

HP Data Protector A.06.10

MPE/iX system user guide



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i n v e n t

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Contents

Publication history	7
About this guide	9
Intended audience	9
Documentation set	9
Guides	9
Online Help	12
Documentation map	13
Abbreviations	13
Map	14
Integrations	15
Document conventions and symbols	17
Data Protector graphical user interface	18
General information	19
HP technical support	19
Subscription service	20
HP websites	20
Documentation feedback	20
1 MPE/iX system user guide	21
Introduction	21
Integration concepts	21
Configuring the integration	21
Prerequisites	21
Before you begin	22
Configuring devices	22
Configuring standalone devices	22
Configuring SCSI tape libraries	26
Backup	29
User-definable backup variables	30
TurboSTORE/iX backup options	33
Full system backup	33
Restore	34

User-definable restore variables	35
TurboSTORE/iX restore options	36
Pre- and post-exec commands	37
Disaster recovery	37
Supported CLI commands	38
Backup and restore of MPE/iX database	39
TurboSTORE/iX log files	40
UDC files and environment variables	41
UDC files	41
OB2SET file	42
Index	43

Figures

1 Data Protector graphical user interface	19
2 I/O configuration: standalone device	23
3 I/O configuration: SCSI tape library	27
4 Specifying backup options	32
5 Entering the variable	33
6 Entering the variable	36

Tables

1	Edition history	7
2	Document conventions	17
3	Backup types	29
4	List of backup variables	30
5	List of restore variables	35

Publication history

Guide updates may be issued between editions to correct errors or document product changes. To ensure that you receive updated or new editions, subscribe to the appropriate product support service. See your HP sales representative for details.

Table 1 Edition history

Part number	Guide edition	Product
N/A	August 2002	Data Protector Release A.05.00
B6960-90088	May 2003	Data Protector Release A.05.10
B6960-90115	October 2004	Data Protector Release A.05.50
B6960-90029	July 2006	Data Protector Release A.06.00
B6960-96056	November 2008	Data Protector Release A.06.10

About this guide

This guide describes how to configure and use Data Protector with MPE/iX systems.

Intended audience

This guide is intended for backup administrators responsible for planning, setting up, and maintaining network backups. It assumes you are familiar with:

- Basic Data Protector functionality
- MPE/iX system administration

Conceptual information can be found in the *HP Data Protector concepts guide*, which is recommended to fully understand the fundamentals and the model of Data Protector.

Documentation set

Other documents and online Help provide related information.

Guides

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

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

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

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

- *HP Data Protector concepts guide*

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

- *HP Data Protector installation and licensing guide*

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

- *HP Data Protector troubleshooting guide*

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

- *HP Data Protector disaster recovery guide*

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

- *HP Data Protector integration guides*

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

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

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

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

This guide describes the integrations of Data Protector with Oracle, SAP R3, and SAP DB/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, and Lotus Notes/Domino Server.

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

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

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

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

- *HP Data Protector integration guide for HP Reporter*
This manual describes how to install, configure, and use the integration of Data Protector with HP Reporter. It is intended for backup administrators. It discusses how to use the application for Data Protector service management.
- *HP Data Protector integration guide for HP Operations Manager for UNIX*
This guide describes how to monitor and manage the health and performance of the Data Protector environment with HP Operations Manager and HP Service Navigator on UNIX.
- *HP Data Protector integration guide for HP Operations Manager for Windows*
This guide describes how to monitor and manage the health and performance of the Data Protector environment with HP Operations Manager and HP Service Navigator on Windows.
- *HP Data Protector integration guide for HP Performance Manager and HP Performance Agent*
This guide provides information about how to monitor and manage the health and performance of the Data Protector environment with HP Performance Manager (PM) and HP Performance Agent (PA) on Windows, HP-UX, Solaris, and Linux.
- *HP Data Protector zero downtime backup concepts guide*
This guide describes Data Protector zero downtime backup and instant recovery concepts and provides background information on how Data Protector works in a zero downtime backup environment. It is intended to be used with the task-oriented *HP Data Protector zero downtime backup administrator's guide* and the *HP Data Protector zero downtime backup integration guide*.
- *HP Data Protector zero downtime backup administrator's guide*
This guide describes how to configure and use the integration of Data Protector with HP StorageWorks Virtual Array, HP StorageWorks Enterprise Virtual Array, EMC Symmetrix Remote Data Facility and TimeFinder, and HP StorageWorks Disk Array XP. It is intended for backup administrators or operators. It covers the zero downtime backup, instant recovery, and the restore of filesystems and disk images.
- *HP Data Protector zero downtime backup integration guide*
This guide describes how to configure and use Data Protector to perform zero downtime backup, instant recovery, and standard restore of Oracle, SAP R/3, Microsoft Exchange Server, and Microsoft SQL Server databases. The guide also

describes how to configure and use Data Protector to perform backup and restore using the Microsoft Volume Shadow Copy Service.

- *HP Data Protector MPE/iX system user guide*
This guide describes how to configure MPE/iX clients and how to back up and restore MPE/iX data.
- *HP Data Protector Media Operations user's guide*
This guide provides tracking and management of offline storage media. It describes the tasks of installing and configuring the application, performing daily media operations and producing reports.
- *HP Data Protector product announcements, software notes, and references*
This guide gives a description of new features of HP Data Protector A.06.10. It also provides information on supported configurations (devices, platforms and online database integrations, SAN, and ZDB), required patches, and limitations, as well as known problems and workarounds. An updated version of the supported configurations is available at <http://www.hp.com/support/manuals>.
- *HP Data Protector product announcements, software notes, and references for integrations to HP Operations Manager, HP Reporter, HP Performance Manager, HP Performance Agent, and HP Service Information Portal*
This guide fulfills a similar function for the listed integrations.
- *HP Data Protector Media Operations product announcements, software notes, and references*
This guide fulfills a similar function for Media Operations.
- *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.

Online Help

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

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

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

Documentation map

Abbreviations

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

Abbreviation	Guide
CLI	Command line interface reference
Concepts	Concepts guide
DR	Disaster recovery guide
GS	Getting started guide
Help	Online Help
IG-IBM	Integration guide for IBM applications: Informix, DB2, and Lotus Notes/Domino
IG-MS	Integration guide for Microsoft applications: SQL Server, SharePoint Portal Server, Exchange Server, and Volume Shadow Copy Service
IG-O/S	Integration guide for Oracle and SAP
IG-OMU	Integration guide for HP Operations Manager for UNIX
IG-OMW	Integration guide for HP Operations Manager for Windows
IG-PM/PA	Integration guide for HP Performance Manager and HP Performance Agent
IG-Report	Integration guide for HP Reporter
IG-SIP	Integration guide for HP Service Information Portal
IG-Var	Integration guide for VMware Virtual Infrastructure, Sybase, Network Node Manager, and Network Data Management Protocol Server

Abbreviation	Guide
Install	Installation and licensing guide
MO GS	Media Operations getting started guide
MO RN	Media Operations product announcements, software notes, and references
MO UG	Media Operations user guide
MPE/iX	MPE/iX system user guide
PA	Product announcements, software notes, and references
Trouble	Troubleshooting guide
ZDB Admin	ZDB administrator's guide
ZDB Concept	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	PA	Integration Guides						ZDB			MO			MPE/iX	CLI		
								MS	O/S	IBM	Var	OV	OVOU	OVOW	Concept	Admin	IG	GS	User			PA	
Backup	X	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						X	
Disaster Recovery	X		X			X																	
Installation/ Upgrade	X	X		X			X					X	X	X			X	X				X	
Instant Recovery	X		X												X	X	X						
Licensing	X			X			X											X					
Limitations	X				X		X	X	X	X			X			X				X			
New features	X						X																
Planning strategy	X		X								X			X									
Procedures/ Tasks	X			X	X	X		X	X	X	X	X	X	X	X	X	X		X				
Recommendations			X				X							X								X	
Requirements				X			X	X	X	X	X		X				X	X	X				
Restore	X	X	X					X	X	X	X				X	X						X	
Support matrices							X																
Supported configurations														X									
Troubleshooting	X			X	X			X	X	X	X	X			X	X							

Integrations

Look in these guides for details of the following integrations:

Integration	Guide
HP Operations Manager for UNIX/for Windows	IG-OMU, IG-OMW
HP Performance Manager	IG-PM/PA
HP Performance Agent	IG-PM/PA

Integration	Guide
HP Reporter	IG-R
HP Service Information Portal	IG-SIP
HP StorageWorks Disk Array XP	all ZDB
HP StorageWorks Enterprise Virtual Array (EVA)	all ZDB
HP StorageWorks Virtual Array (VA)	all ZDB
IBM DB2 UDB	IG-IBM
Informix	IG-IBM
Lotus Notes/Domino	IG-IBM
Media Operations	MO User
MPE/iX system	MPE/iX
Microsoft Exchange Server	IG-MS, ZDB IG
Microsoft Exchange Single Mailbox	IG-MS
Microsoft SQL Server	IG-MS, ZDB IG
Microsoft Volume Shadow Copy Service (VSS)	IG-MS, ZDB IG
NDMP Server	IG-Var
Network Node Manager (NNM)	IG-Var
Oracle	IG-O/S
Oracle ZDB	ZDB IG
SAP DB	IG-O/S
SAP R/3	IG-O/S, ZDB IG

Integration	Guide
Sybase	IG-Var
EMC Symmetrix	all ZDB
VMware	IG-Var

Document conventions and symbols

Table 2 Document conventions

Convention	Element
Blue text: Table 2 on page 17	Cross-reference links and e-mail addresses
Blue, underlined text: http://www.hp.com	website addresses
<i>Italic text</i>	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 text</i>	<ul style="list-style-type: none"> • Code variables • Command variables
text	Emphasized monospace text

△ CAUTION:

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

📌 IMPORTANT:

Provides clarifying information or specific instructions.



NOTE:

Provides additional information.



TIP:

Provides helpful hints and shortcuts.

Data Protector graphical user interface

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

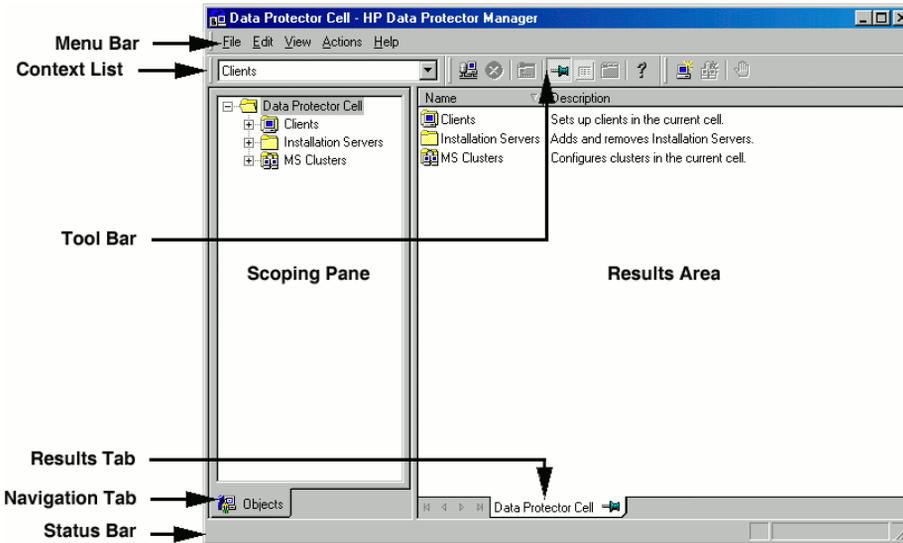


Figure 1 Data Protector graphical user interface

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://www.hp.com/support/manuals>
- <http://www.hp.com/support/downloads>

Documentation feedback

HP welcomes your feedback.

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

1 MPE/iX system user guide

Introduction

This chapter explains how to configure and use the Data Protector MPE/iX integration. It describes concepts and methods you need to understand to back up and restore the following MPE/iX data:

- User files and directories
- System files
- Filesystem directories

This chapter provides information specific to the Data Protector MPE/iX integration. For general Data Protector procedures and options, see the online Help.

Integration concepts

The Data Protector MPE/iX integration uses TurboSTORE/iX backup utility to initiate backup and restore. TurboSTORE/iX APIs are bundled with filesystem and use TurboSTORE/iX internally to back up and restore MPE/iX files. Among the other MPE/iX files, these APIs provide access to specific MPE/iX database files (ALLBASE/SQL and TurboIMAGE/XL) and POSIX filesystem files.

Configuring the integration

Prerequisites

- Ensure that you have correctly installed and configured Data Protector. You need to have at least 15 MB of available disk space (5 MB for the installation package and 10 MB for the installation itself). See the *HP Data Protector installation and licensing guide* for instructions on how to install Data Protector in various architectures.

- For an up-to-date list of supported versions, platforms, devices, required patches and other information, see the *HP Data Protector product announcements, software notes, and references* or <http://www.hp.com/support/manuals>.
- Ensure that TurboSTORE/iX or TurboSTORE/iX 7x24 True-Online is installed on your system.
- Ensure that TCP/IP protocol is installed and configured.

For a list of supported platforms and general Data Protector and MPE/iX-specific limitations, see the *HP Data Protector product announcements, software notes, and references*.

Before you begin

- Configure devices and media for use with Data Protector. See “[Configuring devices](#)” on page 22 for instructions.
- To use backup devices connected to MPE/iX system, install the General Media Agent.
- Install the MPE/iX Disk Agent and configure the `JINETD.NET.SYS` file on all supported MPE/iX systems.
- Enable the name resolving mechanism (DNS or host files).

Configuring devices

This section describes how to configure standalone devices and SCSI tape libraries on MPE/iX.

Configuring standalone devices

1. Connect a device to the system.

2. Write down tape I/O Configuration from the ISL utility MAPPER.
 - a. Press **CTRL - B** to put the system in control mode.
 - b. Enter **TC** and press **RETURN** to soft reset the system.
 - c. Press any key to override the autoboot.
 - d. Enter **Y** for `Boot from the primary boot path (Y or N)?` or if prompt shows `BO PRI`. Press **RETURN**.
 - e. Enter **Y** for `Interact with IPL (Y/N)?`.
 - f. At the ISL prompt, enter: `ISL>ODE ODE>MAPPER MAPPER>RUN`
 - g. After MAPPER scans system I/O configuration, you get the output similar to the following:

```

*****
I/O Configuration:
Path      Component Name          HW SW  Revisions
          Type ID      Mod Mod Hdwr Firm
-----
.
523.0    HPC1533A                -    -    -    -    L100
.
*****

```

Figure 2 I/O configuration: standalone device

Find the tape device and write down the I/O path and component name.

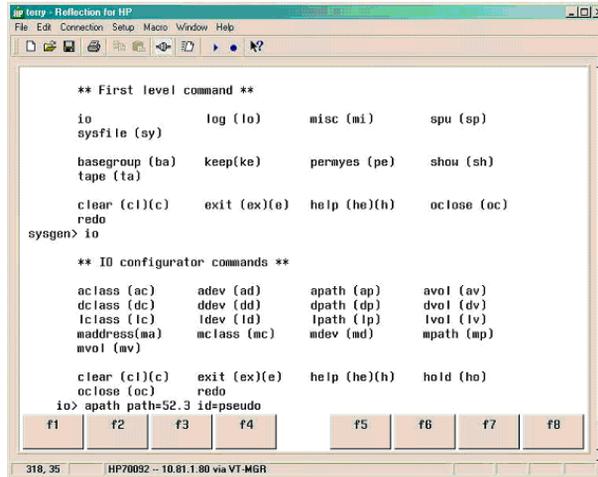
3. Restart the system and log in.

 **NOTE:**

Do not stream jobs or start network interface and network services.

5. For a standalone (DDS) device, add:

- Path for device and identify it as PSEUDO:



- Tape drive device (always on path address ending with 0), set ID and mode as AUTOREPLY:

```
IO>ADEV LDEV=30 PATH=52.3.0 ID=HPC1533A MODE=AUTOREPLY
```

- Autochanger (robotics) device and identify it as PICKER:

```
IO>ADEV LDEV=31 PATH=52.3.1 ID=PICKER
```

The MAPPER utility lists the path number (for example, PATH=52.3) and ID for the device (use the first word from Component Name, for example ID=HPC1533A).

The LDEV number is any free number from 1-255. You can check already used numbers by listing all devices with SYSGEN, IO subsystem, or the showdev command:

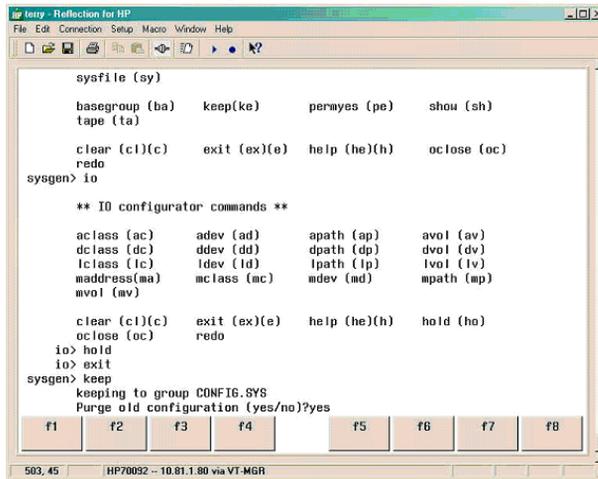
```
:SYSGEN
SYSGEN>IO
IO>LDEV
:SHOWDEV
```

The path address for autochanger is usually the path address for tape +1.

 **NOTE:**

For SCSI devices, use PSEUDO as the device identifier.

6. Keep the new configuration and exit SYSGEN:



Enter Y for Purge old configuration (yes/no)?.

7. Create a device link file using mknod:

```
:mknod "/dev/picker c 0 31"
```

```
:mknod "/dev/drive c 0 30"
```

8. To verify the changes, restart the system.

After you connected and configured standalone devices, configure them for use with Data Protector. For detailed steps, see the online Help index: "configuring standalone devices".

Configuring SCSI tape libraries

1. Connect a device to the system.

2. Write down tape I/O Configuration from the ISL utility MAPPER.
 - a. Press **CTRL - B** to put the system in control mode.
 - b. Enter **TC** and press **RETURN** to soft reset the system.
 - c. Press any key to override the autoboot.
 - d. Enter **Y** for `Boot from the primary boot path (Y or N)?` or if prompt shows `BO PRI`. Press **RETURN**.
 - e. Enter **Y** for `Interact with IPL (Y/N)?`.
 - f. At the ISL prompt, enter:

```
ISL>ODE
ODE>MAPPER
MAPPER>RUN
```

- g. After MAPPER scans system I/O configuration, you get the output similar to the following:

```
.....
I/O Configuration:
.....
Path      Component Name      Type  SW Revisions Test
          ID  Mod  Hdw  Firm Avail
-----
.
56/52.0.0 C7200-8000 AUTOCHANGER      - - - - -
56/52.2.0 DLT8000 TAPEDRIVE          - - - - -
56/52.3.0 DLT8000 TAPEDRIVE          - - - - -
.
.....
```

Figure 3 I/O configuration: SCSI tape library

Find the tape device and write down the I/O path and component name.

3. Restart the system and log in.

 **NOTE:**

Do not stream jobs or start network interface and network services.

4. Run the `SYSGEN` utility, IO subsystem:

```
:SYSGEN  
SYSGEN>IO
```

For a SCSI tape library (DLT) device, add:

- The path and device for autochanger:

```
IO>PATH PATH=56/52.0 ID=PSEUDO  
IO>ADEV LDEV=30 PATH=56/52.0.0 ID=PICKER
```

- Paths and devices for tapes:

```
IO>APATH PATH=56/52.2 ID=PSEUDO  
IO>ADEV LDEV=31 PATH=56/52.2.0 ID=DLT8000  
MODE=AUTOREPLY
```

```
IO>APATH PATH=56/52.3 ID=PSEUDO  
IO>ADEV LDEV=32 PATH=56/52.3.0 ID=DLT8000  
MODE=AUTOREPLY
```

The `MAPPER` utility lists the path number (for example, `PATH=56/52.0`) and the device ID (use the first word from `Component Name`, for example `ID=DLT8000`).

The `LDEV` number is any free number from 1-255. You can check already used numbers by listing all devices with `SYSGEN, IO subsystem`, or the `showdev` command:

```
:SYSGEN  
SYSGEN>IO  
IO>LDEV  
:SHOWDEV
```

The path address for autochanger is usually the path address for tape +1.

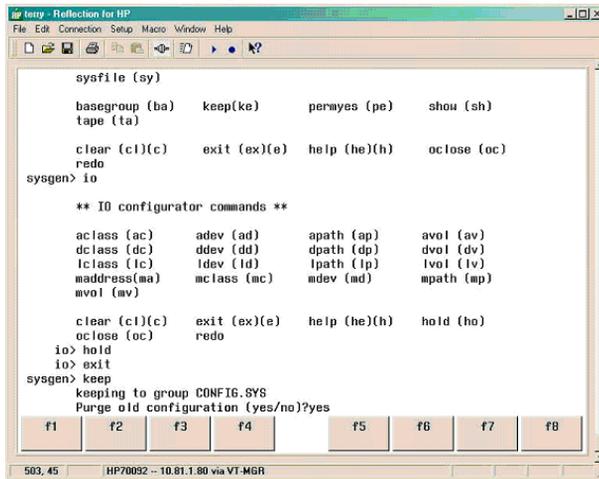
5. For path number (`PATH=56/52.0-PATH=56/52.0.0`) from `MAPPER` utility, for ID use the first word from `Component Name` (`ID=DLT8000`), for autochanger use `PICKER` (`ID=PICKER`) and for `LDEV` numbers use any free number from 1-255.



NOTE:

For SCSI devices, use `PSEUDO` as the device identifier.

6. Keep the new configuration and exit SYSGEN:



Enter Y for Purge old configuration (yes/no)?.

7. Create a device link file using mknod:

```
:mknod "/dev/dlt_picker c 0 30"
:mknod "/dev/dlt_tape01 c 0 31"
:mknod "/dev/dlt_tape02 c 0 32"
```

8. Restart the system to verify the changes.

After you connected and configured SCSI libraries, configure them for use with Data Protector. For detailed steps, see the online Help index: "configuring SCSI libraries".

Backup

TurboSTORE/iX supports two backup types:

Table 3 Backup types

Online (option ONLINE)	The files are closed for write access during backup.
True-online (option ONLINE=START)	The files are not required to be closed for write access during backup.

You perform an MPE/iX backup in the same way as the filesystem backup. For the procedure, see the online Help index: “creating backup specifications”.

Additionally, specify the supported MPE/iX backup options in the form of extended variables. See “[User-definable backup variables](#)” on page 30.

User-definable backup variables

Set user-definable backup variables (a variable name and its value) to enable flexible operation of the Data Protector MPE/iX integration.

[Table 4](#) on page 30 lists backup variables and their values.

Table 4 List of backup variables

Variable	Value	Description
ONLINE	none (default)	If this variable is used, files must be closed for write access during backup. This provides compatibility to pre-MPE/iX 5.5 TurboSTORE backup behavior. The TurboSTORE/iX log file logs information about the files that could not be backed up. This log is created during backup and restore and is presented as <code>/tmp/storeprocessid.log</code> .
ONLINE	START	If this variable is used, files are not required to be closed for write access during backup. If <code>ONLINE=START</code> is not set, “open file” errors will occur during backup. For more information, see the TurboSTORE/iX documentation
DIRECTORY	none (default)	Used to back up the MPE system directory information, which keeps track of the accounts, groups, users, and files (but not of the private volume sets). Storing directory information helps you rebuild your system from backups if you unexpectedly lose information. All hierarchical filesystem directories on the system are also stored when <code>DIRECTORY</code> is specified.

User-definable options depending on TurboSTORE/iX options are: `DIRECTORY`, `ONLINE`, `ONLINE=START`. These options are mapped to the same TurboSTORE/iX options.

Setting Backup Variables

1. In the **HP Data Protector**, switch to the **Backup** context.
2. In the Scoping Pane, expand **Backup**, and double-click **Backup Specifications**.
3. Right-click the backup specification and select **Properties** from the pop-up menu.
4. Click the **Options** tab, and then click **Advanced** under **Filesystem Options**.

5. Select **Other** from the **Filesystem Options** window, and then click **Edit** under **User defined variables**. See [Figure 4](#) on page 32.

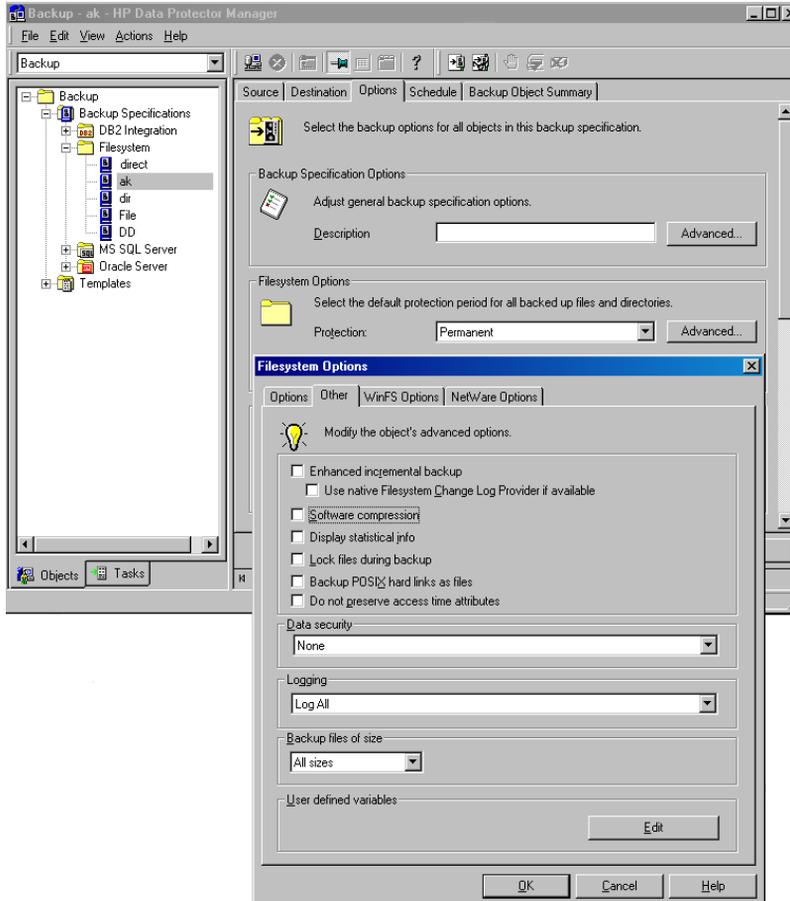


Figure 4 Specifying backup options

6. In the **Advanced** window, enter the supported MPE/iX variable, for example `ONLINE` with the value `START`. See [Figure 5](#) on page 33.

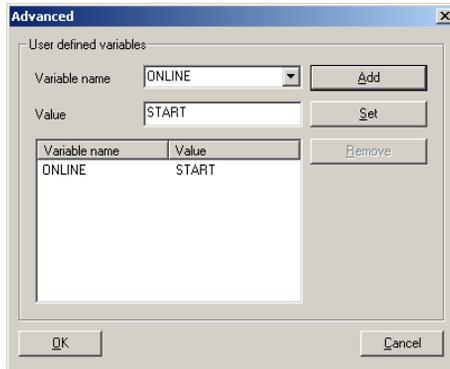


Figure 5 Entering the variable

7. Click **Add** to add the new variable to the list.

TurboSTORE/iX backup options

See “[User-definable backup variables](#)” on page 30 for the description of `ONLINE`, `ONLINE=START`, and `DIRECTORY` variables.

The following TurboSTORE/iX backup options are always used and cannot be disabled: `ONVS`, `TREE`, and `DIRECTORY` (if the whole volume set is checked for backup).

The following TurboSTORE/iX backup options cannot be used as they are replaced by the Data Protector functionality: `DATE`, `PROGRESS`, and `STATISTICS`.

The following TurboSTORE/iX options are not supported: `COMPRESS`, `FCRANGE`, `FILES`, `FULLDB`, `INTER`, `LOGVOLSET`, `MAXTAPEBUF`, `NOTIFY`, `ONERROR`, `PARALLEL`, `PARTIALDB`, `PURGE`, `RENAME`, `SPLITVS`, `STOREDIRECTORY`, `STORESET`, and `TRANSPORT`.

Full system backup

For full system backup, create two sets of tapes:

- SLT (system load tape) containing system parameters and I/O configuration
- Store tape containing user files and directories and system directory information

Creating SLT

To create a SLT, run:

```
sysgen>TAPE (or sysgen>TA)
```

When the tape is created, you receive the message that boot backup was generated successfully. If an error occurs, a flashing `TAPE ERROR` message is issued to the console.

Create the SLT tape each time you make configuration changes.

For more information on `SYSGEN`, see the *System Startup, Configuration, and Shutdown Reference Manual*.

Creating Store Tapes

To create a store tape, perform an MPE/iX backup in the same way as an ordinary backup. Additionally, specify the `DIRECTORY` option. This option stores the system directory information in the `volset_name_DAF` file on the medium. This is not a real permanent file as it does not physically exist on the system (it exists only on the medium).

IMPORTANT:

All users and jobs must be logged off the system during backup. If you need to access files during backup, perform the true-online backup (`ONLINE=START` option).

To specify the MPE/iX full backup options, make sure the user-definable variable `DIRECTORY` is specified in the backup options window. For the procedure, see “[User-definable backup variables](#)” on page 30.

Restore

To perform the restore, select the backed up objects and start the session. For details, see the online Help index keyword: “restore”.

Besides standard restore options, Data Protector offers MPE/iX-specific options as user-definable variables. For information, see “[User-definable restore variables](#)” on page 35.

User-definable restore variables

Set user-definable variables (a variable name and its value) to enable flexible operation of the Data Protector MPE/iX integration.

Table 5 on page 35 lists restore variables and their values.

Table 5 List of restore variables

Variable	Value	Description
DIRECTORY	none (default)	Restores the MPE system directory (volume set configuration) information.
VOLSET	<i>/volume_set_name</i>	Performs the restore to target volume set, if backed up volume set is different (cross-volume set restore using options <code>-as</code> or <code>-into</code>).
CREATE	NOHFS	Forces restore of MPE account or MPE group instead of HFS directory.

User-definable options that depend on TurboSTORE/iX options are `DIRECTORY` and `VOLSET`. These options are mapped to the same TurboSTORE/iX options.

The option `CREATE=NOHFS` is not a TurboSTORE/iX option.

Setting Restore Variables

1. In the **HP Data Protector Manager**, switch to the **Restore** context.
2. In the Scoping Pane, under **Restore Objects**, expand the appropriate data type.
3. Expand the client system and then click the appropriate object.
4. In the **Source Property** page, select objects for restore.
5. Click the **Options** tab to open the **Options Property** page.
6. Click **Advanced**.

7. In the **Advanced** dialog box, specify the appropriate variable and its value, and then click **Add**.

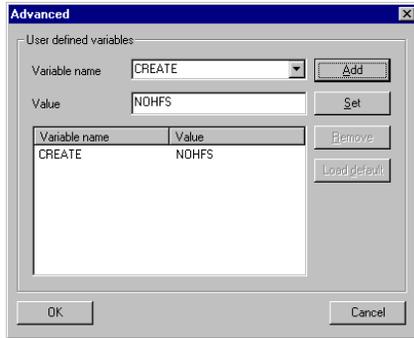


Figure 6 Entering the variable

8. Click **OK** to apply the settings.

TurboSTORE/iX restore options

The variable `VOLSET=/VOLUMESETNAME` directs the restore behavior to write the data to `/VOLUMESETNAME`. If the variable is not used, the files are restored to the original volume set. This option is used for a cross-volume set restore.

To restore MPE accounts/groups as native MPE accounts/groups (and not HFS directories), use the `CREATE` variable as well.

The restore variable `CREATE=NOHFS` creates an MPE account/group.

TurboSTORE/iX can only restore data into MPE accounts/groups that already exist. If a restore is performed into or as a new MPE account/group, TurboSTORE/iX creates a hierarchical filesystem directory instead of an MPE account/group. Set the `CREATE=NOHFS` variable to avoid such behavior and create an MPE account/group.

TIP:

You can use restore options together, for example, `VOLSET` and `CREATE=NOHFS`, to restore an account/group from one volume set to a new account/group on another volume set.

The `VOLSET` TurboSTORE/iX restore option is always used and cannot be disabled.

The following TurboSTORE/iX restore options cannot be used as they are replaced by the standard Data Protector functionality: `COPYACD`, `KEEP`, `NEWDATE`, `NOACD`, `OLDDATE`, and `SHOW`.

Pre- and post-exec commands

Before backup or restore, you may want to check the number of files to back up, stop some transaction processing, or shut down a database. Such actions are performed using pre- and post-exec commands, which are not supplied by Data Protector. Depending on your need, you may prepare your own executables that perform the required actions.

To execute pre- and post-exec commands, enter `/bin/sh` and the full script pathname in the pre-exec and post-exec fields.

Example

```
/bin/sh /usr/omni/bin/script_name
```

Shell script can contain commands for job streaming:

```
callci stream job_file_name
```

Example

```
callci stream MYJOB.SYS.PUB
```



NOTE:

Make sure the permissions for pre- and post-exec commands are set properly before starting backup or restore.

For more information on pre- and post-exec commands, see the online Help index: “pre- and post-exec commands”.

Disaster recovery

Disaster recovery on MPE/iX is performed manually and involves recovering the system using the SLT tape. In addition, Data Protector is used to restore all files, including the system directory information.

See the *STORE and TurboSTORE/iX Products Manual* for more information about disaster recovery on MPE/iX.

Prerequisites

- SLT containing system parameters and I/O configuration
- Store tape containing user files and directories and system directory information

Recovery Procedure

1. Boot your system from the latest SLT. Use the `INSTALL` utility to make your hard disk is bootable.
2. Run `VOLUTIL` to initialize the system volume set members.

Example

```
volutil: SCRATCHVOL LDEV=2
```

```
volutil: NEWVOL MPEXL_SYSTEM_VOLUME_SET:MEMBER 2 LDEV=2  
PERM=80 TRANS=100
```

```
volutil: EXIT
```

Verify that the master volume (`LDEV1`) for `MPEXL_SYSTEM_VOLUME_SET` is in the `MASTER` state. Other volumes may be in the `SCRATCH` or `UNKNOWN` state. These are the volumes that must be re-initializing.

`VOLUTIL` is not necessary if the members of the system set are defined in the `SYSGEN` utility using `AVOL`. If this is not done, the members of the system volume set initialize when `INSTALL` is performed.

3. Reinstall Data Protector.
4. Restore the latest backup of your system directory information. Select the `volset_name_DAF` object and specify the `DIRECTORY` option. All system information is restored.
5. Restore your latest filesystem backup.
6. Restart the system.

Supported CLI commands

Data Protector A.06.10 supports the `omnib` command.

Prerequisites

- For the `omnib` command to operate properly, add the `MANAGER.SYS` user to the `admin` group.

 **NOTE:**

Due to the limitations of the MPE/iX Posix shell (utility `nroff` is not implemented), it is not possible to implement help for this command as a man page.

For a description of the `omnib` command, see the *HP Data Protector command line interface reference*.

 **NOTE:**

On MPE/iX, the `omniintro` man page is also available in `/usr/omni/docs`.

Backup and restore of MPE/iX database

MPE/iX supports ALLBASE/SQL database and the TurboIMAGE/XL Database Management System.

When backing up the MPE/iX database, consider the following:

- To back up a complete database (all database files), perform true-online backup.
- To back up database files, select the account/group in which they reside.

Follow the standard backup procedure (see “[Backup](#)” on page 29). Additionally, specify user-definable backup variables (see “[User-definable backup variables](#)” on page 30).

To understand the options `ONLINE` and `ONLINE=START`, perform the online database backup.

If the `ONLINE` option is used, the files closed for write access are not backed up. The TurboSTORE/iX log contains the information about the files that are not backed up.

If the `ONLINE=START` option is used, all files are backed up, including those closed for write access. This is called true-online backup.

See “[TurboSTORE/iX log files](#)” on page 40 for examples of TurboSTORE/iX log files options `ONLINE` and `ONLINE=START`.

TurboSTORE/iX log files

During backup or restore, TurboSTORE/iX creates a log file, saved in the /tmp directory. Its name consists of store or restore process and the process identification number (pid), for example store74711122.log.

IMPORTANT:

TurboSTORE/iX log file for backup can show more objects than actually backed up. That is because of some Data Protector options (-skip, -only, -since) where the data is read but not written to the medium. The line Total media written is related to TurboSTORE/iX, not to Data Protector, media.

Below are the examples of TurboSTORE/iX log files.

Example 1. TurboSTORE/iX log files with ONLINE

```
>> TURBO-STORE/RESTORE  VERSION  C.60.17  B5152AA  <<
(C) 1986 Hewlett-Packard CO.
STORE /SYS/SAMPLEDB/;
;TREE;ONVS=MPEXL_SYSTEM_VOLUME_SET;ONLINE=START;NW3K^M
THU, JAN 25, 2007,  3:59 PM
/SYS/SAMPLEDB/MUSIC NOT STORED: FILE OPEN FOR WRITE ST ATTACH
/SYS/SAMPLEDB/MUSICDBE NOT STORED: FILE OPEN FOR WRITE ST ATTACH
/SYS/SAMPLEDB/MUSICDCR NOT STORED: FILE OPEN FOR WRITE ST ATTACH
/SYS/SAMPLEDB/MUSICDFL NOT STORED: FILE OPEN FOR WRITE ST ATTACH
/SYS/SAMPLEDB/MUSICDLG NOT STORED: FILE OPEN FOR WRITE ST ATTACH
ONLINE BACKUP UTILIZED DISC SPACE FOR LOG ON THE FOLLOWING VOLSETS:
MPEXL_SYSTEM_VOLUME_SET :
0 KB
DATABASE INFORMATION:
ALL/SQL DATABASE: /SYS/SAMPLEDB/PARTSDBE
FILES STORED:
12
HFS DIRECTORIES STORED:
1
FILES STORED:
104
FILES NOT STORED:
5
TOTAL MEDIA WRITTEN:
0
```

Example 2. TurboSTORE/iX log files with ONLINE=START

```
>> TURBO-STORE/RESTORE VERSION C.60.17 B5152AA <<
(C) 1986 Hewlett-Packard CO.
STORE /SYS/SAMPLEDB/;
;TREE;ONVS=MPEXL_SYSTEM_VOLUME_SET;ONLINE=START;NW3K^M
THU, JAN 25, 2007, 3:59 PM
ONLINE BACKUP UTILIZED DISC SPACE FOR LOG ON THE FOLLOWING VOLSETS:
MPEXL_SYSTEM_VOLUME_SET:
832 KB
TURBOIMAGE DATABASE: /SYS/SAMPLEDB/MUSIC
FILES STORED:
7
ALLBASE/SQL DATABASE: /SYS/SAMPLEDB/MUSICDBE
FILES STORED:
3
ALLBASE/SQL DATABASE: /SYS/SAMPLEDB/PARTSDBE
FILES STORED:
12
HFS DIRECTORIES STORED:
1
FILES STORED:
109
TOTAL MEDIA WRITTEN:
0
```

UDC files and environment variables

The following section describes how to create UDC files and use MA environment variables.

UDC files

To create a UDC file, enter the following in command prompt:

```
:editor

HP32201A.09.00 EDIT/3000 MON, JAN 15, 2007, 2:37 PM
(C) Hewlett-Packard CO. 1993

/add
1      OB2UDC                <- UDC NAME
2      OPTION LOGON          <- START ON LOGIN
3
4      OB2SET                 <- SET OB2VARIABLES SCRIPT
```

```

5      *                               <- END OF UDC COMMAND
6      //
...
/keep OB2UDCF.PUB.SYS
/exit

```

```

END OF SUBSYSTEM
:

```

To activate the UDC file enter:

```
:SETCATALOG OB2UDC.PUB.SYS; APPEND
```

OB2SET file

OB2SET file can be created with any editor.

Below is an example of the Data Protector environment variables:

Example

```

SETVAR OB2DEVRETRY                5
SETVAR OB2DEVSLEEP                5
COMMENT SETVAR OB2BLKSIZE         -1
COMMENT SETVAR OB2SEGSIZE         -1
SETVAR OB2OMNIMAXCATALOG          -1

SETVAR OB2OMNIMAXCATALOG          -1

SETVAR OB2SHORTSEEKFM             -1
SETVAR OB2EODMETHOD               -1
SETVAR OB2DASDRIVESTATUS2         -1
SETVAR OB2SPTRETRY                5
SETVAR OB2SPTSLEEP                5
SETVAR OB2SPTRETRYCOMMAND         5
SETVAR OB2SPTSLEEPCOMMAND         5
SETVAR OB2SKIPWRITE               -1
SETVAR OB2SCSITIMEOUT             -1
SETVAR OB2DBD                     -1
SETVAR OB2SKIPEJECT               -1
SETVAR OB2IMMEDFM                 -1

```

After adding new variables to `OB2SET`, restart `inetd` to update the configuration with the new settings. See the *Configuring and Managing MPE/iX Internet Services* manual for more information.

Index

A

audience, 9

B

backing up MPE/iX, 29
 database backup, 39
 full system backup, 33
 online backups, 29
 true-online backups, 29
 TurboSTORE/iX backup options, 33
 user-definable backup variables, 30

C

concepts
 MPE/iX integration, 21
configuring devices
 MPE/iX integration, 22
configuring MPE/iX, 21
conventions
 document, 17

D

disaster recovery on MPE/iX, 37
document
 conventions, 17
 related documentation, 9
documentation
 HP website, 9
 providing feedback, 20

F

full system backup on MPE/iX, 33

H

help
 obtaining, 19
HP
 technical support, 19

I

introduction
 MPE/iX integration, 21

M

MPE/iX backup
 TurboSTORE/iX backup options, 33
MPE/iX database backup, 39
MPE/iX database restore, 39
MPE/iX integration
 concepts, 21
 configuring devices, 22
 database backup, 39
 database restore, 39
 introduction, 21
 prerequisites, 21
MPE/iX restore
 TurboSTORE/iX restore options, 36
MPE/iX backup, 29
 online backups, 29
 true-online backups, 29
 user-definable backup variables, 30

- MPE/iX configuration, 21
- MPE/iX integration
 - backup, 29
 - configuration, 21
 - disaster recovery, 37
 - full system backup, 33
 - pre- and post-exec commands, 37
 - restore, 34
 - supported CLI commands, 38
 - TurboSTORE/iX log files, 40
 - UDC files and environment variables, 41
- MPE/iX restore, 34
 - user-definable restore variables, 35

P

- pre- and post-exec commands on MPE/iX, 37
- prerequisites
 - MPE/iX integration, 21

R

- related documentation, 9
- restoring MPE/iX, 34
 - database restore, 39
 - TurboSTORE/iX restore options, 36
 - user-definable restore variables, 35

S

- Subscriber's Choice, HP, 20
- supported CLI commands on MPE/iX, 38

T

- technical support
 - HP, 19
- technical support
 - service locator website, 20
- TurboSTORE/iX backup options, 33

- TurboSTORE/iX log files, 40
- TurboSTORE/iX restore options, 36

U

- UDC files and environment variables, 41
- user-definable backup variables on MPE/iX, 30
- user-definable restore variables on MPE/iX, 35

W

- websites
 - HP Subscriber's Choice for Business, 20
 - HP, 20
 - product manuals, 9