Communicator e3000 MPE/iX Release 7.5 PowerPatch 2 (Software Release C.75.02)

HP e3000 MPE/iX Computer Systems

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1 Overview — MPE/iX Release 7.5 PowerPatch 2 (C.75.02)

This *Communicator HP e3000* provides general and detailed information on the new and enhanced functionality for the MPE/iX Release 7.5 PowerPatch 2 (C.75.02) as well as information on support, release strategy and installation prerequisites.

This *Communicator* should be used in conjunction with the *Communicators* from Release 7.5. Only information relating to the Release 7.5 PowerPatch 1 and 2 is contained in this document. If you have additional questions beyond the scope of this document, please review the information in the *Communicator* for Release 7.5. This document is available online at *www.docs.hp.com*.

This MPE/iX *Communicator* describes the following:

- Enhanced Host-based DTC Management Fubctionality
- High Availability FailOver/iX for FC Disk Arrays
- Support for HP SureStore Virtual Array 7110 and 7410 on the HP e3000
- Limited support for Ultrium tape on MPE/iX

Communicator Summary

Following are brief descriptions of the articles and chapters.

Chapter 1, Overview — Communicator Summary

This chapter provides a summary of information contained in this manual. It also provides information about obtaining MPE patches from the HP Electronic Support Center.

Chapter 2, Announcements

Important announcements regarding availability of products and services are included in this chapter.

- Introducing MPE/iX Release 7.5 PowerPatch 2
- Additional Announcements from HP
- End of Support Dates
- Obtaining Software Security Patches for you HP Computer System

Chapter 3, Technical Articles

This chapter contains articles about the new and enhanced functionality for MPE/iX Release 7.5 PowerPatches (C.75.01 and C.75.02).

MPE/iX Patches on HP IT Resource Center

by Patch Support Team
Commercial Systems Division

MPE/iX patches for MPE/iX Releases are available on the IT Resource Center (previously the HP Electronic Support Center) to all customers.

Features and Benefits

The patch access and delivery system benefits all MPE/iX customers with:

- Improved overall communication between HP and customers.
- Provision of useful and timely information for patch justification and decision making.
- Reduced system downtime for known problems.
- Reduction of the turnaround time for patch availability and delivery.
- Close to 24*7 access time.
- Unification of the MPE/iX and HP-UX patch delivery process.

Electronic access to patch information and delivery of patches provide three basic services:

1. Access to patch information in an automated, timely and accurate manner.
2. Electronic downloading of patch information and binaries.
3. Proactive notification of new patches via email.

Access Method to the HP IT Resource Center

To serve customers the IT Resource Center provides World Wide Web access for downloading patches.

Access to World Wide Web Server (www)

World Wide Web access is the easiest, fastest, and most popular method of browsing for patch information and downloading patches. It is more reliable, especially for large patches.

- **U.S. Web accessing address:**
  http://us-support.external.hp.com
- **European Web accessing address:**
  http://europe-support.external.hp.com

Electronic Digests

If you want to keep yourself up-to-date on the latest development of MPE/iX patches, you can sign up for the daily Security Bulletin and weekly mpeix_patch Bulletin. Once you have subscribed to these two bulletins, you will receive these digests on a periodic basis via electronic mail. HP IT Resource Center will inform you proactively about newly developed security and GR patches. For more information, refer to the instructions on the IT Resource Center website.

Patch Installation Tools

There are two tools available to install MPE/iX reactive patches, Patch/iX and AUTOPAT. HP recommends the use of Patch/iX for reactive patch installation. Patch/iX has many features and checks to ease and improve the installation process, including:

- A sophisticated patch qualification mechanism to ensure the integrity of your system.
- The ability to perform much of the patch installation process while your system is still up and available to users.
- An option to install a patch or set of patches using the HP Stage/iX Subsystem, which allows the application of a patch to be performed without tapes. For more information on Stage/iX, refer to the *System Software Maintenance Manua*l for your release. Patch/iX instructions are also available on the following website: *http://www.docs.hp.com/mpeix/*

You should use AUTOPAT only if you are familiar with its use, and have a good understanding of MPE/iX patch management.

Patch/iX Installation Document Retrieval

These are the steps for retrieving documents regarding Patch/iX.

1. Access the HP IT Resource Center WEB site (previously the Electronic Support Center) using the appropriate WEB address for your country.
2. Click on the link, “Individual Patches.”
3. Enter: “ITRC User ID” and “password.”
4. Click on the link, “MPE/iX Patches.”
5. Click on the link, “MPE Patch Installation Guide.”
6. Click on the link, “Use Patch/iX or AUTOPAT to install the patch.”
7. Click on the link, “Patch/iX Instructions.”

Patch/iX Version Identification

To ensure you have the latest version of Patch/iX, on your system, enter the following:

1. `:HELLO MANAGER.SYS,INSTALL`
2. `:PATCHIX VERSION`
3. Compare this version number (for example, B.01.02) with the latest version available for your release on the HP IT Resource Center Patch/iX download page. If you are running an earlier version than is available, you should download and install the newer one from the download page.

AUTOPAT Installation Document Retrieval

AUTOPATINST is the "DOCID" of the document with instructions to assist you in installing one or more patches needed by your MPE/iX system using the AUTOPAT installation tool.

1. Access the HP IT Resource Center WEB site (previously the Electronic Support Center) using the appropriate WEB address for your country.
2. In the Main Menu, click on the link, "Search Technical Knowledge Base."
3. Enter: "ITRC User ID" and "password."
4. In the Technical Knowledge Base Home page from the pull down menu, click on "Search By DOC ID" (do not Search by Keyword).
5. In the search field, enter "AUTOPATINST."
6. Click on the "SEARCH" button.

Create a CSLT Prior to Patch Installation

Before starting any patch application activity, you should always back up your system by creating a Custom System Load Tape and a full backup. This will allow you the flexibility of restoring your system to the previous environment. To create a CSLT, do the following:

1. Log on as MANAGER.SYS
2. :SYSGEN
3. >TAPE

Disclaimer

CAUTION Hewlett-Packard is not liable for errors occurring during data transmission through the Internet. HP assumes no responsibility for the use or reliability of its software on equipment that it has not furnished itself. Furthermore, for customers without a current support contract with HP, HP is not responsible for answering any questions in regard to the use of this patch delivery process.

2 Announcements

MPE/iX Release 7.5 PowerPatch 2

MPE/iX and the e3000 have been dutifully serving HP customers for nearly 30 years. On November 14th, 2001 HP announced the end of sales for the HP e3000 and MPE/iX. That date (November 1, 2003 for end of sales) has now passed. HP is pleased to announce the delivery of MPE/iX 7.5 PowerPatch 2 in June, 2004.

HP realizes that customers are planning their migration away from the e3000 and MPE/iX. We understand that it is very important for our customers to have additional time to develop and implement their migration strategy. HP recommends that customers chose the very latest in hardware and software in order to maximize the value of their current HP e3000 environment during this transition period. Thus, HP has improved the existing functionality and integrity of MPE/iX Release 7.5 with a proactive patch-set found in MPE/iX 7.5 PowerPatch 2.

End of Support Dates

HP will support the 6.5, 7.0 and 7.5 releases until December 31, 2006. HP encourages customers to update to the latest release of either MPE/iX 7.0 or MPE/iX 7.5. These releases contain many performance and capacity enhancements for high-end systems and bundled tools for using the HP e3000 with the Internet.

Additionally, customers who are planning their HP e3000 environment into the future should note that while MPE/iX 7.5 is supported on currently supported 9xx series servers, many of the new storage capabilities in 7.5 are supported only on HP e3000 A-Class and N-Class servers.

For a comprehensive listing of supported hardware please go to:*http://www.hp.com/products1/mpeixservers/news_events/discont/servers/end_support.html*

HP is also formalizing plans to ensure the delivery of all e3000 software products through MPE end-of-support. Besides exploring ways to improve efficiency in the distribution of MPE to our customers, our focus is to anticipate and prevent any critical disruptions in customer operations due to HPe3000 software product discontinuance.

Obtaining Software Security Patches for your HP Computer System

Hewlett-Packard would like to make you aware of a special free service provided for all customers of HP e3000 and HP 9000 computer systems. This service gives customers a direct route to Hewlett-Packard for obtaining information relating to the security of their Hewlett-Packard Computer System(s).

Hewlett-Packard issues information on the availability of Software security patches via Security Bulletins to subscribers of the HP Security Bulletin Digest e-mail service, a part of the IT Resource Center (formerly the HP Electronic Support Center). A Hewlett-Packard support contract is NOT required to subscribe to this service to obtain information or security patches. Any purchaser of an HP e3000 or HP 9000 Computer System can make use of the HP Security Bulletin services at no charge.

Customers may also obtain information and Security Bulletin services via the World Wide Web.

A security problem is a software defect that allows unauthorized personnel to gain access to a Computer System or to circumvent any of the mechanisms that protect the confidentiality, integrity or availability of the information stored on the system. When such problems in Hewlett-Packard software are brought to the attention of the company, their resolution is given a very high priority. This resolution is usually in the form of a Security Bulletin which may explain how to correct the problem or describe how to obtain a software security patch that will correct the problem.

Hewlett-Packard has introduced this service as the primary mechanism to alert subscribers to security problems and provide corrections. Hewlett-Packard will not analyze the relevance of any security patch to any individual customer site within the scope of the HP Security Bulletin service. The responsibility for obtaining and applying security patches resides with the customer.

The remainder of this section outlines the various security related services offered by Hewlett-Packard IT Resource Center and the methods for subscribing to and retrieving information from it. It also outlines how you can inform Hewlett-Packard of potential security concerns you may have with your Hewlett-Packard Computer System.

HP IT Resource Center Security-Related Services

HP IT Resource Center offers subscribers the following benefits:

- Receive Security Bulletins automatically when they are published.
- Retrieve the archive list of bulletins issued prior to subscription.
- Download security patches if the subscriber configuration supports it.

Remember, an HP support contract is not required to subscribe to HP Security Bulletin services.

Subscribing to HP IT Resource Center Security Bulletin Services

Once you have placed your name on the subscriber list for future Security Bulletins (see instructions below), you will receive them via e-mail on the day they are issued by HP.

As referenced below, you can also view a list of past Security Bulletins issued in the “HP Security Bulletins Archive.”

How to Subscribe

To subscribe to automatically receive future NEW HP Security Bulletins from the Hewlett-Packard Electronic Support Center via electronic mail, do the following (instructions subject to change without notice):

1. Use your browser to access the HP IT Resource Center web page at:

http://us-support.external.hp.com	US, Canada, Asia-Pacific, and Latin-America
http://europe-support.external.hp.com	Europe

2. Logon with your User ID and password (or register for one). Remember to save the User ID assigned to you, and your password.
3. Once on the archive page, scroll down to find “MPE Security Bulletins”. On this page, you can subscribe to many different digest services, including the Security Bulletin Digests.

To review Security Bulletins that have already been released, click on “Search Technical Knowledge Base” on the HP Electronic Support Center home page. Near the bottom of the next page, click on “Security Bulletins” under “MPE Software”. On that next page click on “Security Bulletin Archive”.

Once in the archive page, click on “HP-UX Security Patch Matrix” to get a patch matrix of current HP-UX and BLS security patches. Updated daily, this matrix categorizes security patches by platform/OS release, and by Security Bulletin topic.

If You Discover a Security Problem

To report new security vulnerabilities, send e-mail to

security-alert@hp.com

Please encrypt any explicit information using the security-alert PGP key, available from your local key server, or by sending a message with a -subject- (not body) of ‘get key’ (no quotes) to *security-alert@hp.com*.

3 Technical Articles

This chapter contains the following articles:

- Enhanced Host-based DTC Management Functionality
- High Availability FailOver/iX for FC Disk Arrays
- Support for the HP SureStore Virtual Array 7110 and 7410 on the HP e3000
- Announcing Limited Support for Ultrium Tape on MPE/iX
- Predictive Installation changes
- TurboIMAGE B-Tree Behavior Clarifiaction

Enhanced Host-Based DTC Management Functionality

by John Spitzer, MPE/iX Lab

Introduction

The HP e3000 uses the Datacommunications and Terminal Controller (DTC) to provide the hardware and functionality to configure and establish connections to the HP e3000 via Asynchronous Serial ports and X.25/PAD protocols. For the HP e3000 on all supported MPE/iX releases, the configuration and management of the DTCs has been performed by the Open View DTC Manager (OVDTCMgr) workstation running on a PC with Windows 95, or by functions of the DTS subsystem include in FOS with MPE/iX. When the OVDTCMgr manages the DTCs it is known as PC-Based DTC Management and when the HP e3000 host manages the DTCs it is called Host-Based DTC Management. Both PC-Based and Host-Based managed DTCs and HP e3000 hosts can co-exist in any combination within any network.

Due to numerous issues, the Open View DTC Manager solution on the PC has been discontinued as of the end of October 2002. This article describes enhancements made to the DTS subsystem on the HP e3000 in order to provide the functionality needed to continue to support the DTC connectivity required by the HP e3000 users. These added features were available on the OVDTCMgr platform when PC-Based DTC Management was used, but not on the HPe3000 when Host-Based DTC Management was used.

This functionality was first released as two sets of patches. One set of patches was created for release 7.5 and the second set was created for Release 7.0. With this delivery, the patches are now incorporated into MPE/iX 7.5 Power Patch 2 and will be included in all future patches of the subsystems that are affected by the enhancements.

New and Enhanced Functionality

The following is a summary of the DTS subsystem's DTC management features that have been enhanced. All of this functionality was available when using the OVDTCMgr PC-based platform and is now available on the HP e3000 host.

- X.25 System to Systems Switching – You can now configure the DTC to share X.25 connections from one or more cards in a DTC to multiple HP e3000 hosts.
- PAD Switching – Connections from external PAD devices to the DTC can now connect to multiple HP e3000 systems through a shared X.25 card in a DTC.
- PAD Security lists – These lists allow you to configure PAD Security more like the PAD security lists that were available on the OVDTCMgr platform. On the OVDTCMgr platform these were known as the Node Names List and PAD Access List.
- PAD Incoming Security – This table maps a PAD Security list to a set of incoming X.25 PAD addresses to control access to the HP e3000 from PAD devices.
- Non-Nailed TIO devices – You can now configure non-nailed direct connect TIO devices when the system is configured for Host Based Management. Previously, non-nailed direct connect TIO devices were only available when PC-based Management was used on the HP e3000.
- RAFCP and Auto Restart – Routable AFCP on a front end DTC and Automatic Restart of X.25/PAD protocols can now be enabled on the appropriate DTCs.

Supportability and Other Enhancements

To support the enhancements listed above, the following TermDSM and DTCCNTRL functions have also been enhanced:

TermDSM commands:

CONNECT	This command now displays the appropriate information for all supported connection types through both the X.25 and Direct connect cards that are going to any system that has been allowed access from the DTC.
MULTI	This new command allows you start or stop the X.25 and/or PAD protocols on multiple X.25 cards in one or more DTCs with one command.
X25SITE	This new command displays information on X.25 system-to-system connections between HP e3000 systems. This feature displays the same information as the X.25 Site Management feature that was available on the OVDTCMgr platform.

DTCCNTRL enhancements:

- All new and changed NMMGR DTS configuration screens are fully supported by Dynamic Configuration.
- To prevent configuration discrepancies that could occur when changes to PAD devices were only partially successful, DTCCNTRL will now try to verify that the changes to all PAD devices on a card will succeed before proceeding with the changes.

OVDTCMgr Featuress That Are Not Supported

Some features of the OVDTCMgr workstation are not supported on the HP e3000 host. They are:

Telnet Access Card	This card is long out of support and all of the features provided by this card have other viable alternatives on the HP e3000.
Monitor functions	The following monitor functions are not supported: Describe, DTC Polling, Alarm Logging and Display.
Diagnose functions	The following diagnose functions are not supported: Extended PING.
DTC Tools	DTC Tools – The following DTC tools are not supported: Find Port; In Manage Multiple DTCs, the Delete DTC configuration and paste configurations to DTCs, boards or ports.

Local and Remote DTC Manager Access

Migrating to Host-Based Management

In order to ease the transition from the OVDTCMgr PC-Based solution to Host-Based management, the following features are available and these behaviors occur when your system is updated to the new host-based versions of the DTS subsystem.

- Although it is now an unsupported configuration, the OVDTCMgr platform still is able to manage the DTCs for connection to the HP e3000. HP recommends that you migrate your DTS configuration to Host-Based management at the earliest opportunity.
- When you reboot your system after updating with this release, DTS recognizes that the data in the DTS subsystem of the NMCONFIG file is the old format but still creates a valid DTS configuration. DCC displays the following warning message:

```
DCC WARNING P-L, NMCONFIG is previous version. Run NMMGRVER. (DCCWARN 52)
```

The DTS configuration created is identical to what was created prior to the update.

- In NMMGR, if you attempt to display the DTS configuration before running NMMGRVER, a screen states that the DTS subsystem has been updated. From this screen you can launch NMMGRVER to perform the conversion of the NMCONFIG file without exiting NMMGR.
- You use the version of NMMGRVER installed with this relase to update the NMCONFIG file to the latest format and then perform a DTS Shutdown and Restart.
- After using NMMGRVER to migrate the configuration file to the latest format, DTS Dynamic Configuration will be disabled until a DTS Shutdown and Restart or system reboot is performed.

The PC and Host Migration Tools

The New Host-Based DTC Management release contains two tools that allows you to migrate a majority of your DTC's configurations from the OVDTCMgr workstation and the PC-Based NMMGR configuration on the host to the new Host-based DTC Management in the NMCONFIG file.

Before you perform the migration, you should read the section"Configuration Issues to Consider Before Migrating" in the updated *Configuring and Managing Host-Based X.25 Links* manual. Review your configuration on the OVDTCMgr platform and any HP e3000 hosts that use those DTCs to determine if there are any configuration changes that you can make to help the process go smoothly. It is likely that you will need to perform some manual changes to the resulting configuration file to create a valid DTS configuration and to reapply your DTC port profile customizations.

These tools and the process for migrating your configuration are fully documented in the updated release of the *Configuring and Managing Host-Based X.25 Links* manual.

The PC Migration Tool

A PC Migration tool has been created that allows you to migrate your DTC's configuration from the OVDTCMgr PC platform to the NMCONFIG file on the HP e3000 host. This tool is incorporated into a patch to the OVDTCMgr. The PC Migration tool is accessed from a new command that has been added to the Manage Multiple DTCs Tool menu.

The OVDTCMgr patch is available as part of this Release 7.5 PowerPatch 2 installation. The patch consists of the following two files:

- READHD45.DTS0000.TELESUP
- EXEHD45A.DTS0000.TELESUP

The full instructions for installing this patch on the OVDTCMgr PC is contained in the READHD45 file.

This tool runs on the PC and creates a text file that contains the NMMGR commands necessary to create an equivalent configuration in the NMCONFIG configuration file of the DTCs that are selected on the PC. The text file that is created is copied to the HP e3000 and read by NMMGR to make the configuration changes to the NMCONFIG file.

The Host Migration Tool

A Host Migration tool has been incorporated into NMMGRVER that merges the configurations of the DTCs in the PC-Based configuration of the NMCONFIG file into the Host-based configuration. This tool is designed to work with the PC Migration tool to create as complete a configuration as possible.

The Host Migration tool can be accessed in two equivalent ways: by running NMMGRVER with the following command parameters:

```
:run NMMGRVER;PARM=77;
```

Or from within NMMGR by pressing the **[Go To Migrate]** key on the Utility screen.

Migrating to Host-Based DTC Management

The migration process has been designed from the view that you will be migrating your HP e3000 host from PC-Based management to Host-Based Management. The process described below assumes that you will be merging the configuration of your DTCs from OVDTCMgr PC and the PC-based tree of the NMCONFIG file into the Host-based tree of the NMCONFIG file. If your system is already configured as Host-based, or you want to retain some DTCs in the Host-based tree of the NMCONFIG file, the process is documented in "Appendix A" of the updated *Configuring and Managing Host-Based x.25 Links* manual.

The Migration process consists of the following major steps. These steps are described in more detail in Appendix A of the updated Configuring and Managing Host-Based X.25 Links manual.

1. Run the PC Migration tool on the OpenView DTC Manager PC and select the DTCs that are to be managed on the HP e3000 host. The PC Migration tool will create a file that contains all the NMMGR Maintenance Mode commands needed to create an equivalent configuration on the HP e3000 host.
2. On the HP e3000 host, remove any DTC configurations from the PC-Based configuration in the NMCONFIG file that aren't in use or should not be included in the migration process. Run the DTS Validation and ensure that there are no Validation errors displayed.
3. Change the configuration to Host-based Management and remove all DTCs that may still exist in the Host-Based configuration.Run the DTS Validation and ensure that there are no Validation errors displayed.
4. Transfer the file created on the PC to the HP e3000 host and enter the following commands to use the file as input commands to NMMGR to create the configuration in the NMCONFIG file.

   ```
   :file nmmgrcmd=<cmdfile>
   :nmmgr
   ```

   Where <cmdfile> is the file that was transferred from the OVDTCMgr PC.
5. Run the Host Migration tool integrated into NMMGRVER and merge the PC-Based DTCs configured in the PC-based configuration into the Host-based configuration.
6. Create or modify any profiles that have been assigned to DTC devices if you want to apply customization to the DTCs devices. The profile names assigned by the migration process will either be a default name assigned by the PC Migration tool or the profile name that was assigned to the port in the PC-Based Configuration.
7. Validate the NMCONFIG file and perform any changes needed to resolve any configuration discrepancies that are found.
8. Use DTCCNTRL to perform a DTS Shutdown and Restart.

More Information

More information on the change to the DTS subsystem's configuration in NMMGR is available in the updated *Configuring and Managing Host-Based X.25 Links* manual that is available online from:
http://www.docs.hp.com/mpeix/pdf/36939-90057.pdfl

or from the JAZZ website at:

http://jazz.external.hp.com/papers/manuals/36939-90057.pdf

Announcing High Availability FailOver/iX for FC Disk Arrays

by Jim Hawkins, MPE/iX Lab

General Information

At no charge, High Availability FailOver/iX (HAFO or HAFO/iX) is now available for HP e3000 systems connected to many of HP's VA and XP family Fibre Channel (FC) disk array products. Support is offered for customers with HP e3000 A/N-Class systems running MPE/iX 7.5 using the A6795A 2Gbit FC-HBA and also for customers with HP e3000 S9xx systems running at least MPE/iX 7.0 using the A5814A-003 SCSI-FC Router. This greatly expands the coverage of the HAFO product which until recently supported only the SCSI XP256 (SCSI XP256 remains supported with these changes).

Once the HAFO software is installed, the user configures each disk LDEV with a primary data path and an alternate data path. In a normal state, data is routed through the primary path while HAFO software continually monitors disk I/O reply messages for failed components. HAFO is designed to detect the following event types:

- Hung I/O
- Failed disk controller
- Failed I/O host device adapter card
- Failed connection component (cables, switches, routers)

When these events are detected the HAFO software will "failover" to the alternate data path. That is, all subsequent I/O is sent to the configured alternate data path. No application or higher level MPE/iX Operating System component should experience an abnormal event. All I/Os complete as normal using the alternate data path and alternate array controller.

In the event of a failover, the system operator is notified via an MPE/iX console message. This is a "repeater" type message. Repeater messages are repeatedly sent to the console at approximately five minute intervals until a REPLY command is used to acknowledge the message. In addition to the console message, the failover event also causes I/O type log records to be written into the MPE/iX system log file.

Upon repair of the failed component, the system operator may switch the LDEV back to the primary path to restore HAFO protection for that device.

NOTE To prevent an uncontrolled series of repeated failover events HAFO does not allow automatic "fail back" from alternate to primary path

Who Should Consider HAFO

HAFO is for customers using disk arrays who want protection against failure for the following components of the I/O subsystem:

- I/O Host Bus Adapter (HBA)
- Cabling
- FC Switches
- SCSI-FC Routers
- Disk Controllers

CAUTION Before deploying HAFO, system disk I/O performance should be analyzed. Those systems with disk I/O bottlenecks (long disk queues and/or I/O completion times greater than a few seconds) are not good HAFO candidates as false failover events may be seen.

NOTE Those customers using Cluster/iX to protect their MPE/iX disk volumes may NOT use HAFO/iX on these same volumes. Further, Cluster/iX and HAFO/iX protected volumes may not share an HBA.

Required Hardware and Software

Required Hardware

- HP e3000 (each HAFO connection requires a pair of HBAs)
  - S9xx
    - A28696A NIO F/W SCSI Card
    - A5814A SCSI-FC Router
  - A-Class, N-Class
    - A6795A 2Gbit FC HBA
- Supported FC Multi-port Disk Array Products (each HAFO connection requires a pair of ports)
  - VA7410
  - XP48 and XP512
  - XP128 and XP1024
  - (SCSI XP256 remains supported)

Minimum Required Software

MPE/iX 7.0 (for HP e3000 S9xx)

MPE/iX 7.5 (for HP e3000 A/N-Class)

MPEMXL5 (I/O Core Patch for BOTH 7.0 and 7.5) (or superceding patch)

MPEMXK9 (HA Utilities Patch for BOTH 7.0 and 7.5) (or superceding patch)

Hardware that is NOT supported

- Any Arrays not listed above including, but not limited to
  - VA7100, VA7110 (supported on MPE but not for HAFO)
  - FC-XP256, VA7400 (never supported on MPE)
- A5814-001 Distancing Router (direct connect to XP48/512)

Documentation

Please refer to *http://docs.hp.com/* for the new edition of the HAFO manual:

High Availability FailOver/iX Manual (MPE/iX 7.0, MPE/iX 7.5) Edition 2, date code E0803, Part Number: 32650-90911 (".pdf" only)

The previous version of the manual still applies to MPE/iX 6.5 customers with SCSI XP256: "High Availability Failover Utilities Configuration Guide" (Part No. 32650-90899)

Additional information on HAFO, HP e3000 High Availability products, disk array utilization and MPE specific FC configuration information can be found in the "High Availability" section of the CSY external web site: *http://jazz.external.hp.com/mpeha/papers/index_papers.htm*

Recommended items for customers deploying HAFO and FC disk arrays include:

Table 3-1

High Availability FailOver/iX	(Web based training slide show with audio)	*http://jazz.external.hp.com/mpeha/papers/HAFO_training_session/HAFO_training_session.html*
Router White Paper	(Important information for A5814A-003 SCSI-FC Router)	*http://jazz.external.hp.com/mpeha/papers/router_paper01.htm*
MPE Disk Performance White Paper	(General discussion of disk performance issues)	*http://jazz.external.hp.com/mpeha/papers/off_white_2004.html*
How-To Papers	(Other HA related subjects)	*http://jazz.external.hp.com/mpeha/howto/index_howto.html*

HP SureStore Virtual Array 7110 and 7410 on the HP e3000

by Jim Hawkins, MPE/iX Lab

The HP StorageWorks Virtual Array is a low-cost, high capacity, high performance, 2 Gb Fibre Channel virtual disk array that delivers industry leading uptime. You can mix and match drives of different size, and add capacity instantly. HP's hot swap technology and redundant components reduce planned downtime. The virtual array architecture simplifies management and administration of the array. File or LUN creation occurs quickly, without worrying about the underlying physical technology.

- The HP StorageWorks Virtual Array 7110 (va7110) supports over 6.5 TB with up to 45 disks. The va7110 has one host port per array controller to enable configurations with no single point of failure. These ports support either 1 Gb or 2 Gb Fibre Channel devices to protect your investment in connectivity infrastructure.
- The HP StorageWorks Virtual Array 7410 (va7410) supports over 15 TB with up to 105 disks. The va7410 has four host ports to enable simplified and more extensive server and storage area network (SAN) connectivity. These ports support either 1 Gb or 2 Gb Fibre Channel devices. With four back-end disk ports and faster array controllers, the va7410 is capable of up to 34,000 cached I/Os per second and up to 330 MBps sequential throughput.

Device installation and support is to be provided by HP trained personnel. For detailed information on the support and configuration of the Virtual Array products consult the hp external web site in the storage section: http://www.hp.com/storage (currently VA7110 is under “Entry-level” and VA7410 “Mid-range”). Both the VA7110 and VA7410 have “technical documentation” tabs as the primary source for information.

For HP Support engineers additional information can be found on the NSS Spock site (HP Internal only): *http://hpso.rose.hp.com/spock/index.shtml*

NOTE The Command View SDM software is required to Support the VA disk arrays. CV-SDM does NOT run on MPE/iX. In addition to your MPE system you are required to connect an appropriate host system (“windows” type or HP-UX) with CV-SDM installed for configuration, support and management of your VA

HP SureStore Command View SDM .http://www.hp.com/storage “Storage software”

Configuration Basics

- va7100 va7410 Configuration Requirements
  - — Firmware version A100 or higher
  - — Port behavior set to HPUX or MPE
  - — Port Topology should be set to Private Loop
  - — Rebuild Priority should be set to Low
  - — Logical Unit Number (LUN) (0) must be configured for Command View SDM to work properly
  - — LDEV 1 as a boot device is supported
- HP e3000 System information:
  - — S9xx (NIO based machines):

- F/W SCSI Device Adapter HP28696A. Firmware version 3728
- SCSI-FC Fabric Router A5814A #003. Firmware version 8.01.0A
- HSSDC Gigabit Interface Converters (GBIC)
- Fibre optic cable: 62- or 50-micron fibre optic cable with dual SC connector

OR

- A/N-Class (PCI based systems):
  - A6795A PCI- 2Gbit Card -- LC Cable interface
  - No additional GBIC for Card, Device still requires one.
  - LC/SC Fibre Channel Cable such as A5750A-008 or C7530A
- HP e3000 Software Requirements
  - MPE/iX 7.0 plus MPEMXF8 (or superceding patch or PPT)
  - MPE/iX 7.5 plus MPEMXF8 (or superceding patch or PPT)
  - SYSGEN product ID is `HPDARRAY`.
- Host Diagnostic Support
  - No host based diagnostics are supported. Diagnostic functions are accomplished via Command View SDM Product running on NT or HP-UX host.
  - Offline Diagnostic Support. No specific support for Offline Diagnostic support. Basic functions such as "ODE Mapper" will be able to identify and the Logical Units configured on the VA7100 as SCSI Disks.

Additional MPE Specific information on disk array utilization and FC configuration information can be found in the “High Availability” section of the vCSY external web site:
http://jazz.external.hp.com/mpeha/papers/index_papers.html

Recommended items for customers deploying va family disk arrays include:

Table 3-2

High Availability FailOver/iX	(Web based training slide show with audio)	*http://jazz.external.hp.com/mpeha/papers/HAFO_training_session/HAFO_training_session.html*
Router White Paper	(Important information for A5814A-003 SCSI-FC Router)	*http://jazz.external.hp.com/mpeha/papers/router_paper01.htm*
MPE Disk Performance White Paper	(General discussion of disk performance issues)	*http://jazz.external.hp.com/mpeha/papers/off_white_2004.html*
How-To Papers	(Other HA related subjects)	*http://jazz.external.hp.com/mpeha/howto/index_howto.html*

Announcing Limited Support for Ultrium Tape on MPE/iX

by Jim Hawkins, MPE/iX Lab

The purpose of this article is to document the limited support offered for Ultrium Tape Devices (a.k.a. "LTO") on MPE/iX.

The primary considerations are outlined below. Items #3 and #4 are unique to Ultrium Tape Devices and represent a departure from traditional MPE/iX tape device support.

1. System and connection types: A-Class and N-Class, LVD-SCSI only.
2. O.S. software: MPE/iX 7.0 or 7.5 with appropriate version of patch MPEMXJ3.
3. Supported software: Only for use with certified 3rd party back-up solutions.
4. Diagnostic support: Very limited, requires access to Windows or HP-UX system with LVD-SCSI HBA and current version of HP Storage Works Library and Tape Tools. Some diagnostic activities may require removing the tape device from the HP e3000.

More in depth discussion of these items along with configuration details follows.

Hardware and Software Requirements

MPE/iX support of Ultrium 215 and 230 devices is limited to parallel LVD-SCSI connections only. Thus, these devices may only be connected to HP e3000 A-Class and N-Class systems running MPE/iX 7.0 or 7.5 Release. In addition, patch MPEMXJ3, version "A" for MPE/iX 7.0 or version "B" for MPE/iX 7.5, must be installed for the device to be supported. Finally, on 7.0 only, patch MPEMX74 "A" should also be installed.

Only those HP Ultrium Tape devices sold for use with HP-UX PA-RISC server systems will be supported. There are variations in firmware for the many Ultrium devices on the market; only devices with the firmware for HP-UX server systems will be supported. More on Firmware below.

Ultrium Tape Usage Requirements

Ultrium devices will only be supported for access/usage by certified 3rd party supplied back-up products; certified products are currently limited to:

- BACKUP+/iX (ORBiT Software Inc., *http://www.orbitsw.com/*)
- HiBack® (Mount10 Group, *http://www.mount10.com/*).

Ultrium Tape devices are NOT supported for any other traditional MPE/iX tape functions including, but not limited to: System boot, SYSGEN, HP Store/Restore, HP TurboStore, general file system access, user logging, FCOPY, Sherlock diagnostics, etc. These restriction are in place due to incompatibilities between MPE/iX tape usage patterns and Ultrium implementation assumptions which can lead to unacceptably poor performance. In most of these cases, there are no actual blocks in place to prevent using Ultrium; nevertheless, such usage is NOT supported.

There is one small exception: The program `devtool.pub.sys` and the command file `devctrl.mpexl.telesup` may be used to load/unload media but it will NOT support turning compression on/off for Ultrium. HP Ultrium incorporates "intelligent" compression that prevents attempts to compress data that is already compressed so there is no need to explicitly turn device level (hardware) compression on or off.

Error Reporting, Diagnostics and Firmware Updates

MPE/iX logs all Ultrium Tape device errors and checks conditions to the system log files as with other SCSI tapes. System Log files can then be examined with LOGTOOL or cstm's logtool utility. Similarly, all standard tape console messages such as AVR tape mount or cleaning cartridge prompts can be seen. However, MPE/iX cstm (a.k.a. MESA) diagnostics, (like HP-UX cstm) do NOT allow Ultrium access to functions such as "expert tools" or "firmware update."

Most diagnostic support for Ultrium drives comes from HP Storage Works Library and Tape Tools (a.k.a. LTT). LTT does not run on MPE/iX; therefore in some diagnostic scenarios the Ultrium may have to be removed from the HP e3000 and connected to a host running LTT. For details on LTT, please reference the HP corporate web site *www.hp.com*. Currently "HP StorageWorks Library and Tape Tools" web page may be found at:

http://h18006.www1.hp.com/products/storageworks/ltt/index.html

Firmware update can be accomplished through Firmware Upgrade Tape (FUP). The Firmware Upgrade Tape (FUP) creator is part of the HP Storage Works Library and Tape Tools. The FUP creator must be run on Windows, HP-UX or Linux. Once a FUP is created it can be used to update Ultrium devices connected to the HP e3000. More information can be found at the following web sites:

HP External: "HP Ultrium - Firmware Upgrade Instructions for HP Standalone External, Internal and M-drive Ultrium Tape Drives"

http://h20000.www2.hp.com/bizsupport/TechSupport/Document.jsp/objectID=lpg50219

HP Internal: NSS Nearline storage "HP StorageWorks Library and Tape Tools - Firmware"

http://hpcrlib1.gr.hp.com/customercare/Technicalsupport/diagnostics/LTT_firmware.htm

Ultrium device firmware should selected for devices to be compatible with HP-UX Server Systems. Current firmware levels are:

- Ultrium 215, firmware revision N26D
- Ultrium 230, firmware revision E32D

Configuration Limits and Examples for Ultrium Devices on MPE/iX

Physical connections are to be made only to LVD-SCSI Host Bus Adaptors. LVD-SCSI terminators must be used for devices to function at rated speeds. HP recommends only ONE Ultrium Tape device per SCSI bus for maximum performance. No more than TWO Ultrium Tape devices per SCSI bus will be supported. An Ultrium device must never share a SCSI bus with any other SCSI peripheral type.

You may configure an Ultrium tape LDEV via SYSGEN or IOCONFIG as you would any other SCSI tape device. On 7.0 with MPEMX74 you should use device ID=DLT. On 7.5 you may use device ID=LTO or ID=DLT. (Using device ID of LTO or DLT assigns the scsi_tape2_dm driver to the device. This driver supports Ultrium, DLT and other, "non-DDS" tapes. The driver, completed by MPEMXJ3, will detect Ultrium devices and automatically make the appropriate SCSI mode page settings.)

Ultrium devices are configured as standard SCSI type devices and so require a "pseudo" device to be configured as do all other SCSI devices on MPE/iX

Configuration Example:

Given the following output from "ISL> ODE RUN MAPPER2"

```
0/6         Elroy PCI Bridge                    DH    782H  AH    0     0

0/6/2/0     Symbios SCSI Controller

0/6/2/0.3.0  Ultrium (LTO) 1-SCSI Tape drive   -     -     -     -  E32D
```

The following SYSGEN (IOCONFIG) commands would be used:

```
sysgen> ap 0/6       pat_pci_bc
sysgen> ap 0/6/2     pci_device
sysgen> ap 0/6/2/0   A5149A
sysgen> ap 0/6/2/0.3 PSEUDO
sysgen> ad 19 0/6/2/0.3.0 LTO
                          |||
```

(ID of DLT may be used on 7.0)

To confirm, use the "list path" command. The last three entries should show:

```
sysgen> LP
. . .
PATH:  0/6/2/0                              LDEV:
  ID:  A5149A                               TYPE: DA
PMGR:  PCI_SCSI_DAM                      PMGRPRI:     6
LMGR:                                     MAXIOS:     0


PATH:  0/6/2/0.3                            LDEV:
  ID:  PSEUDO                               TYPE: DA
PMGR:  TRANSPARENT_MGR                   PMGRPRI:     6
LMGR:                                     MAXIOS:     0


PATH:  0/6/2/0.3.0                          LDEV:   19
  ID:  LTO                                  TYPE: TAPE
PMGR:  SCSI_TAPE2_DM                     PMGRPRI:    10
LMGR:  LOGICAL_DEVICE_MANAGER             MAXIOS:     0
```

Predictive Changes SYSSTART during UPDATE

by Gary Robillard, Predictive Support

Due to some customer sites having multiple startup directives in SYSSTART.PUB.SYS, the job that installs Predictive has been modified to recognize this. Previously, this Predictive job would just add the "STREAM JPSMON.PRED.SYS" line to the end of SYSSTART. Now, the job modifies the SYSSTART file as follows:

1. Gather STREAMs device and printer queue for STREAMs and OPENQ commands if needed.
2. If SYSSTART.PUB.SYS does not exist, a new SYSSTART file is created on ldev 1 with the following contents:

```
STARTUP
**
WARMSTART
OPENQ LP
STREAMS 10
STREAM JPSMON.PRED.SYS
**
COOLSTART
OPENQ LP
STREAMS 10
STREAM JPSMON.PRED.SYS
****
```

3. If a WARMSTART, COOLSTART, RELOAD or UPDATE section exists and has commands, AND there are no other STREAM commands AND there are no STARTSESS to OPERATOR.SYS commands, then do not modify the SYSSTART file.
4. If there are STARTSESS commands but no STARTSESS to OPERATOR.SYS, then do not modify the SYSSTART file.
5. The command STREAM JPSMON.PRED.SYS is removed from the STARTUP section and added to the WARMSTART and COOLSTART sections. If no WARMSTART and COOLSTART sections exist, they are created and contain these commands:

```
**
WARMSTART
OPENQ LP
STREAMS 10
STREAM JPSMON.PRED.SYS
**
COOLSTART
OPENQ LP
STREAMS 10
STREAM JPSMON.PRED.SYS
****
```

If the file NOSYSST.PRED.SYS exists, it prevents the Predictive job from doing any SYSSTART file processing during installation. Therefore, if you do NOT want the "STREAM JPSMON.PRED.SYS" command added to your SYSSTART file, create the NOSYSST.PRED.SYS file with a build command.

```
BUILD NOSYSST.PRED.SYS;DISC=1
```

TurboIMAGE B-Tree Behavior Clarification

by Tien You Chen, MPE/iX Lab

Possible Confusing Behavior

TurboIMAGE has supported B-Tree indices since C.07.00. Even though a user can create a B-Tree index only on the master data set's key item, s/he can perform index searches using all of its corresponding detail data set search items as well. Users can now call DBFIND to perform a generic key search on a master data set, then chained DBGETs to return all the qualified records. Confusion arises when a user calls DBFIND on a master data set but, before or between the chained DBGETs of those qualified records, s/he calls another DBFIND on a detail data set using a search item linked to the master currently being accessed chained. This DBFIND will reposition the chain pointer on the master. As a result the user may get an 'end of chain' status for the next DBGET to the master data set. Since these two DBFINDs are finding against two different data sets, the user is amazed at the interference between these two.

What to Expect and How to Solve

Because only one KSAM/iX file is attached to each master data set, all B-Tree access for related detail data sets also goes, via the master data set, to the same KSAM file. Since there is only one logical record pointer in the KSAM file, a new DBFIND, which positions the logical record pointer, affects the current reading. In addition, the internal runtime data structure, though allocated one per data set, is still affected. Therefore, even if the second DBFIND on the detail data set is not a B-Tree DBFIND, many flags in the runtime data structure are reset. The next DBGET to the master data set acts as though there was no previous B-tree DBFIND to the master.

This combination of access methods, mixing DBFIND/chain DBGET to a master with DBFIND/chain DBGET to a detail using a path to that same master, is not common. We suggest the user call a second DBOPEN to handle the second DBFIND. However, please remember the second DBOPEN is needed only when calling DBFIND on a detail chain while still performing chained DBGETs on the related master data set.