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AltaVista Tunnel
Internet AlphaServer 800

DIGITAL HiTest Notes

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| **Version:** | Product Version 1.0 |

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Preface

This document provides an overview of DIGITAL HiTest Suites and detailed technical information about interoperability test results for the AltaVista Tunnel Internet AlphaServer 800 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

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

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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, Internet User, or Internet Service Provider (ISP).

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 AltaVista Tunnel HiTest Suite consists of the following software components:

- AltaVista Tunnel 96

- DIGITAL UNIX 4.0B

This Suite will meet the needs of an organization where users need a secure way to pass over an ISP or Intranet.

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 AltaVista Tunnel HiTest Suite. 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 Internet tunneling.

- **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: AltaVista Tunnel DIGITAL HiTest Template

<table>
<tr><td colspan="5" align="center">AltaVista Tunnel HiTest AppSet
Internet AlphaServer 800 HiTest Foundation</td></tr>
<tr><td colspan="5" align="center">For documentation and updates: http://cosmo.tay.dec.com and http://www.partner.digital.com:9003
For hardcopy of this Suite's HiTest Notes, order EK-HAVUF-HN.</td></tr>
<tr><td>Line Item</td><td>Description</td><td>Part Number</td><td>Min</td><td>Max</td></tr>
<tr><td colspan="5" align="center">AppSet Software</td></tr>
<tr><td>1</td><td>AltaVista Tunnel 96 Server Workgroup</td><td>QB-4W0AA-SB</td><td>1</td><td>1</td></tr>
<tr><td colspan="5">NOTE: One copy of the software in line items 2 or 3 are required for each PC using the tunnel.</td></tr>
<tr><td>2</td><td>AltaVista Tunnel 96 Personal NT</td><td>QB-4W2AB-SA</td><td>1</td><td>1</td></tr>
<tr><td>3</td><td>AltaVista Tunnel 96 Personal Windows 95</td><td>QB-4W2AA-SA</td><td>1</td><td>1</td></tr>
<tr><td>4</td><td>AltaVista Tunnel 96 Personal License</td><td>QB-4W2AA-AA</td><td>10</td><td>200</td></tr>
<tr><td colspan="5" align="center">Foundation Hardware</td></tr>
<tr><td>5</td><td>AlphaServer 800 5/400 Pedestal
AlphaServer 800 5/333 Pedestal

Hardware includes:
• 128 MB memory
• CPU with 2 MB cache
• S3 SVGA integrated Graphics
• DE500-AA 10/100 Mbit Fast Ethernet
• Qlogic ISP1020A FWSE SCSI-2 and cable
• SCSI CD-ROM drive
• RX23L-AB 1.44 MB Floppy drive
• 2.1 GB hard drive
• LK47W-A2 PS/2 style keyboard

Software includes:
• DIGITAL UNIX
• DIGITAL ServerWORKS
• Unlimited user license
• Server extension license
• BMC Patrol Agent</td><td>PB81B-FC
PB80B-FC</td><td>1</td><td>1</td></tr>
<tr><td>6</td><td>Memory Option 256 MB</td><td>PB8MA-AE</td><td>0</td><td>1</td></tr>
<tr><td>7</td><td>Select one of the following monitors:

15-in Flat-square with 0.28 dot pitch
17-in Trinitron aperture grille, 0.26 mm
21-in Diamondtron aperture grille, 0.30 mm</td><td>SN-VRCX5-WA
SN-VRCX7-WA
SN-VRCX1-WA</td><td>1</td><td>1</td></tr>
<tr><td>8</td><td>10/100 Mbit Fast Ethernet</td><td>DE500-AA</td><td>1</td><td>3</td></tr>
<tr><td>9</td><td>Additional internal disk 2.1 GB</td><td>RZ28M-SB</td><td>0</td><td>1</td></tr>
<tr><td>10</td><td>8 GB DAT Drive</td><td>TLZ09-VA</td><td>0</td><td>1</td></tr>
<tr><td colspan="5" align="center">Foundation Software</td></tr>
<tr><td colspan="5">NOTE: Order the exact versions and revisions of the software shown below. Paper documentation can be ordered separately.</td></tr>
<tr><td>--</td><td>UNIX for AlphaServer Version 4.0B</td><td>Included with item 5</td><td></td><td></td></tr>
<tr><td>11</td><td>DIGITAL UNIX 4.0B Alpha CD-ROM</td><td>QA-MT4AA-H8</td><td>1</td><td>1</td></tr>
</table>

The following table lists the revision levels of the components.

Table 2-2: Component Revision Levels

Hardware Component	Hardware	Firmware	Software
SRM console	--	V 3.0-10	--
2.1 GB disks (RZ28M-SB)	--	14	--
Fast Ethernet adapter (DE500-AA)	A01	--	--
Software Component	**Version/ Revision**	**Build Level**	
DIGITAL UNIX	4.0 B	0564	
Patch Kit	1	1	

Special Configuration Rules

The special configuration rules for the AltaVista Tunnel are as follows:

- Make sure that the systems on which the tunnel is to be installed are not using MME drivers. If MME drivers are present, they are listed in /etc/.proto.rc.config. Comment them out and rebuild the kernel.

- Confirm that the Ethernet adapters are set to FAST mode. If not set to FAST mode, go to the console prompt and type the following command: set ew$x$0_mode FAST. The character *x* signifies the adapter to be configured. Ranging from a to z, starting with a and advancing one letter at a time.

- When configuring tunnels from the Dynamic Addressing window do not use addresses ending in .0 or .255 as these have special meaning. This limits each range/group defined to 127 tunnels.

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.

Operating System

The DIGITAL UNIX 4.0B operating system is installed with all kernel options. All DIGITAL UNIX subsets are loaded.

Swap Space

Set the swap mode to *lazy*. Create one swap space for the system:

- Primary on rz8g

UNIX Kernel Parameters (/etc/sysconfigtab)

Default parameters as shipped with the system are used.

Applications

AltaVista Tunnel Configuration

The tunnel is configured as described in the following steps:

1. Confirm that the system clocks are synchronized. It is recommended that a network time keeper such as the Network Time Protocol (NTP) be used.

2. Configure the inbound tunnel first.

3. Configure the outbound tunnel as detailed in the instructions.

4. Add any additional static routes that your site/configuration may require.

5. Enable the outbound tunnel.

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
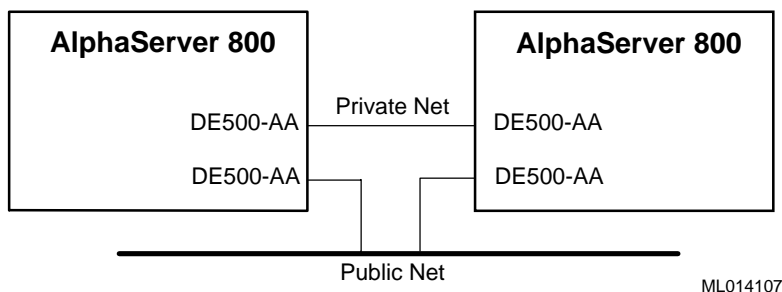- Test Configuration
- Test Process and Results

Overview of Results

Interoperability testing was performed successfully on the AltaVista Tunnel HiTest Suite. The tests verified that the business processes functioned correctly.

Test Environment

Figure 4-1 shows the AlphaServer 800 AltaVista Tunnel test environment.

Figure 4-1: Test Environment

The environment is complex because the test tools are UNIX-based and a UNIX client was not available at the time of testing. The testers set up an arrangement that has two tunnels back to back and passed all traffic through a private network to the destination test machines.

Test Tools

The tool used for interoperability testing is a script that performs user logins and executes several user commands on the remote system.

Test Configuration

The systems were configured with hardware as detailed in Appendix A. The systems had additional routes added to ensure the use of all network adapters to their routing tables.

Minimum Configuration

The minimum configuration includes the basic AlphaServer 800, with 128 MB of memory and two DE500-AA network adapter cards.

Maximum Configuration

The maximum configuration includes everything in the minimum configuration, plus an additional 256 MB memory option, and an additional two DE500-AA network adapter cards. The software was the same in both instances.

Test Process and Results

Interoperability testing of the AltaVista Tunnel systems was done by installing and configuring the software. After this, test scripts were executed to simulate a load.

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. Areas covered include:

- Timing impact of tunnel connections – The timing impact from the tunnel appeared to be minimal. There was an additional delay of between 800 and 900 ms at initial connect. After that, the response was close or identical to that of two systems connected directly to the network.

- Number of tunnels and users supported – Up to 30 user sessions were run concurrently and still maintained reasonable response time with the minimum configuration. This was slightly higher for the maximum configuration, with network capacity being the gating factor. When there is no routing and private networks, and the full network capacity can be used by clients, these numbers can be much higher. (As much as four times in the case of the maximum.)

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

Ethernet Adapters

Problem	Network adapters cannot be configured.
Resolution	From the firmware console set `ewxo_mode` to fast for each network adapter where x is a letter starting with A and progresses sequentially.

Operating System

System Crash

Problem	The system crashes if two copies of tunman attempt to start the same tunnel simultaneously.
Resolution	Use only one copy of the tunman GUI to start and stop tunnels.

Application

AltaVista Tunnel

Problem	Previous setup information cannot be cleared.
Resolution	Run `tunadmin.tcl intitialize`.
Problem	A floppy cannot be made when extracting keys and eta files.
Resolution	FTP the file to a destination.
Problem	The GUI has information left over from the previous setup (nonexistent information) after running `tunadmin.tcl`.
Resolution	Click on the refresh button.
Problem	The key load fails.
Resolution	Create a new key.

Problems and Resolutions

|	
Problem	System names longer than eight characters are truncated when making key files.
Resolution	Keep names less than eight characters in length, or make sure that the first eight characters of all systems are unique.
Problem	The configured outbound tunnel cannot be started.
Resolution	Make sure that the MME drivers are not used in the kernel. Rebuild the kernel without them.

A
Detailed Hardware Configuration

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

- System Diagram

- AlphaServer 800 configurations, including:

  - System motherboard

  - PCI slot usage

- Configuration Cabling

- Disk architecture

System Diagram

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

Figure A-1: System Diagram

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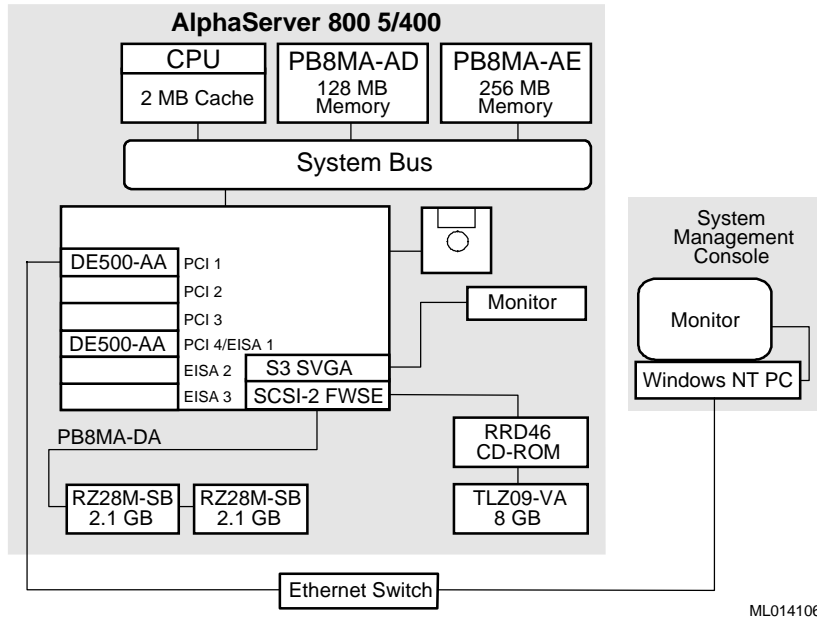
AlphaServer 800 Configurations

Figure A-2 and Table A-1 show the AlphaServer 800 system motherboard and describe the minimum and maximum hardware configurations used in this HiTest Template.

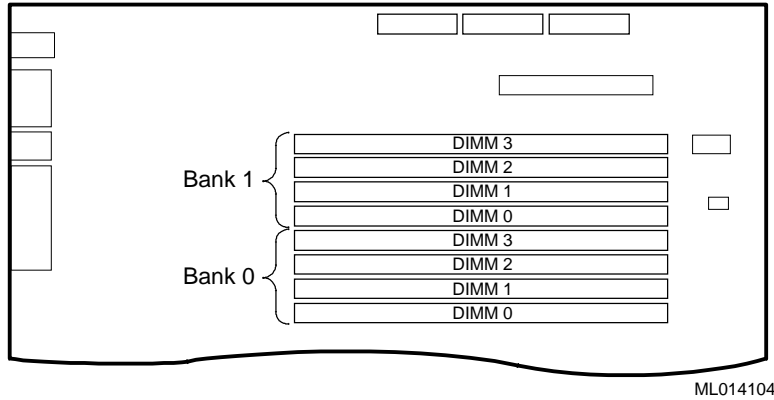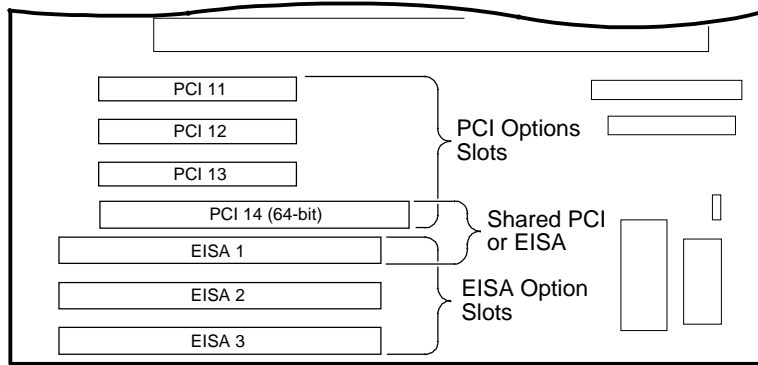**Figure A-2: AlphaServer 800 Motherboard**

ML014104

Table A-1: AlphaServer 800 Usage (Minimum and Maximum Configurations)

Slot	Minimum Configuration Options (Bank 0)	Maximum Configuration Options (Banks 0 and 1)
DIMM3		32 MB
DIMM2		32 MB
DIMM1		32 MB
DIMM0		32 MB
DIMM3	32 MB	64 MB
DIMM2	32 MB	64 MB
DIMM1	32 MB	64 MB
DIMM0	32 MB	64 MB

AlphaServer 800 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: AlphaServer 800 PCI Slot Usage

ML014105

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

Slot	Minimum Configuration Options	Maximum Configuration Options	Description
PCI11	DE500-AA	DE500-AA	100 MB Fast Ethernet adapter
PCI12	DE500-AA	DE500-AA	100 MB Fast Ethernet adapter
PCI13	Open	DE500-AA	100 MB Fast Ethernet adapter
PCI14	Open	DE500-AA	100 MB Fast Ethernet adapter
EISA1	Open	Open	Open
EISA2	Open	Open	Open
EISA3	Open	Open	Open

Disk Architecture

Table A-3 lists the architecture of the disk subsystem for this HiTest System.

Table A-3: Disk Architecture (Maximum Configuration)

SCSI Bus	Logical Unit (LUN)	RAID Level	Member Drives
SCSI1	rz0	0	rz8