filenames contain spaces.

Workaround:

- On Windows systems:
 1. Change the `RUNDIRECTORY` parameter to short (8+3) path names and edit filenames in the registry key `HKEY_LOCAL_MACHINE\SOFTWARE\SAP\SAP DBTech\IndepData`.
 2. Restart the database.
- On HP-UX and Linux systems:

1. 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.
 2. Adjust the values of the IndepData parameter in the file
 /var/spool/sql/ini/SAP_DBTech.ini (on HP-UX) or
 /usr/spool/sql/ini/SAP_DBTech.ini (on Linux).
- On SUSE Linux Enterprise Server 10 x86-64 systems with SAP MaxDB 7.6 installed, you cannot back up SAP MaxDB data with more than 19 streams. If you set the **Parallelism** option to a higher value, the session fails.
 Workaround: Contact SAP MaxDB support.

Oracle Server

- In case the backup system is low on resources (CPU, memory, and so on), the following error is reported by the Oracle Server Manager in the Data Protector Monitor context for the Oracle HP P9000 XP Disk Array Family integration:
 ORA-12532: TNS: invalid argument
 Workaround: Configure the backup system so that it has sufficient resources to simultaneously run the Oracle Server instance and execute a backup session.
- While performing a backup set ZDB session, the following warning is displayed for each database datafile:
 RMAN-06554: WARNING: file n is in backup mode
 Processing of each such message may take up to 20 seconds. It considerably slows down backups of databases with a large number of datafiles (200 or more).
- If you abort a running backup set ZDB session after the Oracle RMAN command has already been invoked by Data Protector, the ZDB session is terminated properly, but the RMAN-related Oracle Server processes continue to run on the backup system. These processes need to be manually terminated.
 Workaround: To automatically terminate problematic processes properly, run another Data Protector session based on the same ZDB backup specification.

VMware

Data Protector Virtual Environment integration

- If a virtual machine has been backed up with a floppy diskette or CD-ROM drive connected to it, any UNIX guest operating system might fail to boot after the restore. Backup and restore sessions will both complete successfully, but the virtual machine will not be in the consistent state once restored.
 Workaround: To ensure a successful restore, make sure you dismount any floppy diskette or CD-ROM drives from the configuration before you back up:
 1. In VMware vSphere Client, right-click on the virtual machine in the inventory pane and click **Edit Settings**.
 2. Remove any floppy diskette drives or CD-ROM drives from the configuration.
 If you want to perform a backup of a template, see http://kb.vmware.com/selfservice/microsites/search.do?language=en_US&displayKC=1001416.
- The restore of thin disks using the SAN transportation mode is slower compared to the backup. The vCenter Server system receives a large number of requests to "Clear lazy zero" and "Allocate blocks" during the restore, which cause a slower restore and fill up the vCenter

Server system database by logging the tasks. This is caused by a known issue described at http://kb.com/selfservice/microsites/search.do?language=en_US=displayKC=1035096.

Workaround: Do one of the following:

- Use an ESX Server as a Data Protector client and select the target datastore for restore.
- Use a vCenter Server system as a Data Protector client and set the `OB2_VEAGENT_RESTORE_TRANSPORT_METHOD omnirc` option on the backup host to `NBD`.

Sybase Server

- On Solaris systems, aborting a Sybase backup session makes the system unresponsive.

Workaround: Abort the backup session by terminating the

`SYBASE_HOME_DIR/bin/sybmultbuf` process from the command-line interface.

Disk array integrations

- The Data Protector integration with HP P6000 EVA Disk Array Family provides instant recovery by use of snapclones. The snapclone creation takes time and requires disk array resources. The actual performance impact depends on factors such as disk management, configuration, I/O load, and disk usage. Thus, HP strongly recommends to perform performance benchmarking in sensitive environments before using snapclones.

Data Protector also provides 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 low-performance disks for replicas.
- During a ZDB-to-disk+tape or ZDB-to-tape session, you can postpone the backup to tape until the snapclones are fully created, thus preventing performance degradation of the application during this phase.

For further assistance, contact HP support.

- On Windows systems, if performing a snapshot backup on P6000 EVA Array, the following message may occur:

```
[Normal]Starting drive discovery routine.
```

```
[Major]Resolving of filesystem fsname has failed. Details unknown.
```

Workaround: Install Secure Path version 4.0B and patch v4.0B-3. The patch can be obtained from the HP webpage <http://www.itrc.hp.com>.

- When using the Secure Path 4.0C driver, unrecoverable error occurs occasionally on the backup system.
- On Windows Server 2008 systems without the Windows Server 2008 Service Pack 2 installed, it may occur that the Data Protector ZDB agent cannot dismount a volume during an ZDB or IR session, although no processes are running which could keep the volume locked and prevent the dismount operation.

Workaround:

1. On the system where the problematic volume resides, perform one of the following:
 - Update the operating system to Windows Server 2008 Service Pack 2.
 - Install a specific Windows Server 2008 hotfix. The hotfix package can be obtained from the Microsoft website <http://support.microsoft.com/kb/952790>.
 - Set the omnirc option SMISA_FORCE_DISMOUNT (in the case of the Data Protector HP P6000 / HP 3PAR SMI-S Agent) or SSEA_FORCE_DISMOUNT (in the case of Data Protector HP P9000 XP Agent) to 1.
 2. Restart the session that failed.
- In circumstances when several ZDB sessions that involve the HP P6000 / HP 3PAR SMI-S Agent and a Windows Server 2008 SP2 backup system are running simultaneously, the backup administrator logged on the backup system using the system default administrative account might be occasionally presented with a pop-up window, asking them to format a disk which is presented to the backup system. A message similar to the following is displayed in the pop-up window:

You need to format the disk in drive *DriveLetter*: before you can use it.

Do you want to format it?

This was recognized as a known issue by Microsoft, and was addressed by the hotfix available at <http://support.microsoft.com/kb/971254>. When installed, the hotfix significantly reduces the frequency of such occurrences, but it does not completely eliminate them. According to Microsoft, the problem might also occur on Windows Server 2008 R2.

Workaround: Click **Cancel** to close the pop-up window. To avoid such pop-up windows from reappearing, disable the system-default administrative account and use another user account. The workaround might not be useful on Windows Server 2008 R2 systems. For further assistance, contact the HP Customer Support Service or the Microsoft Support directly.
 - On Windows Server 2008 R2 systems, when using the Data Protector Microsoft Volume Shadow Copy Service integration or the Data Protector HP P6000 / HP 3PAR SMI-S Agent, you may encounter either of the following problems after several zero downtime backup sessions have been simultaneously and continuously running for several days:
 - Although presented to the backup system, target volumes are not recognized by the operating system. As a result, the affected ZDB session ends abnormally. All consecutive ZDB sessions fail as well.

Although this problem turned out not to occur under ordinary conditions, it is not possible to exclude that it will occur in your environment.

Workaround: None. HP is collaborating with external partners to find a solution.
 - A critical system error occurs on the application system, resulting in a Stop error message (displayed in white text on a blue screen).

This was recognized by Microsoft as a known issue in the Microsoft Multipath I/O (MPIO) framework driver, and was addressed by the hotfixes available at <http://support.microsoft.com/kb/2511962> and <http://support.microsoft.com/kb/2549567>. The hotfixes resolve one aspect of the issue and significantly reduce the probability of a system failure.

Workaround: Install the hotfixes on the application system, and rerun the problematic sessions. If the problem persists, avoid running multiple ZDB sessions in parallel.
 - On SUSE Linux Enterprise Server 10.3 and 11.1 and on Oracle Enterprise Linux 5.3, after multiple simultaneous zero downtime backup sessions that involve a P6000 EVA Array and the same backup system have been running continuously for a longer period, the virtual disks

of the disk array are unexpectedly unrepresented from the backup system. Additionally, creation of the virtual disk device files on the backup system fails sporadically, even after a user-triggered disk rescan is complete.

Workaround: Restart the backup system, and rerun the problematic zero downtime backup sessions.

- If two command devices are configured for a disk array of the HP P9000 XP Disk Array Family which supports authorization verification, one operating in the user authentication mode and the other in the conventional mode, a problem may occur when you run a ZDB or IR session if no or wrong user credentials exist in the XPDB database (XPDB). In such circumstances, the problem occurs if the HP P9000 XP Agent first connects to the command device with enabled authentication, and after failing to start the requested operation, it connects to the command device with disabled authentication. At this point the session fails unexpectedly.

Workaround: Do one of the following and restart the session afterwards:

- Using the `omnidbxp -user` command, add correct user credentials to the XPDB or update the existing ones appropriately.
For command syntax and usage examples, see the `omnidbxp` reference page in the *HP Data Protector Command Line Interface Reference* or the `omnidbxp` man page.
- Disable the user authentication mode on the command device.
- Prevent the HP P9000 XP Agent from connecting to the command device operating in the user authentication mode using either method:
 - Unpresent the command device from the application system and the backup system.
 - Follow the steps:
 1. On the application system and the backup system, set the `SSEA_QUERY_STORED_CMDDEVS omnirc` option to 1.
 2. Remove the data belonging to the command device from the XPDB using the `omnidbxp -cm -remove` command.

- If you remove the last HP 3PAR StoreServ Storage snapshot presentation that belongs to a specific application system, the application system is also removed from its HP 3PAR StoreServ Storage virtual domain.

The problem is caused by a known issue in handling the *Super* user account privilege level by the HP 3PAR StoreServ Storage firmware.

Workaround: Configure the Data Protector HP 3PAR StoreServ Storage integration agent by choosing an HP 3PAR StoreServ Storage system user account that only has the *Edit* privilege level assigned.

Non-Data Protector issues related to Granular Recovery Extensions

VMware vSphere

- When you select a virtual machine and navigate to the **HP Data Protector** plugin tab, the following error message is displayed:

```
HTTP Status 500 -
```

```
Exception javax.servlet.ServletException: Unable to read shell environment variables
```

```
org.apache.catalina.servlets.CGIServlet.init(CGIServlet.java:310)
```

```
org.apache.catalina.valves.ErrorReportValve.invoke(ErrorReportValve.java:102)
```

```
...
```

This error appears in Windows Server 2008 environments in combination with some versions of the Tomcat Server for vCenter.

Workaround: Change the `os.name` property in the Tomcat configuration:

1. Run the Tomcat configuration utility: **Start > VMware > VMware Tomcat > Configure Tomcat.**
2. Click the **Java** tab and add the following line to Java options: `-Dos.name="Windows 2008"`.
3. Restart the Tomcat Server.

Microsoft Exchange Server

- Recovery of an entire mailbox or single mailbox items using the Data Protector Granular Recovery Extension for Microsoft Exchange Server in an Exchange Server 2013 environment with the Cumulative Update 1 for Exchange Server 2013 (Exchange 2013 CU1) installed fails with the following error message:

The call to

```
'net.tcp://serverName/Microsoft.Exchange.MailboxReplicationService serverName (15.0.620.29 caps:3F)' failed. Error details: must be logging in with GUIDs, not legDN
```

```
Parameter name: owner.
```

The problem is caused by a known Exchange 2013 CU1 issue, and does not appear in Exchange Server 2013 environments without the Exchange 2013 CU1 installed. For details, see [http://technet.microsoft.com/en-us/library/jj150489\(v=exchg.150\).aspx](http://technet.microsoft.com/en-us/library/jj150489(v=exchg.150).aspx).

Workaround: None. Installing an upcoming Data Protector patch or a future Microsoft Exchange Server patch will resolve the issue.

Non-Data Protector issues related to disaster recovery

- During an Enhanced Automated Disaster recovery of an Red Hat Enterprise Linux 5.1, the restore session completes successfully, but the operating system is left in an inconsistent state after the disaster recovery and does not start successfully.

Workaround: Update the GRUB bootloader package to `grub-0.97-13.5.src.rpm` or a later version, as described in <http://rhn.redhat.com/errata/RHBA-2008-0440.html>.

Non-Data Protector issues related to reporting

- While using Microsoft Outlook, 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. The same happens if you configure a notification and select the e-mail

send method. The cause of the problem is that Outlook requires user interaction before sending an e-mail notification.

Workaround: 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 Microsoft Outlook XP, 2003, or 2007, see 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 specific Windows operating systems and is the default MAPI handler on those 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 Server systems, the **SMTP Mail Connector** option must be enabled on the Microsoft Exchange Server. For details of how to configure SMTP on Microsoft Exchange Server system, see the Microsoft webpage <http://support.microsoft.com/kb/265293>.

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

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

- On UNIX systems, due to the operating system limitations, international characters in localized e-mail notifications and reporting may be displayed incorrectly if they are transmitted between systems using a different locale.
- When viewing web reports using Netscape Navigator, after resizing the browser window the applet does not automatically adjust its size appropriately.

Workaround: Start the Netscape Navigator manually, resize the window to the desired size and only then open the `WebReporting.html` file.

- 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 it is 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, the report can take significant time to be created.
- If you use Data Protector reporting and the HTML output format, a Unicode file is generated. Some older web browsers do not support local viewing of Unicode files. However, the files may be displayed correctly if retrieved from a Web server.
- 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 not be displayed correctly.

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)**.
- Due to the Microsoft Office Word 2007 limitation which states that the maximum number of columns in a table is 63, the following issue can occur:

When using Microsoft Outlook 2007 and “email SMTP” send method, HTML format, for Device Flow Report and Session Flow Report, Outlook does not display properly the tables in the reports since these reports contain more than 63 columns. The same issue occurs if you log such a report to an HTML file and then try to open it with Microsoft Office Word. Also, in both cases, the tooltips are not displayed.

Workaround: Do not use Word to display such a report. Use a web browser supported by Data Protector. You can open the report with a web browser in one of the following ways:

- Open the mail. In the **Other Actions** menu, click **View in Browser**.
- Since the report is sent also as the HTML format attachment, you can open the attachment directly from Outlook, or you can save the attachment first and then open it with a supported browser.

Other known non-Data Protector issues

- When mounting a CIFS share on a UNIX system, the shared 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 restart the system.

HP-UX systems:

Set the `OB2SHMEM_IPCGLOBAL` option to 1 in the file `/opt/omni/.omnirc`.

Solaris systems:

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 parameter value needs to be increased.

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

- Secure path on HP-UX external device filename may change after restart. This changes the mapping to volume managers. Raw device backups may fail due to a different device file being specified in the backup specification.
- When creating a file system backup for a Windows Vista, Windows 7, Windows 8, Windows Server 2008, or Windows Server 2012 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.
- When creating a file system backup for a Windows Vista, Windows 7, Windows 8, Windows Server 2008, or Windows Server 2012 system, Data Protector GUI does not list `RemovableStorageManagementDatabase` among Windows configuration objects available for backup.
Workaround: To enable backup of the `RemovableStorageManagementDatabase` configuration object, install Removable Storage Manager on the system to be backed up.
- If a FAT32 boot partition exists on Windows Server 2003 system, you cannot use a Windows Vista client for creating an ISO image for this system, since the resulting CD-ROM cannot be used to start the system.
Workaround: Use the Windows Server 2003 system to create the ISO image.
- Data Protector clients without the Internet Protocol version 6 (IPv6) functionality are not able to connect to IPv6-only clients in the cell.
Workaround: For all clients running a newer version of Data Protector in such mixed environments, a dual-stack configuration (enabled both IPv4 and IPv6 protocols) is recommended.
- After installing the Quality Pack Patch Bundle 1103 or 1109 on HP-UX 11.31, the Data Protector backup session performance decreases significantly.
Workaround: To resolve this issue, install the kernel patch `PHKL_41967`.
After installing this patch and setting the parameter, the Data Protector backup performance is restored.

5 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 ports: 5555, 7112, 7113, 7116, 9999. See the *HP Data Protector Installation and Licensing Guide* on how to change the default port numbers.
- 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

The Cell Manager must meet the following minimum requirements:

- The Soft File Limit per Process on the Cell Manager should be at least 1024.
- 8 GB of total RAM

For recovery of the Internal Database, twice as much total RAM is required.

For each parallel backup session 40 MB of RAM are required and 5–8 MB per data segment size. For example, if you want to run 60 parallel backup sessions 3 GB of RAM plus 512 MB for data segments are needed.

- 1.5 GB of free disk space + approximately 100 bytes for each backed up file (for use by the IDB) in the `/var` directory, where the IDB is stored.

If you have insufficient free storage space on the disk volume, you can use linked directories, but you should create the links before the installation and ensure that the destination directories exist.

- HP recommends to modify the kernel parameters as follows:
 - Set the kernel parameter `shmmax` (maximum size of a shared memory segment) to at least 2.5 GB. To check the configuration, execute:

```
kcusage shmmax
```

For recovery of the Internal Database, the parameter should be set to twice the above value.
 - Set the kernel parameter `maxdsiz_64` (max data segment size) to at least 134217728 bytes (128 MB), and the kernel parameter `semnmu` (number of semaphore undo structures) to at least 256.

After committing these changes, recompile the kernel and restart the system.

- The `inetd` daemon must be installed and running.
- The user group `hpdp` and the dedicated user account `hpdp` in this user group to be used by Data Protector.

For details on how to change the default user account see the *HP Data Protector Installation and Licensing Guide*.

On systems running Linux

The Cell Manager must meet the following minimum requirements:

- 4 GB of total RAM

For recovery of the Internal Database, twice as much total RAM is required.

For each parallel backup session 40 MB of RAM are required and 5–8 MB per data segment size. For example, if you want to run 60 parallel backup sessions 3 GB of RAM plus 512 MB for data segments are needed.

- 1.5 GB of free disk space + approximately 100 bytes for each backed up file (for use by the IDB) in the `/var` directory, where the IDB is stored.

If you have insufficient free storage space on the disk volume, you can use linked directories, but you should create the links before the installation and ensure that the destination directories exist.

- HP recommends to modify the kernel parameters as follows:

- Set the kernel parameter `shmmax` (maximum size of a shared memory segment) to at least 2.5 GB. To check the configuration, execute:

```
cat /proc/sys/kernel/shmmax
```

For recovery of the Internal Database, the parameter should be set to twice the above value.

- 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++`.
- On Red Hat Enterprise Linux 6 64-bit systems (x86_64), make sure to install the package `glibc-2.12-1.25.el6.i686` or a later version.
- The `inetd` or `xinetd` daemon must be installed and running.
- The user group `hpdp` and the dedicated user account `hpdp` in this user group to be used by Data Protector.

For details on how to change the default user account see the *HP Data Protector Installation and Licensing Guide*.

On systems running Windows

The Cell Manager must meet the following minimum requirements:

- 4 GB of total RAM

For recovery of the Internal Database, twice as much total RAM is required.

For each parallel backup session 40 MB of RAM are required. For example, if you want to run 60 parallel backup sessions 3 GB of RAM are needed.

- 1.5 GB of free disk space + approximately 100 bytes for each backed up file (for use by the IDB).

If you have insufficient free storage space on the chosen disk volume, you can mount another volume to a directory on it, but you should do so before the installation.

- $2 \times \text{size_of_the_biggest_package_to_be_installed} + 10$ MB of disk space needed on the system drive
- The firewall must be configured to additionally accept "Remote Service Administration" (NP) connections (port 445).
- Administrative privileges are required to install Data Protector 8.00.

Installation Server requirements

On systems running HP-UX

The Installation Server must meet the following minimum requirements:

- 512 MB of total RAM
- 1.5 GB of free disk space
- The `inetd` daemon must be installed and running.

On systems running Linux

The Installation Server must meet the following minimum requirements:

- 512 MB of total RAM
- 1.5 GB of free disk space
- The `inetd` or `xinetd` daemon must be installed and running.

On systems running Windows

The Installation Server must meet the following minimum requirements:

- 512 MB of total RAM
- 2 GB of free disk space
- Administrative privileges are required to install Data Protector 8.00. You must also configure a user account whose credentials will be used during remote installation.

Client system requirements

On systems running UNIX

The prerequisites for remote installation of the Data Protector client are the following:

- The `inetd` or `xinetd` (on Linux) daemon must be either up and running or set up so that Data Protector is able to start it on the remote client system.
- HP recommends that the `ssh` is installed and enabled to enable secure installation of remote clients.

If `ssh` is not installed, the `rsh`/`rexec` service must be enabled. For details on how to enable the services, see your operating system documentation.

RAM and disk space requirements for the Data Protector client components on UNIX systems

The following table presents the minimum RAM and disk space requirements for different Data Protector client components on UNIX systems:

Client system component	RAM (MB) ¹	Free disk space (MB) ¹
Disk Agent	64 for each (recommended 128)	20 for each
Media Agent		
Integration components		
English Documentation (Guides, Help)	N/A	100

¹ The figures indicate requirements for the components only. The figure does not include space allocation for the operating system, paging file, or other applications.

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.

For HP-UX 11.11, the IPv6NCF11i bundle or TOUR/IPv6 support is required to enable the Internet Protocol version 6 (IPv6). For details, see [“HP-UX system patches required by Data Protector” \(page 88\)](#).

Solaris systems

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.

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 SUSE Linux Enterprise Server 10 and 11, the package `compat-libstdc++-2.96-2.96-132.7.2` with 2.96-RH compatibility standard C++ libraries must be installed on the system.
- On Red Hat Enterprise Linux 6 64-bit systems (x86_64), make sure to install the packages `glibc-2.12-1.7.el6.i686` and `libstdc++-4.4.4-13.el6.i686` or a later version.

Mac OS X systems

When installing remotely, a UNIX based Installation Server (Linux or HP-UX) is required for accommodating the Mac OS X remote installation packages (Core and Disk Agent).

On systems running Windows

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

- On Microsoft Windows XP Professional systems, Service Pack 3 must be installed.
- On Microsoft Windows Server 2003 systems, Service Pack 2 must be installed.

RAM and disk space requirements for the Data Protector client components on Windows systems

The following table presents the minimum RAM and disk space requirements for different Data Protector client components on Windows systems:

Client system component	Total RAM (MB) ¹	Free disk space (MB) ¹
User Interface	512 ²	150 ³
Disk Agent	64 each (recommended 128)	20 each
Media Agent		
Integration components		
English Documentation (Guides, Help)	N/A	100

¹ The figures indicate requirements for the components only. The figure does not include space allocation for the operating system, paging file, or other applications.

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 512 MB of RAM are enough to display about the maximum number of file names.

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

The figures indicate requirements for the components only. For example, the "disk space" figure does not include space allocation for the operating system, paging file, or other applications.

Newer Windows operating systems and service packs

Windows versions subsequent to Windows XP Service Pack 2 and Windows Server 2003 introduce an improved version of the Internet Connection Firewall (ICF), under a new name as Microsoft Firewall. 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` option `OB2FWPASSTHRU` is set on the Installation Server, the installation agent automatically registers itself with Windows Firewall and the installation continues normally.

Java web reporting requirements

To use Data Protector Java web reporting, the following prerequisites must be fulfilled:

- A supported Web browser must be installed on the system

The supported Web browsers are the same as for viewing the Data Protector Help. For details, see "[Requirements for viewing Data Protector documentation](#)" (page 86).

- **Windows Internet Explorer:**

The default web browser security settings prevent webpages from running scripts or using ActiveX controls. To allow the web browser to run scripts and use ActiveX controls in order to enable Data Protector Web Reporting, click **Allow blocked content** in the Internet Explorer Information bar. To permanently allow blocked content, select **Tools > Internet Options > Advanced**, locate the Security section and select the option **Allow active content to run in files on My Computer**.

- A supported Java runtime environment must be installed on the system and enabled in the Web browser

The supported Java runtime environment is Java Runtime Environment (JRE) 1.5.0_06 or newer update (for example, 1.5.0_07). You can download JRE at <http://www.oracle.com/technetwork/java/index-jsp-141438.html>.

Local client installation

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

For the installation procedure, see the *HP Data Protector Installation and Licensing Guide*.

Windows XP Home Edition and HP OpenVMS clients can be installed locally. Remote installation is not supported.

Upgrade

The procedures for upgrading to Data Protector 8.00 from Data Protector A.06.11, 6.20, and 7.00 are documented in the *HP Data Protector Installation and Licensing Guide*. To upgrade from an even earlier version, you first need to upgrade to one of the mentioned earlier Data Protector versions, and then upgrade to Data Protector 8.00 following the instructions in the *HP Data Protector Installation and Licensing Guide*.

Requirements for viewing Data Protector documentation

To view the Data Protector guides and the Data Protector Help, you must install a supported PDF document viewer and a supported Web browser. Below is a list of applications and versions that are supported. HP recommends to use the newest version available for your operating system:

- For viewing the guides, you need Adobe Reader. The following versions are supported:

Windows, Solaris, and Linux systems:

- Adobe Reader 9 or later
You can download it at <http://get.adobe.com/reader/>.

HP-UX systems:

- Adobe Reader 7 or later
You can download it at <ftp://ftp.adobe.com/pub/adobe/reader/unix/7x/7.0.9/enu/>.

Other PDF document viewers may fulfill this requirement as well, but have not been tested.

- For viewing the Help, you need a Web browser that is able to run under the same account as the Data Protector GUI process. JavaScript must be enabled in the Web browser. The following Web browsers are supported:

Windows systems:

- Windows Internet Explorer 8.0 or later¹
Compatibility view should be disabled for locally stored websites.
You can download Windows Internet Explorer at <http://windows.microsoft.com/en-us/internet-explorer/download-ie>.
- Mozilla Firefox 17.0.5 (Extended Support Release) or later
You can download it at <http://www.mozilla.org/en-US/firefox/organizations/all.html>.

Other Web browsers may fulfill this requirement as well, but have not been tested.

Requirements for Data Protector services on Windows systems

Data Protector uses five services:

Inet	Backup client service
CRS	Cell Manager Service
hpdp-idb	Internal Database Service
hpdp-idb-cp	Internal Database Connection Pooler
hpdp-as	Application Server

By default, Inet and the hpdp-* services are running under the Local System account, and CRS is running under the Administrator account.

1. This is also the requirement for viewing the HP Data Protector Granular Recovery Extension for Microsoft Exchange Server Help.

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
CRS	<i>Data_Protector_program_data</i>	Full access
	HKLM\SOFTWARE\Hewlett-Packard\OpenView\OmniBackII	Full access
Inet	Backup and Restore	-
	Take Ownership	-

Files installed in the %SystemRoot%\system32 folder

The following files are placed (depending on the components selected) into %SystemRoot%\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.
- ob2informix.dll This library is used to integrate with the Informix Server database.
- snmpOB2.dll This library is used to implement system SNMP traps.

6 Required patches

For Data Protector patches, see <http://support.hp.com> for the latest information.

Windows system patches required by Data Protector

For systems running Windows, contact the Microsoft Corporation for the latest Microsoft Windows Service Pack.

HP-UX system patches required by Data Protector

For patches on systems running the HP-UX operating systems, see <http://www.itrc.hp.com> 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.

HP recommends 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 11.11

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

Service pack	Bundle name	Description
Use latest	GOLDQPK11i	Current patch bundle for HP-UX 11.11
Use latest	HWEEnable11i	Required hardware enablement patches

The following HP-UX 11.11 individual patches are recommended for all systems in the Data Protector cell:

Patch name	Hardware platform	Description
PHCO_40310	s700, s800	libc cumulative patch
PHSS_41214	s700, s800	ld(1) and linker tools cumulative patch
KRNG11i	s700, s800	Strong Random Number Generator ¹

¹ Required to enable encrypted control communication.

The following HP-UX 11.11 individual patches are recommended for all HP-UX 11.11 clients in the Data Protector cell:

Patch name	Hardware platform	Description
Use latest	s700, s800	MC/ServiceGuard patches for the version you use

The following product and HP-UX 11.11 patch must be installed on each Data Protector Disk Agent system from which data will be backed up in the AES 256-bit encrypted form:

Product number or patch name	Hardware platform	Description
KRNG11i	s700, s800	HP-UX Strong Random Number Generator
PHKL_27750	s700, s800	vpar enablement, krng enablement

Additionally, to use IPv6 on HP-UX 11.11, the following bundle and patches are required by Data Protector:

Bundle or patch name	Hardware platform	Description
IPv6NCF11i bundle or the TOUR transition patches	s700, s800	Transport Transition 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 for all HP-UX 11.23 clients in the Data Protector cell:

Patch name	Hardware platform	Description
PHKL_32272 ¹	s700, s800	Changes to fix intermittent failures in getacl/setacl.
PHSS_41178	s700, s800	linker and fdp cumulative patch

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	QPK1131	Current patch bundle for HP-UX 11.31

The following HP-UX 11.31 individual patches are required by Data Protector:

Patch name	Hardware platform	Description
PHCO_38050	Itanium, PA-RISC	pthread library cumulative patch
PHKL_38055	Itanium, PA-RISC	Scheduler cumulative patch
PHSS_41179	Itanium, PA-RISC	linker and fdp cumulative patch

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.

7 End-of-support announcements

You can find the relevant version information regarding supported platforms, integrations, and other functional areas in the Data Protector support matrices. Information in this chapter is provided for your convenience, but may not be exhaustive.

For the latest list of support matrices on the Web, see <http://support.openview.hp.com/selfsolve/manuals>. In the Storage section, click **Storage Software** and then select your product.

Platforms

Cell Manager, Installation Server, and Manager-of-Managers platforms

The following Data Protector Cell Manager, Installation Server, and Manager-of-Managers platforms are no longer supported in Data Protector 8.00:

- Microsoft Windows 7 (32-bit)
- Microsoft Windows Server 2003 (64-bit) (x64)
- Microsoft Windows Server 2008 (32-bit)
- HP-UX 11.31 (PA-RISC)
- SUSE Linux Enterprise Server 10

Client platforms

The following Data Protector client platforms are no longer supported in Data Protector 8.00:

Disk Agent:

- Oracle Enterprise Linux 4.x
- HP OpenVMS 7.3, 8.21 (Alpha)
- IBM AIX 5.3
- SGI IRIX
- SCO OpenServer
- SCO UnixWare
- Tru64
- Apple Mac OS X 10.5.x
- Novell Netware

Media Agent:

- Microsoft Windows XP
- Microsoft Windows Vista
- Oracle Enterprise Linux 4.x
- HP OpenVMS 7.3, 8.21 (Alpha)
- IBM AIX 5.3
- SCO OpenServer
- Tru64
- Novell NetWare

Integrations

Integrations with the following software applications are no longer supported in Data Protector 8.00:

- HP Network Node Manager
- Microsoft Exchange Server 2003
(using the Data Protector Microsoft Exchange Server 2003/2007 integration or Data Protector Microsoft Exchange Server 2003 ZDB integration)
- Microsoft SharePoint Portal Server 2003
- VMware Virtual Infrastructure
(using the Data Protector VMware (Legacy) integration; this integration is supplied with Data Protector 8.00, but no longer officially supported)
- VMware vSphere
(using the Data Protector VMware (Legacy) integration; instead of this integration, use the Data Protector Virtual Environment integration to integrate with this virtualization environment)

Integration with the following disk array families is longer supported on the specified platforms in Data Protector 8.00:

- HP P6000 EVA Disk Array Family on HP-UX (PA-RISC) versions 11.11 and 11.23

Other functional areas

The following Data Protector functional areas are no longer supported in Data Protector 8.00:

- VLS automigration
- Restore directly from backup media
- Scope of particular disaster recovery methods:
 - One Button Disaster Recovery (OBDR) method for Data Protector Cell Managers
 - Disk Delivery Disaster Recovery (DDDR) method for Windows systems
 - Automated System Recovery (ASR) method for Windows systems

Complementary applications

The following applications can no longer be used in conjunction with Data Protector 8.00:

- HP AutoPass
The HP AutoPass utility can no longer be used for obtaining Data Protector licenses. For more information about obtaining licenses, see the *HP Data Protector Installation and Licensing Guide*.

Unsupported upgrade paths

The following products can no longer be directly upgraded to the latest Data Protector release version (8.00):

- HP Data Protector A.06.10

For a list of Data Protector release versions from which you can upgrade directly, see the *HP Data Protector Installation and Licensing Guide*, chapter *Upgrading to Data Protector 8.00*.

8 Data Protector documentation

Documentation set

The Help and other guides provide related information.

NOTE: The documentation set available at the HP support website at <http://support.openview.hp.com/selfsolve/manuals> contains the latest updates and corrections.

Help

Data Protector provides Help topics and context-sensitive (F1) Help for Windows and UNIX platforms. Install the Help during the Data Protector setup procedure by selecting the installation component English Documentation (Guides, Help) (Windows systems) or OB2-DOCS (on UNIX systems). Once installed, the Help resides in the following directory:

Windows systems: `Data_Protector_home\help\enu`

UNIX systems: `/opt/omni/help/C/help_topics`

You can access the Help from the top-level directory of any installation DVD-ROM without installing Data Protector:

Windows systems: Open `DP_help.chm`.

UNIX systems: Unpack the zipped tar file `DP_help.tar.gz` and open `DP_help.htm`.

Guides

Data Protector guides are available in the electronic PDF format. Install the PDF files during the Data Protector setup procedure by selecting the installation component English Documentation (Guides, Help) (on Windows systems) or OB2-DOCS (on UNIX systems). Once installed, the guides reside in the following directory:

Windows systems: `Data_Protector_home\docs`

UNIX systems: `/opt/omni/doc/C`

You can also access the guides:

- From the **Help** menu of the Data Protector graphical user interface
- From the HP support website at <http://support.openview.hp.com/selfsolve/manuals> (where the most up-to-date guide versions are available)

Data Protector guides are:

- *HP Data Protector Getting Started Guide*
This guide contains information to get you started with using Data Protector. It lists installation prerequisites, provides instructions on installing and configuring a basic backup environment and procedures for performing backup and restore. It also lists resources for further information.
- *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 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 Command Line Interface Reference*

This guide describes the Data Protector command-line interface, command options, and their usage as well as provides some basic command-line examples. It is located in the following directory:

Windows systems: `Data_Protector_home\docs\MAN`

UNIX systems: `/opt/omni/doc/C/`

On UNIX systems, you can use the `omniintro` man page to display a list of the available Data Protector commands. You can then execute the `man CommandName` command to retrieve information about each Data Protector command.

- *HP Data Protector Product Announcements, Software Notes, and References*

This guide gives a description of new features of HP Data Protector 8.00. It also provides information on installation requirements, required patches, and limitations, as well as known issues and workarounds.

- *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 and operators.

There are six guides:

- *HP Data Protector Integration Guide for Microsoft Applications: SQL Server, SharePoint Server, and Exchange Server*

This guide describes the integrations of Data Protector with the following Microsoft applications: Microsoft SQL Server, Microsoft SharePoint Server, and Microsoft Exchange Server.

- *HP Data Protector Integration Guide for Oracle and SAP*

This guide describes the integrations of Data Protector with Oracle Server, SAP R/3, and SAP MaxDB.

- *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 UDB, and Lotus Notes/Domino Server.

- *HP Data Protector Integration Guide for Sybase and Network Data Management Protocol Server*

This guide describes the integrations of Data Protector with Sybase Server and Network Data Management Protocol Server.

- *HP Data Protector Integration Guide for Microsoft Volume Shadow Copy Service*
This guide describes the integration of Data Protector with the Microsoft Volume Shadow Copy Service. This guide also documents application writer specifics.
- *HP Data Protector Integration Guide for Virtualization Environments*
This guide describes the integrations of Data Protector with virtualization environments: VMware Virtual Infrastructure, VMware vSphere, VMware vCloud Director, Microsoft Hyper-V, and Citrix XenServer.
- *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 P4000 SAN Solutions, HP P6000 EVA Disk Array Family, HP P9000 XP Disk Array Family, HP 3PAR StoreServ Storage, and EMC Symmetrix Remote Data Facility and TimeFinder. 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 Server, SAP R/3, Microsoft Exchange Server, and Microsoft SQL Server databases.
- *HP Data Protector Granular Recovery Extension User Guide for Microsoft Exchange Server*
This guide describes how to configure and use the Data Protector Granular Recovery Extension for Microsoft Exchange Server. Graphical user interface of the Data Protector Granular Recovery Extension for Microsoft Exchange Server is integrated into the Microsoft Management Console. This guide is intended for Microsoft Exchange Server administrators and Data Protector backup administrators.
- *HP Data Protector Granular Recovery Extension User Guide for Microsoft SharePoint Server*
This guide describes how to configure and use the Data Protector Granular Recovery Extension for Microsoft SharePoint Server. The Data Protector Granular Recovery Extension is integrated into Microsoft SharePoint Server Central Administration and enables you to recover individual items. This guide is intended for Microsoft SharePoint Server administrators and Data Protector backup administrators.
- *HP Data Protector Granular Recovery Extension User Guide for VMware vSphere*
This guide describes how to configure and use the Data Protector Granular Recovery Extension for VMware vSphere. The Data Protector Granular Recovery Extension is integrated into VMware vCenter Server and enables you to recover individual items. This guide is intended for VMware vCenter Server users and Data Protector backup administrators.
- *HP Data Protector Deduplication*
This technical white paper describes basic data deduplication concepts, principles of Data Protector integration with Backup to Disk devices and its use of deduplication. It also provides instructions how to configure and use deduplication in Data Protector backup environments.

- *HP Data Protector Integration with Autonomy IDOL Server*
This technical white paper describes all aspects of integrating Data Protector with Autonomy IDOL Server: integration concepts, installation and configuration, Data Protector backup image indexing, full content search-based restore, and troubleshooting.
- *HP Data Protector Integration with Autonomy LiveVault*
This technical white paper all aspects of integrating Data Protector with Autonomy LiveVault: integration concepts, installation and configuration, backup policy management, cloud backup, cloud restore, and troubleshooting.

Documentation map

Abbreviations

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

Abbreviation	Documentation item
CLI	Command Line Interface Reference
Concepts	Concepts Guide
DR	Disaster Recovery Guide
GS	Getting Started Guide
GRE Exchange	Granular Recovery Extension User Guide for Microsoft Exchange Server
GRE SPS	Granular Recovery Extension User Guide for Microsoft SharePoint Server
GRE VMware	Granular Recovery Extension User Guide for VMware vSphere
Help	Help
Install	Installation and Licensing Guide
IG IBM	Integration Guide for IBM Applications: Informix, DB2, and Lotus Notes/Domino
IG MS	Integration Guide for Microsoft Applications: SQL Server, SharePoint Server, and Exchange Server
IG VSS	Integration Guide for Microsoft Volume Shadow Copy Service
IG O/S	Integration Guide for Oracle and SAP
IG Var	Integration Guide for Sybase and Network Data Management Protocol Server
IG VirtEnv	Integration Guide for Virtualization Environments
IG IDOL	Integration with Autonomy IDOL Server
IG LV	Integration with Autonomy LiveVault
PA	Product Announcements, Software Notes, and References
Trouble	Troubleshooting Guide
ZDB Admin	ZDB Administrator's Guide
ZDB Concepts	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.

	Help	GS	Concepts	Install	Trouble	DR	CLI	PA	Integr. guides					ZDB		GRE	
									MS	O/S	IBM	Var	VSS	VirtEnv	Concepts	Admin	IG
Backup	X	X	X						X	X	X	X	X	X	X		
CLI							X										
Concepts, techniques	X		X						X	X	X	X	X	X	X	X	X
Disaster recovery	X		X			X											
Installation, upgrade	X	X		X				X									
Instant recovery	X		X										X	X	X		
Licensing	X			X				X									
Limitations	X				X			X	X	X	X	X	X		X		
New features	X							X									
Planning strategy	X		X										X				
Procedures, tasks	X			X	X	X			X	X	X	X	X	X	X	X	X
Recommendations			X					X					X				
Requirements				X				X	X	X	X	X	X				
Restore	X	X	X						X	X	X	X	X	X	X	X	X
Supported configurations													X				
Troubleshooting	X			X	X				X	X	X	X	X	X	X	X	X

Integrations

Look in these guides for details of the integrations with the following software applications:

Software application	Guides
Autonomy IDOL Server	IG IDOL
Autonomy LiveVault	IG LV
IBM DB2 UDB	IG IBM
Informix Server	IG IBM
Lotus Notes/Domino Server	IG IBM
Microsoft Exchange Server	IG MS, ZDB IG, GRE Exchange
Microsoft Hyper-V	IG VirtEnv
Microsoft SharePoint Server	IG MS, ZDB IG, GRE SPS
Microsoft SQL Server	IG MS, ZDB IG
Microsoft Volume Shadow Copy Service (VSS)	IG VSS
Network Data Management Protocol (NDMP) Server	IG Var
Oracle Server	IG O/S, ZDB IG
SAP MaxDB	IG O/S
SAP R/3	IG O/S, ZDB IG
Sybase Server	IG Var

Software application	Guides
VMware vCloud Director	IG VirtEnv
VMware vSphere	IG VirtEnv, GRE VMware

Look in these guides for details of the integrations with the following families of disk array systems:

Disk array family	Guides
EMC Symmetrix	all ZDB
HP P4000 SAN Solutions	ZDB Concepts, ZDB Admin, IG VSS
HP P6000 EVA Disk Array Family	all ZDB, IG VSS
HP P9000 XP Disk Array Family	all ZDB, IG VSS
HP 3PAR StoreServ Storage	ZDB Concepts, ZDB Admin, IG VSS

Localized documentation

Documentation for Data Protector 8.00 is currently only available in English. Localized versions will be available later.