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Lotus Domino
Windows NT Prioris MX

DIGITAL HiTest Notes

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Preface

This document provides an overview of DIGITAL HiTest Suites and detailed technical information about interoperability test results for the Lotus Domino Windows NT Prioris HiTest Suite.

Audience

Primary users of this document are DIGITAL and Partners sales representatives and technical support personnel. Secondary audiences include product managers, customers, and the personnel responsible for installing, setting up, and operating a DIGITAL HiTest Suite.

Road Map

This document contains the following chapters:

1. Introduction – Provides a brief summary of the benefits of DIGITAL HiTest Suites and an overview of the Suite covered in this document.

2. Configuration Data – Includes tables of configuration data about the hardware and software components that define the Template, and special configuration rules if any.

3. System Installation and Setup – Presents useful information for installing and setting up this DIGITAL HiTest Suite.

4. Interoperability Tests and Results – Describes how the tests were set up (including database organization), what data and programs were placed on what disks, and how the tests were run.

5. System Limits and Characterization Data – Summarizes any system limitations or characterization data that were identified during testing.

6. Problems and Resolutions – Discusses any problems and resolutions that were discovered during testing.

Appendix A: Detailed Hardware Configuration – Contains more detailed information about the hardware and software components listed in the Configuration Data chapter.

Feedback and Ordering Information

What our readers think of this or any other DIGITAL documentation is important to us. If you have any comments, we would appreciate hearing from you. Send your comments to: *reader-comments@digital.com*.

Please reference the document title and part number (EK-HLDNM-HN. A01) in your correspondence about this document.

Copies of this and other DIGITAL documents can be ordered by calling 1-800-DIGITAL.

1
Introduction

DIGITAL HiTest Suite and Its Advantages

DIGITAL HiTest Suites are guidelines for configuring a set of prequalified computer systems. A HiTest Suite often contains all the hardware and software needed for a complete customer solution. DIGITAL HiTest Suites can be used as a basis for configuring systems that satisfy a wide set of customer requirements. Typically, Suites target specific markets such as Data Warehousing or WWW Serving and mail administration.

DIGITAL Product Management and Engineering select the components and design the configurations in each HiTest Suite to ensure high system reliability, application performance, and upgradability. A Suite's hardware and software components have been successfully tested for interoperability.

A HiTest Suite specifies allowed ranges of hardware and software components, as well as each component's part number, description, and revision information. These specifications are listed in the *DIGITAL HiTest Template*.

The components in a HiTest Suite are organized into two groups, the *DIGITAL HiTest Foundation* and the *DIGITAL HiTest AppSet*. The HiTest Foundation includes the hardware, operating system, middleware, and database software. The HiTest Foundation can be used as a base on which any customer-desired applications can be installed. The HiTest AppSet includes the software specific to one class of customer solutions.

Configuring a DIGITAL HiTest Suite is straightforward. Select components from the HiTest Template to configure a DIGITAL HiTest System. Any system configured as specified in the DIGITAL HiTest Template can be called a DIGITAL HiTest System.

The HiTest Suite is documented in the *DIGITAL HiTest Notes*. The HiTest Notes list the HiTest Foundation and HiTest AppSet components. HiTest Notes also describe the testing of the Suite and include configuration details, installation instructions, tuning parameters, problems encountered and their solutions, and system diagrams.

Some components listed in the HiTest Foundation or AppSet may be optional. If the minimum quantity is zero (0), then the component is optional. If the minimum quantity is one or more, then you must order at least the minimum quantity.

The maximum quantities represent the largest group of components that were tested for interoperability with all the other components in the Suite. Although it may be possible to place more than the specified maximum quantity of a component on a DIGITAL system, extensive interoperability testing was not done at that level and such a system would not be considered a DIGITAL HiTest System.

You can select any combination of components with quantities ranging from the minimum to the maximum specified. Occasionally, special configuration rules give further guidance or restrict configurations. These rules appear in the Configuration Data chapter of the HiTest Notes.

A customer can include the Suite-specified hardware and software they need and then layer on additional software. Other types of hardware, called *add-on hardware*, can also be added to a DIGITAL HiTest System. The add-on hardware is specified in the Configuration Data chapter of the HiTest Notes, and in the HiTest Systems Web Pages, available through the following URLs:

```
http://cosmo.tay.dec.com              (Intranet)
http://www.partner.digital.com:9003 (Internet)
```

Even though the customer may install application software that is not specified in the Suite, the customer and DIGITAL still experience the advantages of knowing that all of the Suite-based hardware and software interoperates correctly. Of course, the full benefit of configuring a system from a HiTest Suite is obtained when the system includes only specified HiTest Foundation and AppSet components.

Overview of This DIGITAL HiTest Suite

The Lotus Domino Windows NT Prioris MX HiTest Suite includes the following software components:

- Windows NT Server

- Lotus Domino

- System Management Server (SMS)

This Suite will meet the needs of a low-end to medium- capacity Lotus Domino user.

Lotus Domino enables customers to easily, quickly, and cost effectively create, deploy, and maintain powerful interactive and collaborative Internet/Intranet applications. Prioris MX systems provide a robust network computing environment for Windows NT servers. A Prioris MX server running Lotus Domino offers an ideal network solution.

These network-ready servers feature high-performance disk and network throughput, providing a platform for Lotus Domino users that delivers application server performance at file/print server prices.

The advanced dual symmetric multiprocessing (SMP) architecture of the DIGITAL Prioris MX 6000 Series is ideally suited to meet the price/performance requirements of users who want to rapidly and economically configure a groupware server for Lotus Domino.

2
Configuration Data

This chapter describes the tested DIGITAL HiTest Configuration Suite, including the hardware, software, and firmware components, and their revision levels. Special configuration rules are explained if required.

Hardware and Software Components

Table 2-1 identifies the range of hardware and software components that can be configured using the Lotus Domino Windows NT Prioris HiTest Suite. The ranges of hardware include 64 MB through 320 MB of memory, one 4.3 GB disk through one 9.1 GB system and swap disk plus an 8.6 GB RAIDset, and multiple Ethernet controllers.

Table 2-2 lists the revision levels of the components.

The HiTest Template (Table 2-1) consists of three categories:

- **AppSet Software** – Includes software specific to one class of customer solutions, in this case low-end to medium capacity Lotus Domino users.

- **Foundation Hardware** – Includes the base system, storage, and other hardware options.

- **Foundation Software** – Includes the operating system, middleware, and database software.

When ordering an item from a HiTest Template, select a quantity that is within the minimum/maximum range for the item. If the minimum quantity is zero (0), then the component is optional. If the minimum quantity is one or more, then order at least the minimum quantity, but not more than the maximum quantity. The maximum quantity represents the greatest number of components that were tested for interoperability with all the other components in the Suite.

For more details on the HiTest Suite hardware configuration, see Appendix A.

Table 2-1: Lotus Domino Windows NT Prioris DIGITAL HiTest Template

Lotus Domino *HiTest AppSet*				
Windows NT Prioris MX 6200 *HiTest Foundation*				
For documentation and updates: http://cosmo.tay.dec.com *and* http://www.partner.digital.com:9003 *For a hardcopy of this Suite's HiTest Notes, order* EK-HLDNM-HN.				
Line Item	**Description**	**Part Number**	**HiTest Range**	
			Min	**Max**
AppSet Software				
1	**Lotus Domino Version 4.5** *For more information, contact the Lotus Corporation at (617) 577-8500 or URL:* http://www2.lotus.com/domino.nsf		1	1
Foundation Hardware				
2	**DIGITAL Prioris MX 6200, 256 KB, 200 MHz** *Hardware includes*: • Dual CPUs with 256 KB cache • 64 MB Memory • Integrated UltraSCSI controller • Integrated 10/100 Mbit Fast Ethernet • SCSI 12X CD-ROM drive • RX23L-AB 1.44 MB Floppy drive *Software includes*: • ServerWORKS CD-ROM	**FR-B41WW-AA**	1	1
3	**Single Channel RAID Controller**	**FR-PCTAR-EA**	0	1
4	**Country kit (accessories, keyboard, docs, mouse, and power cord)**	**FR-PC94K-AA**	1	1
5	**128 MB 60ns Parity SIMMs (2 x 64 MB)**	**FR-PC77M-BM**	0	2
6	**4.3 GB Wide SSB disk drive**	**FR-CECBA-CA**	1	3
7	**9.1 GB UW SCSI disk drive**	**FR-CFCBA-CA**	0	1
8	**4/8 GB DAT SCSI tape drive**	**FR-PCXAT-AJ**	1	1
9	**Fast Ethernet Adapter**	**FR-DE500-AA**	0	1

10	*Select one high-resolution color monitor (the 17 inch is recommended):*
	
	15" flat-square 0.28 dot pitch
	
	17" flat-square 0.28 dot pitch
	
	Note: **YW** and **ZW** = Northern Hemisphere
	        YY and **ZY** = Southern Hemisphere
	        TZ and **UZ** = Europe
		FR-PCXBV-YW /YY/TZ
		FR-PCXBV-ZW /ZY/UZ
			1	1

Foundation Software				
11	**Windows NT Server, Version 4.0** *Please purchase from a Microsoft reseller or contact Microsoft at* http://www.microsoft.com		1	1
12	**Windows NT Service Pack 3** *Please purchase from a Microsoft reseller or contact Microsoft at* http://www.microsoft.com		1	1
13	**System Management Server (SMS) 1.2** *Please purchase from a Microsoft reseller or contact Microsoft at* http://www.microsoft.com		0	1

The following table lists the revision levels of the components.

Table 2-2: Component Revision Levels

Hardware Component	Hardware	Firmware	Software
Phoenix BIOS	–	4.05	–
DAC 960 BIOS	–	3.00.07	–
ADAPTEC BIOS	–	1.24.01	–
Prioris 6200 MP/2	1.05	–	–
Single Channel RAID Controller (FR-PCTAR-EA)	A03	3.50-0-18	–
4.3 GB disks (FR-CECBA-CA)	A01	0702	–
9.1 GB disk (FR-CFCBA-CA)	A02	LXTA	–
Fast Ethernet Adapter (FR-DE500-AA)	B01	1.1	–
Tape Drive (FR-PCXAT-AJ)	A02	0172	–
Software Component	**Version/ Revision**	**Patch Level**	
Windows NT Server	4.0	Service Pack 3 (SP3)	
Lotus Domino	4.5	–	
System Management Server	1.2	Service Pack 1 (Build 786)	
Prioris System Configuration Utility (SCU)	1.05	–	
ServerWORKS Quick Launch CD	3.2	–	
Mylex Disk Array Controller Configuration Utility	4.40	–	

Special Configuration Rules

The *Prioris MX 6200 Server System Reference* (order number ER-B40WW-UA) provides detailed configuration information needed to properly install memory and PCI options.

It is possible to order more memory options than are supported by this DIGITAL HiTest Template. To comply with the HiTest Template, keep the total installed to 320 MB or less.

_____ **Note**_____

Service Packs must be reapplied after installing any new software.
_____

The following configuration rules also apply:

- The CD-ROM drive should always be connected to the on-board Adaptec SCSI controller to support the bootable ServerWORKS Quick Launch CD.

- The CD-ROM drive and the two half-height devices located in the upper bays can only be connected to the narrow SCSI bus.

3
System Installation and Setup

This chapter presents information that is useful when installing and setting up a DIGITAL HiTest System configured from this DIGITAL HiTest Suite. System preparation includes installation of the hardware, operating system, and applications.

Hardware Installation

The hardware was installed and interconnected as shown in Appendix A.

System Firmware

Phoenix BIOS upgrade utility (PHLASH.EXE) located in the BIOS update kit can be obtained from:

http://www.windows.digital.com/~ftp/index/in_prioris_mx6.htm

Disk Storage Configuration

This section describes disk storage configurations for the Lotus Domino Windows NT Prioris MX 6200 system:

- The minimum configuration is for systems that do not include a RAID controller.

- The maximum configuration applies to systems with a RAID controller.

Minimum Configuration

To format SCSI disks on your system, perform the following from the Adaptec BIOS:

1. Press keys Ctrl + A to enter the Adaptec BIOS Setup Utility.

2. Select "SCSI Disk Utilities."

3. Select the disk you want to format.

4. Select "Format Disk" to begin the formatting.

Maximum Configuration

Configure and setup RAID Arrays using the Mylex Disk Array Controller Configuration Utility (DACCF.EXE). (See Step 4 in the section Operating System Installation Using Quick Launch V3.2.)

Prioris System Configuration Utility (SCU)

If PCI or EISA options are added to the system, run the SCU to configure them.

_____ **Note** _____

Reference Chapter 2 of the *Prioris MX 6200 Series Server System Reference (*Part Number: ER–B40WW–UA).

_____

Operating System Installation Using Quick Launch V3.2

Perform the following steps to install the Windows NT Server:

1. Power up your system.

2. Immediately insert the Quick Launch V3.2 CD into the CD-ROM drive.

   The system boots from the CD automatically.

3. If the system does not boot from the CD automatically, press Ctrl + Alt + Delete to boot from the Quick Launch CD.

4. If your system is configured with a RAID controller, complete this step. If you do not have a RAID controller, continue at step 5.

   Create the RAIDsets and initialize the logical drives using the Mylex Disk Array Controller Configuration Utility (DACCF.EXE).

   If your system includes a RAID controller, Quick Launch automatically launches DACCF.EXE.

5. Select "Installation and Utilities."

6. Click the "Express Installation Tab."

7. Click on the MS Windows icon and select "Windows NT 4.0" from the pop-up menu.

8. Fill in the appropriate information to begin the Windows NT installation.

9. Create a 100 MB partition when prompted by Quick Launch. (Quick Launch requires an MS-DOS partition of at least 35 MB to install Windows NT.)

10. Insert the Windows NT V4.0 CD-ROM when prompted.

    The installation is completed using the information already gathered by Quick Launch.

Applications

Install Lotus Domino as follows:

1. Run the Lotus Domino installer in one of the following ways:

   - Double-click the application icon

   - Click Start, choose Run, and enter a command in the following format:

     drive:\lotus45a\w32intel\install\install.exe

     where *drive* is the CD-ROM drive.

2. In the Installation Options window, select the appropriate drive letters at the bottom, and click the Custom Installation radio button.

3. From the Custom Installation menu, select the Notes Performance Monitor Component.

4. Ensure that the `\notes` directory is included in the path for Windows NT.

    Refer to the Windows NT online help for information on how to ensure that the `\notes` directory is included in the path for Windows NT.

5. At the command prompt, use the `CD` command to change to the notes directory and invoke the notesreg.bat batch file which installs the Lotus Note Performance Monitor objects as in the following example:

    `notesreg.bat c:\notes`

6. Install the mail data on a dedicated disk/RAIDset.

7. Install Service Pack 3 for Windows NT 4.0.

    _____ **Note**_____

    The Service Packs and hot fixes are available on the Microsoft support page located at:

    `ftp://ftp.microsoft.com/bussys/winnt/winnt-public/fixes/usa/nt40/`

    Service Packs must be reapplied after installing any new software.

    _____

4
Interoperability Tests and Results

This chapter describes how the tests were set up (including database organization), what data and programs were placed on what disks, and how the tests were run.

This chapter describes:

- Test Environment
- Test Tools
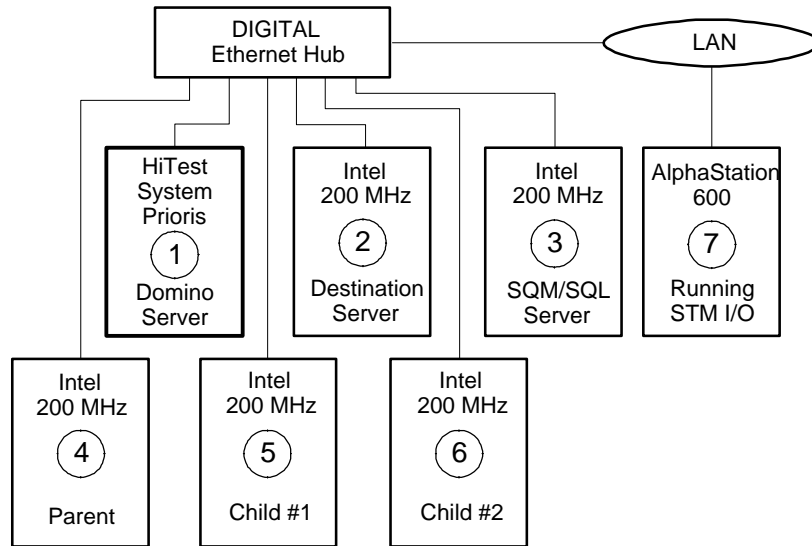- Test Configuration
- Test Process and Results

Overview of Results

Interoperability testing was performed successfully on the Lotus Domino Windows NT Prioris HiTest Suite. The tests verified that the business processes functioned correctly.

Test Environment

Figure 4-1 shows the Lotus Domino Windows NT Prioris test environment.

Figure 4-1: Test Environment

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❶ Prioris HiTest Domino Server (system under test)
❷ Mail recipient
❸ SMS Server polls/audits Prioris
❹ Parent instructs Child to send mail
❺ Child sends mail to the HiTest Prioris which routes mail to the destination server
❻ Child sends mail to the HiTest Prioris which routes mail to the destination server
❼ File share testing

Test Tools

Interoperability testing was performed using the following tools:

- **NotesBench for Lotus Domino** (Lotus Development Corporation)
  NotesBench is a tool that exercises the notes server mail functions, including mail routing and interactive mail. Lotus has specific criteria that define acceptable performance; response time must be less than five seconds.

- **STM I/O Tool Version 1.1-002** (Internal Digital Equipment Corporation test tool)
  STE_IO.EXE generated and copied data to the file shares and performed integrity checking on the data copied.

Test Configuration

The test load was generated as follows:

- The average test duration was 40 hours.

- Windows NT Workstations running Lotus NotesBench generated Lotus Domino Mail client workload.

- STM I/O Tool was run continuously throughout the test.

- SMS performed routine auditing tasks during the test.

Minimum Configuration

The minimum configuration includes one disk connected to one SCSI controller, as shown in Table 4-1.

Table 4-1: Disk Configuration for the Minimum Configuration

Quantity	Capacity	Disk Content/Data	Disk Controller	RAID Configuration
1	4.3 GB	Windows NT system and paging file Lotus Domino mail data File shares Log files	Internal	JBOD

Maximum Configuration

The maximum configuration includes four disks connected to a RAID controller (FR-PCTAR-EA), as shown in Table 4-2.

Table 4-2: Disk Configuration for the Maximum Configuration

Quantity	Capacity	Disk Content/Data	Disk Controller	RAID Configuration
1	9.1 GB	Windows NT system and paging file	FR-PCTAR-EA	JBOD
1	8.6 GB RAIDset (three 4.3 GB disk drives)	Lotus Domino mail data File shares Log files	FR-PCTAR-EA	5

Test Process and Results

The following information describes the test results:

- **Lotus Domino Mail** – The simulated mail clients (NotesBench processes) reported no errors and response times met Lotus Development Corporation criteria for acceptable performance.

- **File Shares** – STM/IO tool reported no errors and found no data corruption.

5
System Limits and Characterization Data

This chapter describes any system limits that may have been determined as a result of the testing, along with information about the system characterization during testing.

- **RAID** – When configuring the RAID disk sets using the Mylex Disk Array Controller Configuration Utility, the initializing of disks can take a long time. It took about one hour to initialize a 4.3 GB disk. Estimate at least an hour when planning the configuration and setup of disks connected to the FR-PCTAR-EA RAID controllers. After they are initialized, formatting requires only seconds, even for large arrays (32 GB formatted in less than one minute).

- **Mail** – In the minimum configuration, 12.422 GB was transferred at an average rate of 2.412 MB per minute. In maximum configuration, 56.42 MB was transferred at an average rate of 6.188 MB per minute.

- **Network** – When operating a server that is expected to provide high-performance network services (such as the Lotus Domino), the server should be on its own LAN segment, preferably with a high-speed interconnection such as Fast Ethernet. This can be achieved by the use of an Ethernet switch.

6
Problems and Resolutions

This chapter describes any problems that may have been encountered during the testing that have not been fixed and eliminated. A resolution for each problem is given. The resolution provides the system manager or user with a fix or workaround for the problem.

The following problems were identified during testing:

Hardware

No problems were encountered.

Operating System

The following issues were noted when doing a Quick Launch installation:

Problem	Quick Launch installation requires a 35 MB MS-DOS partition.
Resolution	Create at least a 35 MB partition when prompted. The partition can be converted to NTFS later in Windows NT.

Problem	"Microsoft Internet Information Server" is listed as installed in the Network control panel, yet no services exist related to IIS.
Resolution	Select "Microsoft Internet Information Server" from the Services tab in the control panel and click Remove.

Application

No problems were encountered.
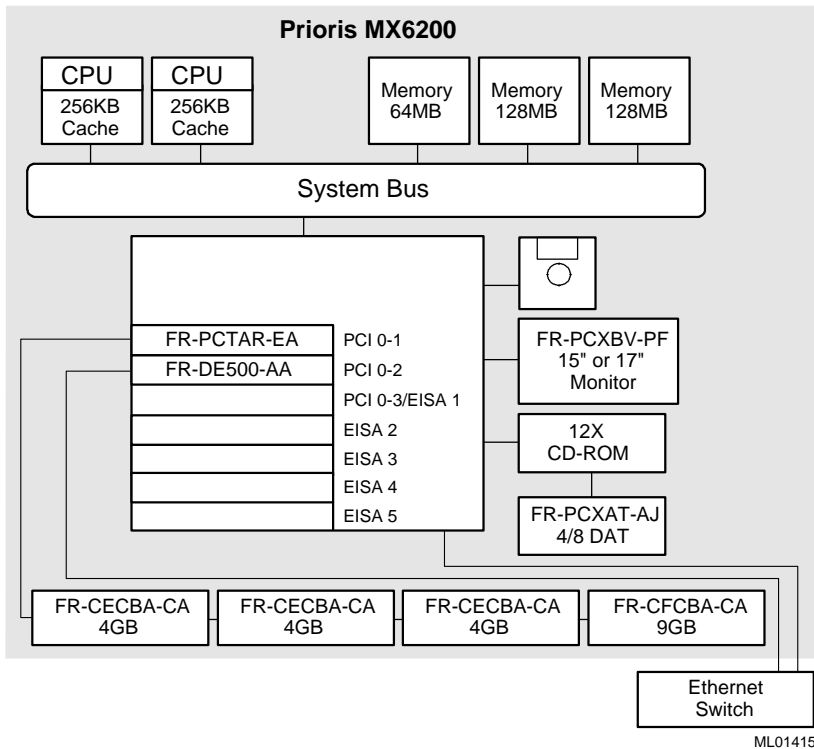
A
Detailed Hardware Configuration

This appendix describes the minimum and maximum hardware configuration for the following:

- System Diagram

- Prioris MX Configurations, including:

    - System Motherboard

    - PC Slot Usage

- Storage Configuration

System Diagram

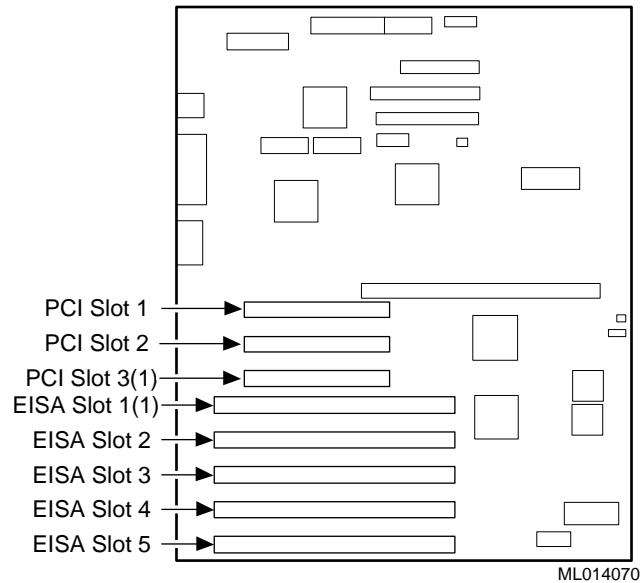Figure A-1 shows a diagram of the entire HiTest Suite.

Figure A-1: System Diagram

Prioris MX Configurations

Figure A-2 and Table A-1 show the Prioris system motherboard and describe the minimum and maximum hardware configurations used in this HiTest Template.

Figure A-2: Prioris MX 6200 Motherboard

PCI Slot 1
PCI Slot 2
PCI Slot 3(1)
EISA Slot 1(1)
EISA Slot 2
EISA Slot 3
EISA Slot 4
EISA Slot 5

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[1] PCI slot 3 and EISA slot 1 share an expansion slot at the rear of the server.

Table A-1: Prioris MX Usage (Minimum and Maximum Configurations)

Slot	Minimum Configuration Options	Maximum Configuration Options	Description
PCI slot 1	open	FR-PCTAR-EA	RAID controller
PCI slot 2	open	FR-DE500-AA	10/100 Fast Ethernet adapter
PCI slot 3/ EISA slot 1	open	open	–
EISA slot 2	open	open	–
EISA slot 3	open	open	–
EISA slot 4	open	open	–
EISA slot 5	open	open	–

Prioris MX PCI Slot Usage

Figure A-3 and Table A-2 show the PCI slot usage for the minimum and maximum configurations of this HiTest Template.
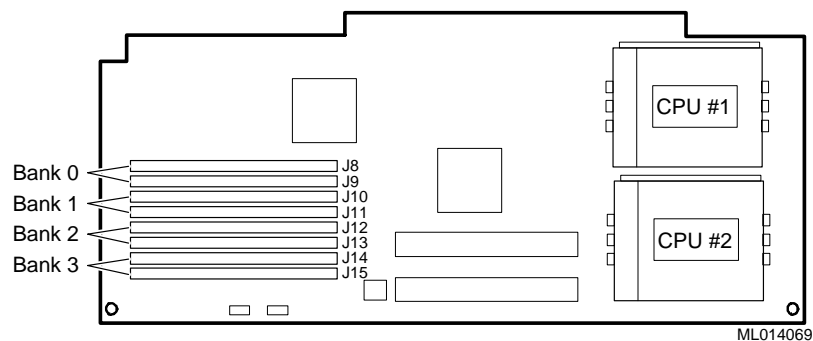
Figure A-3: SIMM Layout for Memory Banks 0 through 3

Table A-2: PCI Slot Usage (Minimum and Maximum Configurations)

Slots	Minimum Configuration Options	Maximum Configuration Options	Description
Bank 0-J8	32 MB SIMM	64 MB SIMM	1 of 2
Bank 0-J9	32 MB SIMM	64 MB SIMM	2 of 2
Bank 1-J10	open	64 MB SIMM	1 of 2
Bank 1-J11	open	64 MB SIMM	2 of 2
Bank 2-J12	open	32 MB SIMM	1 of 2
Bank 2-J13	open	32 MB SIMM	2 of 2
Bank 3-J14	open	open	–
Bank 3-J15	open	open	–

Storage Configuration

Figure A-4 shows the storage configuration used in this HiTest Template. The callouts in this figure are described in Table A-3 and Table A-4.

Figure A-4: Storage Configuration

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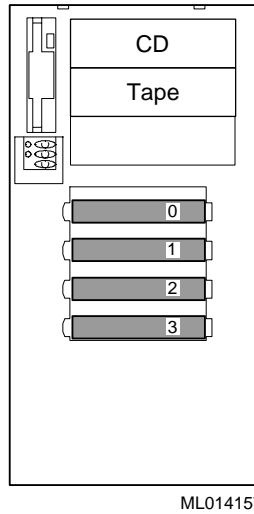
Minimum Configuration

Table A-3 lists the minimum slot configuration for this HiTest System.

Table A-3: Minimum Configuration

Slot	Option/ Part Number	Description
0	FR–CECBA–CA	Windows NT and paging Lotus Domino mail data File shares Log files
1	open	–

Maximum Configuration

Table A-4 lists the maximum slot configuration for this HiTest System.

Table A-4: Maximum Configuration

Slot	Option/ Part Number	Description
0	FR–CFCBA–CA	Windows NT and paging
1-3	FR–CECBA–CA (3)	RAIDset containing: Lotus Domino mail data Log files File shares