Netscape SuiteSpot TruCluster Available
Server UNIX AlphaServer 4x00
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 Netscape SuiteSpot TruCluster Available Server UNIX AlphaServer 4x00 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.
Preface

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-HNSTA-HN. A01) in your correspondence about this document.

Copies of this and other DIGITAL documents can be ordered by calling 1-800-DIGITAL.
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 Internet Service Providers (ISPs).

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/cgi-bin/comet (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 Netscape SuiteSpot TruCluster Available Server UNIX HiTest Suite consists of the following software components:

- **Netscape SuiteSpot**, which includes:
  - Catalog Server
  - Certificate Server
  - Directory Server
  - Enterprise Server
  - LiveWire Pro
  - Mail Server
  - Media Server
  - News Server
  - Proxy Server

- **DIGITAL UNIX**

- **TruCluster Available Server**

This Suite will meet the needs of Internet Service Providers (ISPs) and Intranet users with a need for highly available servers.

Netscape SuiteSpot provides a set of modular, standards-based collaboration services built around a single architecture. These servers enable networks with enterprise servers to communicate and collaborate, allowing for lower cost of deployment and ownership.

AlphaServer 4000/4100 systems feature 466 MHz of processing power and 4 MB onboard cache. The AlphaServer 4000/4100 offers very large memory (VLM) performance to midrange users, is fully scalable and upgradeable and offers mix-and-match flexibility.

With Netscape SuiteSpot and AlphaServer 4x00 systems, users will see outstanding database and application performance, scalability, and availability.
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 Netscape SuiteSpot TruCluster Available Server HiTest Suite. The ranges of hardware include 512 MB through 2 GB of memory, 6 through 82 4.3 GB disks, and multiple Fast Ethernet and RAID controllers.

Table 2-2 lists the System Management Station hardware and software.

Table 2-3 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 Independent Software Providers (ISPs).

- **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: Netscape SuiteSpot TruCluster Available Server DIGITAL HiTest Template

<table>
<thead>
<tr>
<th>Line Item</th>
<th>Description</th>
<th>Part Number</th>
<th>HiTest Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Netscape SuiteSpot V2.01</td>
<td>QB-50EAA-WA</td>
<td>1 1</td>
</tr>
<tr>
<td>2</td>
<td>AppSet Software</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Foundation Hardware</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Select two identical base systems:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>AlphaServer 4100 5/466 Drawer UNIX 512 MB</td>
<td>DA-51JAB-EB</td>
<td>2 2</td>
</tr>
<tr>
<td></td>
<td>AlphaServer 4100 5/466 Drawer UNIX 1 GB</td>
<td>DA-51JAB-FB</td>
<td>2 2</td>
</tr>
<tr>
<td></td>
<td>AlphaServer 4100 5/466 Drawer UNIX 2 GB</td>
<td>DA-51JAB-GB</td>
<td>2 2</td>
</tr>
<tr>
<td></td>
<td>AlphaServer 4000 5/466 Drawer UNIX 512 MB</td>
<td>DA-53JEB-EA</td>
<td>2 2</td>
</tr>
<tr>
<td></td>
<td>AlphaServer 4000 5/466 Drawer UNIX 1 GB</td>
<td>DA-53JEB-FA</td>
<td>2 2</td>
</tr>
<tr>
<td></td>
<td>AlphaServer 4000 5/466 Drawer UNIX 2 GB</td>
<td>DA-53JEB-GA</td>
<td>2 2</td>
</tr>
<tr>
<td></td>
<td>Hardware includes:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• 5/466 MHz CPU with 4 MB cache</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Memory as indicated above</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• S3 Trio64 PCI 1 MB Graphics Adapter</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• DE500-AA 10/100 Mbit Fast Ethernet</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• KZPDA-AA FWSE SCSI and cable</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• RRD46-AB SCSI 12X CD-ROM drive</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• RX23L-AB 1.44 MB Floppy drive</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• LA47W-A2 PS/2 style keyboard</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Three-button PS/2 compatible mouse</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Software includes:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• DIGITAL UNIX Operating System base license</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Unlimited User and Server Extension licenses</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• ServerWORKS</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Internet AlphaServer Administration Software</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• DECevent and BMC PATROL Agent</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• OnliNET Power Management</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Cabinet Enclosure</td>
<td>H9A10-ED</td>
<td>1 1</td>
</tr>
<tr>
<td>4</td>
<td>System Drawer Mounting Kit</td>
<td>CK-BA30A-BA</td>
<td>2 2</td>
</tr>
<tr>
<td>5</td>
<td>466 MHz CPU DIGITAL UNIX SMP UPG</td>
<td>KN304-DB</td>
<td>0 2</td>
</tr>
<tr>
<td>6</td>
<td>450 Watt Power Supply</td>
<td>H7291-AA</td>
<td>0 2</td>
</tr>
<tr>
<td></td>
<td>Note: Provides redundancy (N+1) for up to two CPUs.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

For documentation and updates: http://cosmo.tay.dec.com and http://www.partner.digital.com:903/cgi-bin/comet
For a hardcopy of this Suite’s HiTest Notes, order EK-HNSTA-HN.
### Line Item Table

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Part Number</th>
<th>HiTest Range</th>
</tr>
</thead>
</table>
| 7    | 128 MB Memory Option  
512 MB Memory Option  
1 GB Memory Option  
**Note:** This HiTest Template supports a memory range from 512 MB to 2 GB. When selecting memory options, stay within the Template’s 2 GB maximum. The 4100 supports three additional memory options and the 4000 supports one additional memory option. | MS320-CA  
MS330-EA  
MS330-FA | 0  
See Note |
| 8    | Order when more than 5 additional StorageWorks shelves are ordered.  
StorageWorks Cabinet | SW500-AC | 0  
1 |
| 9    | Cabinet StorageWorks Shelf  
**Note:** Each shelf can hold up to seven Storage Building Blocks (SBBs). | BA36R-RA | 2  
14 |
| 10   | 4.3 GB 7200 RPM UltraSCSI Disk Drive  
**Note:** Each disk represents one SBB.  
The maximum HiTest configuration was tested using RZ29B-VW disks. | DS-RZ1CB-VW | 5  
81 |
| 11   | 4/8 GB 4mm SCSI DAT Tape Drive  
**Note:** Each drive represents one SBB. | TLZ09-VA | 0  
2 |
| 12   | 32/64 GB 4mm DAT 5.25-inch Tape Loader  
**Note:** Each autoloader represents a triple SBB, requiring three slots. | TLZ9L-VA | 0  
1 |
| 13   | PCI one-port FWD SCSI controller | KZPSA-BB | 2  
8 |
| 14   | Order one for each KZPSA-BB ordered.  
2 meter 16-bit SCSI cable (internal) | BN21K-02 | 2  
8 |
| 15   | StorageWorks shelf signal converter  
**Note:** Each signal converter represents one SBB. The maximum quantity is reduced by one for each HSZ52 present. | DWZZB-VW | 0  
4 |
| 16   | Dual StorageWorks Array Controllers, each with 128 MB cache  
**HSZ52-AJ hardware includes:**  
• Two HSZ50 Controllers  
• 256 KB cache (128 KB per controller)  
• Two Tri-link Connectors  
• H879-AA SCSI Terminator  
• BN21L-OB cable  
**Note:** When an HSZ52-AJ is ordered, also order items 17 and 18. | HSZ52-AJ | 0  
2 |
| 17   | Rackmount StorageWorks controller shelf | BA35R-MR | 0  
2 |
| 18   | SCSI Y cable, 68-pin | BN21W-0B | 2  
8 |
### Netscape SuiteSpot TruCluster Available Server *HiTest AppSet*

**DIGITAL UNIX AlphaServer 4x00 HiTest Foundation**


For a hardcopy of this Suite’s HiTest Notes, order EK-HNSTA-HN.

<table>
<thead>
<tr>
<th>Line Item</th>
<th>Description</th>
<th>Part Number</th>
<th>HiTest Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>19</td>
<td>SCSI Tri-link connector</td>
<td>H885-AA</td>
<td>0–2</td>
</tr>
<tr>
<td>20</td>
<td>SCSI Differential terminator</td>
<td>H879-AA</td>
<td>0–6</td>
</tr>
<tr>
<td>21</td>
<td>Order one cable for each StorageWorks shelf that will be attached to the HSZ5X controller; Cable for Connection HSZ to Shelf</td>
<td>BN21N-02</td>
<td>2–8</td>
</tr>
<tr>
<td>22</td>
<td>PCI to Fast Ethernet Adapter</td>
<td>DE500-AA</td>
<td>0–2</td>
</tr>
<tr>
<td>23</td>
<td>10BaseT Twisted-Pair Ethernet Cable</td>
<td>BN25G-07</td>
<td>2–4</td>
</tr>
<tr>
<td>24</td>
<td>Select one high-resolution color monitor: 15-in Flat-square with 0.28 dot pitch 17-in Trinitron aperture grille, 0.26mm 21-in Diamondtron aperture grille, 0.30mm</td>
<td>SN-VRCX5-WA, SN-VRCX7-WA, SN-VRCX1-WA</td>
<td>1–2</td>
</tr>
</tbody>
</table>

### Foundation Software

<table>
<thead>
<tr>
<th>Line Item</th>
<th>Description</th>
<th>Part Number</th>
<th>HiTest Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>25</td>
<td>DIGITAL UNIX V4.0B</td>
<td>Included with Item 2</td>
<td></td>
</tr>
<tr>
<td>26</td>
<td>DIGITAL UNIX V4.0B CD-ROM Media</td>
<td>QA-MT4AA-H8</td>
<td>1–1</td>
</tr>
<tr>
<td>27</td>
<td>StorageWorks PLUS</td>
<td>QB-5RYAG-AA</td>
<td>1–2</td>
</tr>
<tr>
<td></td>
<td>Includes:  • Networker Save and Restore for DIGITAL UNIX V4.3  • Logical Storage Manager (LSM)  • AdvFS Utilities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>28</td>
<td>TruCluster Available Server V1.4A License and documentation</td>
<td>QB-05SAG-AA</td>
<td>2–2</td>
</tr>
<tr>
<td></td>
<td>Note: Media is provided in item 26.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>29</td>
<td>Order 1 kit for the first HSZ52-AJ ordered. StorageWorks Platform kit (DIGITAL UNIX)</td>
<td>QB-5JCAB-SA</td>
<td>0–1</td>
</tr>
<tr>
<td></td>
<td>Includes:  • HSOF software V5.1  • StorageWorks Command Console</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30</td>
<td>When more than one HSZ52-AJ is ordered, order one for each additional HSZ52. HSZ50 Array Controller Operating Software (HSOF) V5.1 LIC/MCD/DOC Kit</td>
<td>QB-5CJAA-SA</td>
<td>0–3</td>
</tr>
<tr>
<td>31</td>
<td>System Management Station</td>
<td>See Table 2-2</td>
<td>0–1</td>
</tr>
</tbody>
</table>
**Table 2-2: System Management Station Template**

<table>
<thead>
<tr>
<th>Line Item</th>
<th>Description</th>
<th>Part Number</th>
<th>HiTest Range</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
</table>
| 1         | DIGITAL PWS 200i Personal Workstation for Windows NT  
*Hardware includes:*  
• 200 MHz CPU with 256 KB cache  
• 32 MB memory  
• AccelPro 2500TX Graphics  
• 10BaseT/10Base2 Ethernet  
• 2.0 GB UW disk  
• EIDE CD-ROM  
• 1.44 MB floppy drive  
• PS/2 style keyboard  
• Two-button PS/2 compatible mouse  
*Software includes:*  
• Windows NT Workstation 4.0  
*Note:* A functionally equivalent X86 system may be substituted without invalidating this HiTest Template. | SN-B3KAP-EL | 1 | 1 |
| 2         | Select one high-resolution color monitor:  
15-in Flat-square with 0.28 dot pitch  
17-in Trinitron aperture grille, 0.26mm  
21-in Diamondtron aperture grille, 0.30mm | SN-VRCX5-WA, SN-VRCX7-WA, SN-VRCX1-WA | 1 | 1 |

**System Management Station Software**

<table>
<thead>
<tr>
<th>Line Item</th>
<th>Description</th>
<th>Part Number</th>
<th>HiTest Range</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
</table>
| 3         | Windows NT Workstation V4.0  
Included with item 1 | | 1 | 1 |
| 4         | Windows NT Service Pack 3  
Install Windows NT Service Pack 3 available from ftp://ftp.microsoft.com/bussys/winnt | Microsoft | 1 | 1 |
| 5         | Exceed V6.0  
For more information on Exceed V6.0, see http://hummingbird.com | Hummingbird | 1 | 1 |
| 6         | ServerWORKS Manager V2.2A  
(QB-4QYAA-SA)  
Included with the AlphaServer | | 1 | 1 |
| 7         | StorageWorks Command Console V1.1  
(QB-4GZAA-SA)  
Included with StorageWorks platform kit | | 1 | 1 |
| 8         | BMC PATROLWATCH for ServerWORKS  
Included with the AlphaServer | | 0 | 1 |

*Note:* Items 9-12 are used with the System Management Station and are installed on the target AlphaServer system.

<table>
<thead>
<tr>
<th>Line Item</th>
<th>Description</th>
<th>Part Number</th>
<th>HiTest Range</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
</table>
| 9         | Base UNIX systems management tools  
Included with DIGITAL UNIX | | 0 | 2 |
| 10        | BMC PATROL Agent  
Included with the AlphaServer | | 0 | 2 |
| 11        | BMC Operating System Knowledge Module  
QB-5KLAA-WB | | 0 | 2 |
| 12        | BMC Knowledge Module Middleware/Messaging Internet/Intranet  
QB-5KWAA-WB | | 0 | 2 |
### Table 2-3: Component Revision Levels

<table>
<thead>
<tr>
<th>Hardware Component</th>
<th>Hardware</th>
<th>Firmware</th>
<th>Software</th>
</tr>
</thead>
<tbody>
<tr>
<td>SRM Console</td>
<td>–</td>
<td>V 3.0-10</td>
<td>–</td>
</tr>
<tr>
<td>4.3 GB disk (DS-RZ1CB-VW)</td>
<td>A01</td>
<td>LJJ0</td>
<td>–</td>
</tr>
<tr>
<td>4.3 GB disk (RZ29B-VW)</td>
<td>C02</td>
<td>0014</td>
<td>–</td>
</tr>
<tr>
<td>HSZ50</td>
<td>A01</td>
<td>V5.1</td>
<td>–</td>
</tr>
<tr>
<td>DEFPA-AB</td>
<td>A01</td>
<td>2.46</td>
<td>–</td>
</tr>
<tr>
<td>DE500-AA</td>
<td>A01</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>PALcode</td>
<td>–</td>
<td>–</td>
<td>V1.21-12</td>
</tr>
<tr>
<td>KZPSA</td>
<td>P02</td>
<td>P01-A10</td>
<td>–</td>
</tr>
<tr>
<td>AlphaBIOS</td>
<td>–</td>
<td>5.24-0</td>
<td>–</td>
</tr>
<tr>
<td>KZPDA</td>
<td>A01</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Graphics board (PB2GA-JB)</td>
<td>2</td>
<td>–</td>
<td>–</td>
</tr>
</tbody>
</table>
| StorageWorks shelf power supply (DS-BA35X-HH) | B01 | – | – |}

#### Software Component

<table>
<thead>
<tr>
<th>Software Component</th>
<th>Version/Revision</th>
<th>Patch Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Netscape SuiteSpot, which consists of the following:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Catalog Server</td>
<td>1.01</td>
<td>–</td>
</tr>
<tr>
<td>Certificate Server</td>
<td>1.0</td>
<td>–</td>
</tr>
<tr>
<td>Directory Server</td>
<td>1.01</td>
<td>–</td>
</tr>
<tr>
<td>Enterprise Server</td>
<td>2.01</td>
<td>–</td>
</tr>
<tr>
<td>LiveWire Pro</td>
<td>1.01</td>
<td>–</td>
</tr>
<tr>
<td>News Server</td>
<td>2.01</td>
<td>–</td>
</tr>
<tr>
<td>Mail Server</td>
<td>2.02</td>
<td>–</td>
</tr>
<tr>
<td>Media Server</td>
<td>1.0</td>
<td>–</td>
</tr>
<tr>
<td>Proxy Server</td>
<td>2.5</td>
<td>–</td>
</tr>
<tr>
<td>DIGITAL UNIX for AlphaServer</td>
<td>4.0B</td>
<td>Patch Kit 1</td>
</tr>
</tbody>
</table>

**Note:** DIGITAL UNIX (0564) Patch Kit 1 (duv40b19700-bf7er) was applied. To access DIGITAL patches, connect to [http://www.service.digital.com/html/patch_public.html](http://www.service.digital.com/html/patch_public.html).

| DECeevent | 2.6 | – |
| StorageWorks PLUS, which includes: | | |
|    Networker Save and Restore for DIGITAL UNIX Logical Storage Manager (LSM) | 4.3 | – |
|    AdvFS Utilities | | |
| TruCluster Available Server | 1.4A | – |
| StorageWorks Platform kit (DIGITAL UNIX) | | |
|    HSOF software | 5.1 | – |
|    StorageWorks Solution Command Console | 1.1 | – |
| System Management Station Software which includes: | | |
|    Base UNIX System Management Tools | – | – |
|    DIGITAL ServerWORKS | 2.0 | – |
|    DIGITAL ServerWORKS Manager | 2.2A | – |
|    Exceed | 6.0 | – |
|    BMC PATROLWATCH for ServerWORKS | 2.0 | – |
|    BMC PATROL Agent | 3.0.15D | – |
|    BMC Operating System Knowledge Module | 2.0 | – |
|    BMC Knowledge Module Middleware/Messaging Internet/Intranet | 1.0 | – |
| Windows NT Workstation | 4.0 | Service Pack 3 (SP3) |
Special Configuration Rules

The special configuration rules for the Netscape SuiteSpot TruCluster Available Server HiTest Suite include:

- Increase vm-map entries to 20000 from the default value of 200. See the kernel parameters as shown in Table 3-1.
- AdvFS Utilities must be used to configure all file systems.
- The maximum number of disks per HSZ52 is 36.
- Put all tape devices on the local shelf.
- Do not use static routing.

StorageWorks Issues

Use the following guidelines with Table 2-1 to order the correct quantities of specific StorageWorks parts for your configuration.

StorageWorks configurations are based on Storage Building Blocks (SBBs). The Cabinet StorageWorks Shelf (BA36R-RA) called for by this HiTest Suite can hold up to seven SBBs. Table 2-4 shows the components that can be connected to the Cabinet StorageWorks shelf and the number of SBBs that each represents.

### Table 2-4: Storage Building Blocks

<table>
<thead>
<tr>
<th>Component</th>
<th>Part Number</th>
<th>SSBs</th>
</tr>
</thead>
<tbody>
<tr>
<td>UltraSCSI disk drives</td>
<td>DS-RZ1CB-VW</td>
<td>1</td>
</tr>
<tr>
<td>SCSI DAT tape drive</td>
<td>TLZ09-VA</td>
<td>1</td>
</tr>
<tr>
<td>Tape loader</td>
<td>TLZ9L-VA</td>
<td>3</td>
</tr>
<tr>
<td>StorageWorks shelf signal converter</td>
<td>DWZZB-VW</td>
<td>1</td>
</tr>
</tbody>
</table>

Although Table 2-1 shows the minimum number for both DWZBBs and HSZ52s as zero, one or the other must be present so that the two systems can share a SCSI bus. Note that the maximum number of DWZBBs configurable for a system is reduced by one for each HSZ52 present. Also, if a DWZZB is dual connected, the number of disks that can be configured for the shelf is reduced by one. For more information, see the section DWZZB Configuration in Chapter 3.

Table 2-5 shows a range of StorageWorks configurations that are possible within this HiTest Suite. It illustrates the kinds of tradeoffs that should be considered when ordering components from Table 2-1.

### Table 2-5: Sample StorageWorks Configurations

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Tested Maximum</th>
<th>Configurable Mid-range</th>
<th>Tested Minimum</th>
</tr>
</thead>
<tbody>
<tr>
<td>DS-RZ1CB-VW</td>
<td>82</td>
<td>30</td>
<td>6</td>
</tr>
<tr>
<td>TLZ09-VA</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>TLZ9L-VA</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>DWZZB-VW</td>
<td>2</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>HSZ52-AJ</td>
<td>2</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
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.

Note that examples are based on the maximum HiTest configuration. When screen displays are repetitive, vertical ellipsis points indicate that part of the log has been deleted from the example.

**Hardware Installation**

The hardware is installed and interconnected as shown in Appendix A. Before configuring your system, see the Special Configuration Rules in Chapter 2.

**Installation of KZPSAs**

In the maximum configuration, KZPSA-BBs are used to connect the two systems to HSZ50s through shared SCSI buses. Set the SCSI ID to 6 on one system and 7 on the other, as the following describes.

If the system is running, bring it down to console mode with the following command:

```bash
# shutdown -h now
```

The following procedure shows how to check the value of the SCSI IDs and change them if necessary:

1. Check the shared KZPSA option settings on both systems, as follows:

```
P00>>> show kzp*
kzpsa0_fast 1
kzpsa0_host_id 7 ← 1st shared bus
kzpsa0_termpwr 1
kzpsa1_fast 1
kzpsa1_host_id 7 ← 2nd shared bus
kzpsa1_termpwr 1
kzpsa2_fast 1
kzpsa2_host_id 7 ← 3rd shared bus
kzpsa2_termpwr 1
kzpsa3_fast 1
kzpsa3_host_id 7 ← 4th shared bus
kzpsa3_termpwr 1
```

2. If the SCSI IDs of the shared KSPSAs are set to the same number on both systems, set the SCSI IDs on one of the systems to a different number, as follows:

```
P00>>> set kzpsa0_host_id 6
P00>>> set kzpsa1_host_id 6
```
System Installation and Setup

POO>>> set kzpsa2_host_id 6
POO>>> set kzpsa3_host_id 6

3. Recheck the shared KZPSA option settings, as follows:
POO>>> show kzp*

4. Check all devices:
POO>>> show dev
polling ncr0 (NCR53C810) slot 1, bus 0 PCI, hose 1 SCSI Bus ID 7
dka500.5.0.1.1  DKa500  RRD45 0436
polling isp0 (ISP1020) slot 0, bus 2, PCI hose 1 SCSI Bus ID 7
dkb0.0.2000.1  Dkb0  RZ1CB-CA  LYJ0
dkb100.1.0.2000.1  Dkb100  RZ1CB-CA  LYJ0
dkb200.0.0.2000.1  Dkb200  RZ1CB-CA  LYJ0
dkb300.0.0.2000.1  Dkb300  RZ1CB-CA  LYJ0
MKb600.0.0.2000.1  MKb600  TLZ9  A020
JkB601.0.0.2000.1  JkB601  TLZ9  A020
Polling kzpsa0 (KZPSA) slot 3, bus 0, PCI hose 1 TPwr 1 Fast 1 Bus ID 7
kzpsa0.7.0.3.1  dkc  TPwr 1 Fast 1 Bus ID 7  P01  A10
dkc100.1.0.3.1  Dkc100  RZ29B 0014
Polling kzpsa1 (KZPSA) slot 5, bus 0, PCI hose 1 TPwr 1 Fast 1 Bus ID 7
kzpsa0.7.0.3.1  dkd  TPwr 1 Fast 1 Bus ID 7  P01  A10
dkd000.1.0.3.1  Dkd000  HSZ50-AX  V512
dkd004.1.0.3.1  Dkd004  HSZ50-AX  V512
dkd100.1.0.3.1  Dkd100  HSZ50-AX  V512
dkd101.1.0.3.1  Dkd101  HSZ50-AX  V512
dkd102.1.0.3.1  Dkd102  HSZ50-AX  V512
dkd103.1.0.3.1  Dkd103  HSZ50-AX  V512
dkd104.1.0.3.1  Dkd104  HSZ50-AX  V512
dkd200.1.0.3.1  Dkd200  HSZ50-AX  V512
dkd204.1.0.3.1  Dkd204  HSZ50-AX  V512
dkd300.1.0.3.1  Dkd300  HSZ50-AX  V512
dkd303.1.0.3.1  Dkd303  HSZ50-AX  V512
dkd304.1.0.3.1  Dkd304  HSZ50-AX  V512
Polling kzpsa2 (KZPSA) slot 4, bus 0, PCI hose 0 TPwr 1 Fast 1 Bus ID 7
kzpsa0.7.0.3.1  dke  TPwr 1 Fast 1 Bus ID 7  P01  A10
dke100.1.0.3.1  Dke100  RZ29B 0014
Polling kzpsa3 (KZPSA) slot 5, bus 0, PCI hose 0 TPwr 1 Fast 1 Bus ID 7
kzpsa0.7.0.3.1  dkf  TPwr 1 Fast 1 Bus ID 7  P01  A10
dkf000.1.0.3.1  Dkf000  HSZ50-AX  V512
dkf001.1.0.3.1  Dkf001  HSZ50-AX  V512
dkf002.1.0.3.1  Dkf002  HSZ50-AX  V512
dkf100.1.0.3.1  Dkf100  HSZ50-AX  V512
dkf101.1.0.3.1  Dkf101  HSZ50-AX  V512
dkf102.1.0.3.1  Dkf102  HSZ50-AX  V512
dkf200.1.0.3.1  Dkf200  HSZ50-AX  V512
dkf201.1.0.3.1  Dkf201  HSZ50-AX  V512
dkf202.1.0.3.1  Dkf202  HSZ50-AX  V512
dkf300.1.0.3.1  Dkf300  HSZ50-AX  V512
dkf301.1.0.3.1  Dkf301  HSZ50-AX  V512
dkf302.1.0.3.1  Dkf302  HSZ50-AX  V512
polling pfi0 (FDDI) slot 4, bus 0, PCI hose 1
fwa0.0.0.4.0  00-00-F8-6B-14-72
polling tulip0 (DECchip 21140-AA) slot 3, bus 0, PCI hose 0
ewa0.0.0.5.0  00-00-F8-02-E1-77  Fast

5. Check the CPUs, as follows:
   P00>>> show cpu
   Primary CPU:  00
   Active CPUs:   00    01    02    03
   Configured CPUs:  00    01    02    03
   SROM Revision:   V2.0  V2.0  V2.0  V2.0

6. Check the amount of Memory:
   P00>>> show mem
   Slot    Type       MB         Base Address
   ----   ------    ------      -----------
   0       EDO      1024          0
   1       EDO      1024        40000000

7. Check the boot device settings, as follows:
   P00>>> show boot*
   boot_dev                dkb0.0.2000.1
   boot_file
   boot_osflags            A
   boot_reset              OFF
   bootdef_dev             dkb0.0.2000.1
   booted_dev
   booted_file
   booted_osflags

Proceed to the installation of the HSZ50s on both systems.

**Installation of HSZ50s (Maximum Configuration Only)**

This section describes the configuraton of the stripesets on the HSZ50s used in the maximum configuration. No stripesets are used in the minimum configuration.

The HSZ50 software (HSOF) is shipped separately. The HSZ will not function without the HSOF software (QB-5CJAA-SA).

Connect a serial terminal (vtxxx) to the first HSZ50 serial port. After the HSZ50 has been powered on, enter the following commands from the terminal to create and verify the controller configuration:

```
Note
Refer to Configuring Your StorageWorks Subsystem (EK-HSZ50-CG) for a complete description of the HSZ50 configuration procedures.
```

1. Verify that the HSZ50 firmware (HSOF) is at revision 5.1, the cache size is 64 MB and is in a GOOD state, and the battery state is GOOD:
   HSZ> show this
   Controller:
   HSZ50-CX ZG61200944 Firmware V51Z-0, Hardware A01
   Not configured for dual-redundancy
   SCSI address 7
   Time: NOT SET
Host port:
  SCSI target(s) (0), No preferred targets
Cache:
  128 megabyte write cache, version 2  (64 MB per HSZ50)
  Cache is GOOD  (128 MB per HSZ52)
  Battery is GOOD
  No unflushed data in cache
  CACHE_FLUSH_TIMER = DEFAULT (10 seconds)
  CACHE_POLICY = A
  Host Functionality Mode = A

2. Set up the HSZ52 (HSZ50 pair) to enable the failover dual redundancy, as follows:
   HSZ> set this prompt="HSZ1_1> "
   HSZ1_1> set this time=16-MAY-1997:11:00:00
   HSZ1_1> set failover copy = this
   HSZ1_1> set this id = 1,2,3,4
   HSZ1_1> set this PREFERRED_ID = 1,2

3. Connect to the second HSZ50:
   HSZ> set this prompt="HSZ1_2> "
   HSZ1_2> set nofailover
   HSZ1_2> set this id = 1,2,3,4
   HSZ1_2> set this PREFERRED_ID = 3,4
   HSZ1_2> restart other
   HSZ1_2> restart this

4. Display the HSZ50 configuration again, as follows:
   HSZ1_1> show this
   Controller:
   HSZ50-AX ZG71124885 Firmware V51Z-0, Hardware A01
   Configured for dual-redundancy with ZG71024492
   In dual-redundant configuration
   SCSI address 7
   Time: 16-MAY-1997:11:00:00

   Host port:
   SCSI target(s) (1, 2, 3, 4), Preferred target(s) (1, 2)
   TRANSFER_RATE_REQUESTED = 10MHZ
   Cache:
   64 megabyte write cache, version 3
   Cache is GOOD
   Battery is GOOD
   No unflushed data in cache
   CACHE_FLUSH_TIMER = DEFAULT (10 seconds)
   CACHE_POLICY = A
   NOCACHE_UPS
   Host Functionality Mode = A
   HSZ1_1>
   HSZ1_1> show other
   Controller:
   HSZ50-AX ZG71024492 Firmware V51Z-0, Hardware A01
   Configured for dual-redundancy with ZG71124885
   In dual-redundant configuration
   SCSI address 6
   Time: NOT SET
Host port:
SCSI target(s) (1, 2, 3, 4), Preferred target(s) (3, 4)
TRANSFER_RATE_REQUESTED = 10MHZ
Cache:
64 megabyte write cache, version 3
Cache is GOOD
Battery is GOOD
No unflushed data in cache
CACHE_FLUSH_TIMER = DEFAULT (10 seconds)
CACHE_POLICY = A
NOCACHE_UPS
Host Functionality Mode = A

5. Check the disk layout:
   ```
   HSZ1_1> show dev
   Name          Type      Port Targ  Lun        Used by
   ------------------------------------------------------------
   DISK100       disk        1    0    0
   DISK110       disk        1    1    0
   DISK120       disk        1    2    0
   DISK130       disk        1    3    0
   DISK140       disk        1    4    0
   DISK150       disk        1    5    0
   ...
   DISK600       disk        6    0    0
   DISK610       disk        6    1    0
   DISK620       disk        6    2    0
   DISK630       disk        6    3    0
   DISK640       disk        6    4    0
   DISK650       disk        6    5    0
   ```

6. To automatically configure storage sets, use the StorageWorks HSZ50 Array Controller Utility for DIGITAL UNIX (the CFMENU utility).
   ```
   HSZ_1> run cfmenu
   ```

7. Choose the type of storage set you want to create: mirrorset, stripeset, or RAIDset. The HiTest systems were configured as stripesets which were mirrored using Logical Storage Manager (LSM).

   CFMENU displays a storage set menu that corresponds to your choice and prompts you for the information it needs to configure the storage. For more information, see the chapter on automatically configuring storage sets in Configuring Your StorageWorks Subsystem (EK-HSZ50-CG).

8. Configure the stripesets. Refer to Figure 3-1 for an example of how the stripesets were set up for the maximum configuration of this HiTest Suite. To increase performance, make sure that each member of a stripeset is located on a different HSZ52 SCSI bus port.
9. Add units using the list of unassigned disks displayed by CFMENU.

10. Exit CFMENU.

11. Display the current units and disks, as follows:

   HSZ1_1> **show units**

<table>
<thead>
<tr>
<th>LUN</th>
<th>Uses</th>
</tr>
</thead>
<tbody>
<tr>
<td>D100</td>
<td>S1</td>
</tr>
<tr>
<td>D101</td>
<td>S3</td>
</tr>
<tr>
<td>D102</td>
<td>S5</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>D400</td>
<td>S8</td>
</tr>
<tr>
<td>D401</td>
<td>S10</td>
</tr>
<tr>
<td>D402</td>
<td>S12</td>
</tr>
</tbody>
</table>

   HSZ1_1> **show disk**

<table>
<thead>
<tr>
<th>Name</th>
<th>Type</th>
<th>Port</th>
<th>Targ</th>
<th>Lun</th>
<th>Used by</th>
</tr>
</thead>
<tbody>
<tr>
<td>DISK100</td>
<td>disk</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>S1</td>
</tr>
<tr>
<td>DISK110</td>
<td>disk</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>S3</td>
</tr>
<tr>
<td>DISK120</td>
<td>disk</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>S5</td>
</tr>
<tr>
<td>DISK130</td>
<td>disk</td>
<td>1</td>
<td>3</td>
<td>0</td>
<td>S7</td>
</tr>
</tbody>
</table>
DISK140  disk  1  4  0  S9
DISK150  disk  1  5  0  S11

DISK600  disk  6  0  0  S2
DISK610  disk  6  1  0  S4
DISK620  disk  6  2  0  S6
DISK630  disk  6  3  0  S8
DISK640  disk  6  4  0  S10
DISK650  disk  6  5  0  S12

12. Perform the same procedure for the second HSZ52, which is the second member in the
    LSM mirrorset. The disk configuration of this HSZ52 must be equal to that of the first.

**DWZZB Configuration**

In the maximum configuration, the two systems shared two SCSI buses which were connected
to two shelves by way of DWZZBs. In addition, two HSZ52s were also on shared SCSI buses.

Each shelf held one additional DS-RZ1CB, which brought the number of disks to the
maximum allowed for the HiTest configuration.

If the maximum HSZ52 configuration is not used, additional disks can be configured using
DWZZBs to connect the shared buses. These disks can be striped, mirrored, or both using
Logical Storage Manager (LSM). Figure 3-2 illustrates the tested configuration. Figure 3-3
illustrates a possible configuration without HSZ52s.

**Figure 3-2: Netscape Suite TruCluster Available Server DWZZB Configuration**

![Diagram showing DWZZB Configuration](image-url)
System Installation and Setup

**Operating System Installation**

Install the DIGITAL UNIX 4.0B operating system with all kernel options.

1. Boot the CD containing the DIGITAL UNIX 4.0B distribution
   ```bash
   boot dka500
   ```

2. Follow the steps in the *DIGITAL UNIX Installation Guide Version 4.0B* (or higher) (Part Number: AA-QTLGB-TE).

**Patch Kit Installation**

After the operating system installation is complete, apply Patch Kit 1 (duv40bl9700-bler), which can be obtained from:


To install the UNIX V4.0B patch kit from a tar file:

1. Copy the patch kit and the installation guide to the system.
2. Create a patches directory and copy the tar file to it.
3. Untar the patch kit onto the system.
   ```bash
   # mkdir /patches
   # cd /patches
   # tar -xpvf 'PATCHKIT-NAME.tar'
   ```
4. Shut down the system to single-user mode.
5. After the system shuts down to single-user mode, use the `bcheckrc` command to check and mount all the UFS and AdvFS file systems, then issue the `update` command and activate the swap partition with `swapon`:
   ```bash
   # /sbin/bcheckrc
   # /sbin/update
   # /sbin/swapon -a
   ```
6. If you are using LSM, you should also run `lsmbstartup`:
   ```bash
   # /sbin/lsmbstartup
   ```
7. Run the patch management utility to install the patches:
   # dupatch

8. When the installation menu is presented, enter 1.

9. Enter 2 to have the program check your system and install the patch kit.

10. Respond when prompted for your name.

11. Enter the path to the patch kit (the directory containing the ./kit and ./doc subdirectories)
    /patches/patch_kit.

12. Respond to the prompts as follows:
    Do you want the patches to be reversible? [y] y
    Do you want to proceed with the installation with this setup? [y/n]: y

13. Install all patches through the patch selection menus.

14. After the patch installation is completed, save a copy of the running kernel and build a new kernel:
    # cp /vmunix /vmunix.pre_patch
    # doconfig -c YOURSYSTEM_NAME

15. Indicate whether or not you want to edit the configuration file:
    Do you want to edit the configuration file? (y/n) n
    When the /usr/sbin/doconfig program finishes, it displays a message showing the full pathname of the new vmunix kernel.

16. Move the new vmunix kernel to /vmunix as follows:
    # mv /usr/sys/YOURSYSTEM_NAME/vmunix /vmunix

17. Reboot the system.

**UNIX Kernel Parameters (/etc/sysconfigtab)**

Edit the UNIX kernel file /etc/sysconfigtab to contain the parameter settings listed in Table 3-1.

**Table 3-1: Kernel Parameters**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>vm parameters:</td>
<td></td>
</tr>
<tr>
<td>vm-maxvas</td>
<td>1073721824</td>
</tr>
<tr>
<td>vm-vpagemax</td>
<td>131072</td>
</tr>
<tr>
<td>vm-ubc-maxpercent</td>
<td>100</td>
</tr>
<tr>
<td>vm-mapentries</td>
<td>20000</td>
</tr>
<tr>
<td>new-wire-method</td>
<td>1</td>
</tr>
<tr>
<td>rt parameters:</td>
<td></td>
</tr>
<tr>
<td>aio-max-num</td>
<td>1024</td>
</tr>
<tr>
<td>aio-max-percent</td>
<td>2</td>
</tr>
</tbody>
</table>
### Parameter Table

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>proc parameters:</td>
<td></td>
</tr>
<tr>
<td>max-proc-per-user</td>
<td>1024</td>
</tr>
<tr>
<td>max-threads-per-user</td>
<td>1024</td>
</tr>
<tr>
<td>num-netconfig</td>
<td>2</td>
</tr>
<tr>
<td>max-netdevs</td>
<td>24</td>
</tr>
<tr>
<td>netdev_0</td>
<td>tu0</td>
</tr>
<tr>
<td>netdev_1</td>
<td>fta0</td>
</tr>
<tr>
<td>ifconfig_0</td>
<td>xxx.xxx.xxx.xxx netmask 255.0.0.0 *</td>
</tr>
<tr>
<td>ifconfig_1</td>
<td>xxx.xxx.xxx.xxx netmask 255.0.0.0 *</td>
</tr>
<tr>
<td>max-users</td>
<td>512</td>
</tr>
<tr>
<td>new-wire-method</td>
<td>1</td>
</tr>
</tbody>
</table>

* The default netmask value is shown. Get the correct value for your local network configuration from your network administrator.

### Labeling the Disks

The disks used for the operating system are labeled automatically during installation.

The shared disks have to be labeled on only one of the servers. The other system will recognize the labels automatically.

At the UNIX command line, enter commands in the following format to label the disks in your configuration. The example shows the labeling of the disks in the maximum configuration.

```
# disklabel -z /dev/rz34
# disklabel -z /dev/rz17
# disklabel -wr /dev/rz24 HSZ50
# disklabel -wr /dev/rz25 HSZ50
# disklabel -wr /dev/rz26 HSZ50
# disklabel -wr /dev/rz27 HSZ50
# disklabel -wr /dev/rzb25 HSZ50
# disklabel -wr /dev/rzc25 HSZ50
# disklabel -wr /dev/rzd25 HSZ50
# disklabel -wr /dev/rze24 HSZ50
# disklabel -wr /dev/rze25 HSZ50
# disklabel -wr /dev/rze26 HSZ50
# disklabel -wr /dev/rze27 HSZ50
# disklabel -wr /dev/rzd27 HSZ50
```

### Partitioning of Operating System Disks

The local disks are partitioned as follows:

<table>
<thead>
<tr>
<th>Disk</th>
<th>Minimum Configuration</th>
<th>Maximum Configuration</th>
</tr>
</thead>
<tbody>
<tr>
<td>rz8a</td>
<td>/</td>
<td>/</td>
</tr>
<tr>
<td>rz8b</td>
<td>primary swap</td>
<td>primary swap</td>
</tr>
<tr>
<td>rz9</td>
<td>/usr and /var</td>
<td>/usr</td>
</tr>
<tr>
<td>rz10</td>
<td>/var</td>
<td>/var</td>
</tr>
<tr>
<td>rz11c</td>
<td></td>
<td>secondary swap</td>
</tr>
</tbody>
</table>

Set the swap mode to "lazy."
TruCluster Available Server

Install the TruCluster Available Server Software. The software is located on the DIGITAL UNIX V4.0B Associated Products Volume 2 - December 1996 CD-ROM.

The TruCluster Available Server documentation can be found at the following web site:
TruCluster_bookshelf.html

This online documentation library includes:
- Release Notes
- Hardware Configuration and Software Installation
- Available Server Environment Administration

You should also familiarize yourself with the following files located at:
/<CD-Mountpoint>/DOCUMENTATION/TCR/TEXT

TCR_USING_ON_4.0B.TXT
AS_LETTER.TXT
AS_SPD.TXT
AS_Version1.4_CLD_Fixes.TXT

To install and configure TruCluster Available Server:

1. Before you install TruCluster Available Server, add each host’s name and IP address to the other nodes /etc/hosts file.

2. Install TruCluster software on both AlphaServers, as follows:

3. Start the installation and select the 3) ALL mandatory and optional subsets option:

   \# cd /<CD-Mountpoint>/TCR140
   \# setld -l

4. Enter the information in the following format, as prompted by the installation program. Italics indicate system-specific responses. The example shows the maximum configuration.

   Enter the IP name for the member network interface [systemname]: systemname
   You chose "systemname," IP 1.0.0.1 using interface fta0

   Do you want to run the ASE logger on this node? [n]: y

   The ASE I/O Bus Renumbering Tool has been invoked.
   Select the controllers that define the shared ASE I/O buses.

   Enter your choices (comma or space separated): q

5. Exit the I/O Controller Name Specification Menu.
   All controllers connected to an I/O bus must be named the same on all ASE members. Enter the controller names for all
shared ASE I/O buses by assigning them one at a time or all at once with the below options.

<table>
<thead>
<tr>
<th>Name</th>
<th>New Name</th>
<th>Controller</th>
<th>Slot</th>
<th>Bus</th>
<th>Slot</th>
</tr>
</thead>
<tbody>
<tr>
<td>scsi2</td>
<td>scsi2</td>
<td>pza0</td>
<td>0</td>
<td>pci1</td>
<td>3</td>
</tr>
<tr>
<td>scsi3</td>
<td>scsi3</td>
<td>pza1</td>
<td>0</td>
<td>pci1</td>
<td>4</td>
</tr>
<tr>
<td>scsi4</td>
<td>scsi4</td>
<td>pza2</td>
<td>0</td>
<td>pci1</td>
<td>5</td>
</tr>
<tr>
<td>scsi5</td>
<td>scsi5</td>
<td>pza3</td>
<td>0</td>
<td>pci0</td>
<td>3</td>
</tr>
</tbody>
</table>

f) Assign buses starting at a given number
p) Assign buses as was done in pre-ASE V1.3
v) View non shared controllers
s) Show previous assignments
r) Reapply previous assignments
q) Quit without making any changes
x) Exit (done with modifications)

Enter your choice [f]: x

6. The kernel is rebuilt after exiting from the menu. Check the kernel files, then move them and reboot, as follows:

```
# ls -l /vm*
-rwxr-xr-x 1 root system 12260144 May 26 10:02 /vmunix
-rwxr-xr-x 1 root system 12240512 May 23 15:05 /vmunix.bef_patch
```

Move the kernel:

```
# mv /vmunix /vmunix.bef_ase
# mv /sys/systemname/vmunix /vmunix
# ls -l /vm*
-rwxr-xr-x 1 root system 12406448 Jun  3 09:09 /vmunix
-rwxr-xr-x 1 root system 12260144 May 26 10:02 /vmunix.bef_ase
-rwxr-xr-x 1 root system 12240512 May 23 15:05 /vmunix.bef_patch
```

Reboot the system:

```
# reboot
```

7. Repeat steps 1 through 6 on the second server.

---

**Note**

If the configuration in /sys/conf/systemname is changed, especially SCSI setup, run /var/ase/sbin/ase_fix_config again to make the changes work with TruCluster V1.4. However, changing SCSI assignments will invalidate any volume definition that may exist then.

---

**Configuring a Server with ASEMGR**

Configure one of the servers using ASEMGR. Note that it is important that only one of the servers be configured, with the second node added to this configuration. If the second node is configured separately, failover will not work.

To configure an available server:

1. Start ASEMGR on one of the systems.
2. Configure an available server using ASEMGR.
3. Add the second node to the Available Server Environment on the first node.
Logical Storage Manager (LSM)

The Logical Storage Manager (LSM) software and license are included with DIGITAL UNIX. To install LSM, select the LSM option during the DIGITAL UNIX installation. Additional licenses for using enhanced LSM features are not required.

To use LSM with TruCluster Available Server (ASE), set up LSM and create a rootdg disk group on all the member systems.

For more information about LSM utilities, display the manpages for volintro:

```
# man volintro
```

volinstall

To set up the LSM environment, use the /usr/sbin/volinstall command.

This command also sets up the system for automatic LSM start at boot time (see /etc/inittab).

```
# volinstall
```

volsetup

Run volsetup to create the rootdg. Partition h of the system disk will be used.

With the volsetup command:

- vold is initialized
- root disk group (rootdg) is initialized

Remember, the rootdg disk group not only has information of its own disk group, but also from all other disks and disk groups defined with LSM.

In the examples which accompany the following procedure, the maximum HiTest configuration was used.

1. Start the volsetup utility. When you create the rootdg disk group on each member system, specify a disk on the system’s local SCSI bus. Do not specify a disk that is on the Available Server shared bus.

```
# volsetup rz8h
```

Approximate maximum number of physical disks that will be managed by LSM? [10] 90

Initialize vold and the root disk group as rz8h

Add disk rx8h to the root disk group as rz8h

addition of disk rz8h as rz8h succeeded.

Initialization of vold and the root disk group was successful.

Note

LSM setup is the same on both systems. When LSM setup is done for one server, TruCluster performs the LSM setup on the second server automatically.

Steps 2 through 7 describe how to initialize and mirror one pair of disks. You can create a script capturing these steps for each mirrorset, or you can repeat the commands in each step for all disks that will use LSM.
System Installation and Setup

2. Initialize a pair of disks that will mirror each other using LSM:
   
   ```
   # voldisksetup -i rz24
   # voldisksetup -i rz40
   ```

3. Create the disk group for the mirrorset and assign a media name to the first disk:
   
   ```
   # voldg init dg1 disk24=rz24
   ```

4. Create the LSM mirrored volume and specify its size:
   
   ```
   # volassist -g dg1 make vol01 12000m
   ```

5. Add the second disk to the LSM disk group and assign it a media name:
   
   ```
   # voldg -g dg1 adddisk disk40=rz40
   ```

6. Create a mirrorset in the background, consisting of the pair of disks added to the disk group:
   
   ```
   # volassist -g dg1 mirror vol01 &
   ```

7. Repeat steps 1 through 6 for all the disks being mirrored.

For each LSM volume that is created, an AdvFS file domain must be created on it. Advanced File System and Utilities for DIGITAL UNIX documentation can be found at:

For Help on AdvFS, display the advfs manpages:

   ```
   # man advfs
   ```

   1. Use the mkfdmn command to create each AdvFS domain:
      
      ```
      # mkfdmn /dev/vol/dg1/vol01 s1
                   
      # mkfdmn /dev/vol/dg12/vol12 s12
      ```

   2. Use the mkfset command to create a file set on each domain:
      
      ```
      # mkfset s1 set1
                   
      # mkfset s12 set12
      ```

Applications

This section describes the Netscape SuiteSpot installation and configuration. Netscape SuiteSpot servers should be installed on both AlphaServers.

Netscape SuiteSpot products tested by HiTest and documented in these installation instructions consist of:

- Netscape Enterprise Server
- Netscape Mail Server
- Netscape News Server

To install other Netscape SuiteSpot servers, follow the instructions provided in the Netscape SuiteSpot documentation.
Netscape Enterprise Server

To install and configure Netscape Enterprise Server:

1. Mount the Netscape Enterprise Server CD-ROM using a command in the following format:
   ```
   mount -t cdfs -o rrip /dev/rz5c /mnt (or other mount point)
   ```

2. Change directories as follows:
   ```
   cd /mnt/decunix/entprise
   ```

3. Copy the following tar file to a temporary directory:
   ```
   cp https.tar /tmp
   ```

4. Change to the temporary directory:
   ```
   cd /tmp
   ```

5. Untar the file:
   ```
   tar -xvof https.tar
   ```

6. Change to the directory created by untarring the file:
   ```
   cd https
   ```

7. Run ns-setup, answer the questions as prompted, and take the defaults.

Netscape Mail Server

To install the Netscape Mail Server:

1. Use the `adduser` command to create an account called `mta` for mail.

2. Mount the Netscape Mail Server CD-ROM using a command in the following format:
   ```
   mount -t cdfs -o rrip /dev/rz5c /mnt (or other mount point)
   ```

3. Change directories as follows:
   ```
   cd /mnt/osf1
   ```

4. Run ns-setup, answer the questions as prompted, and take the defaults.

Netscape News Server

To install the Netscape News Server:

1. Use the `adduser` command to create a news account.

2. Mount the Netscape News Server CD-ROM using a command in the following format:
   ```
   mount -t cdfs -o rrip /dev/rz5c /mnt (or other mount point)
   ```

3. Change directories as follows:
   ```
   cd /mnt/osf1
   ```

4. Run ns-setup, answer the questions as prompted, and take the defaults.

Postinstallation Procedure

After both systems are installed, complete the configuration as follows:

From one of the two systems, copy the entire `NS~home` directory to the shared storage (the RAIDsets) using the `-r` and `-p` options.
This chapter describes how the tests were set up, 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 Netscape SuiteSpot TruCluster Available Server HiTest Suite. The tests verified that the servers functioned correctly.
Test Environment

Figure 4-1 shows the Netscape SuiteSpot TruCluster Available Server test environment.

![Figure 4-1: Netscape SuiteSpot TruCluster Available Server Test Environment](image)

Test Tools

The tools used for interoperability testing include the following:

- **WebTest, Version 1.1 (Internal Digital Equipment Corporation test tool)**
  The WebTest exercises at the protocol and is browser independent. It consists of two parts: WebServer and WebClient.
  
  The WebServer process creates verifiable pages on the server system. These range from 64 bytes to 64 Kbytes.
  
  The WebClient process repeatedly reads and verifies all the pages created by WebServer.

- **NNTP, Version 1.1 (Internal Digital Equipment Corporation test tool)**
  The NNTP (News) test consists of two parts: nntpPost and nntpRead. Both parts use the NNTP protocol as specified in RFC977. All tests are executed on load generation systems and affect data stored on the server system.
The nntpPost process creates verifiable news articles and sends them to the server. The message sizes and content vary according to a random distribution.

The nntpRead process reads and verifies the news articles.

- **MailTest, Version 1.1 (Internal Digital Equipment Corporation test tool)**

  The MailTest consists of two parts: MailSender, which uses the Simple Mail Transfer Protocol (SMTP); and MailReceiver, which uses Post Office Protocol 3 (POP3). The messages are sent to multiple accounts.

  The MailSender process creates verifiable mail messages and sends them to the server. The message sizes and content vary according to a random distribution.

  The MailReceiver process reads and verifies the mail messages.

### Test Configuration

The test load was generated as follows:

- Test load generated via 12 AlphaStation 600’s running from an automated harness running on an additional AlphaStation 600.

- Network connections were Fast Ethernet (100BaseT) for all systems with an additional Fiber Distributed Data Interface (FDDI) connection for the larger configurations.

### Minimum Configuration

- Hardware tested consisted of a pair of AlphaServer 4100s, each with a single 466 MHz processor and 512 MB of RAM.

- A single KZPSA-BB controller augmented the included KZPDA-AA SCSI controller for the disks.

- Network communication was via a DE500-AA Fast Ethernet adapter. Tape storage was provided by a single TLZ09-VA.

### Maximum Configuration

- Hardware tested consisted of a pair of AlphaServer 4100s, each with two 466 MHz processors and 2 GB of memory.

- Two KZPSA-BB adapters on each system were connected to two HSZ52s using shared SCSI buses.

- Two HSZ52-AJ’s were connected to six BA36R-RA shelves with six DS-RZ1CB-VW disks in each.

- Two additional shelves were connected directly to two of the four KZPSA-BBs via DWZZB-VWs in each.

- System storage (non-shared) was connected via a KZPDA and consisted of a single BA36R-RA with four DS-RZ1CB-VW disks.

- Tape storage was a TLZ9L-VA cartridge loader on one system and a TLZ09-VA tape drive on the other system.

- Network connectivity was provided by a Fast Ethernet (DE500-AA) and FDDI (DEFPA-AB) adapter. (The defined HiTest Suite calls for two DE500 adapters to increase network connectivity.)
Interoperability Tests and Results

Test Process and Results

Interoperability testing of Netscape SuiteSpot systems was performed on two AlphaServer 4100 systems.

Multiple WebTest, NNTP, and MailTest processes were started for both the minimum and maximum configurations. The following test results apply to all configurations tested:

- **WebTest** – The WebTest was accomplished by connecting directly to a server. All processes ran successfully.

- **NNTP** – The NNTP testing consisted of the posting and reading of articles. In all cases, the posting and reading of articles occurred successfully. All processes ran successfully.

- **MailTest** – The MailTest consisted of sending and receiving of messages. In all cases, the sending and receiving of messages occurred successfully. All processes ran successfully.
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.

During an average of 12 hours of testing (per test), the system had the following performance characteristics:

- **Web Test** – Connected directly to the Web Server without a browser and processed over 104,000 pages per hour, with 2.1 GB transferred for the minimum configuration. Similarly, there were over 172,000 pages per hour with over 2.9 GB transferred for the maximum configuration. Pages ranged in size from 64 bytes to 64 Kbytes. For the purpose of comparing performance between different HiTest Suites, the HiTest program defined a unit of load rate used in these test results.
  
  The minimum configuration had a load rating of 912.
  
  A configuration with 1 GB of RAM had a load rating of 1034.
  
  A configuration with 2 GB of RAM and one network adapter had a load rating of 1034.
  
  The maximum configuration had a load rating of approximately 2068.

- **Mail Testing** – Occurred in two steps: sending and receiving messages.
  
  The sender achieved a throughput of over 1350 messages per second.
  
  The receivers achieved an average throughput of 15.2 messages per second with a total of over 600 MB being transferred.

- **NNTP Testing** – Occurred in two steps: posting and reading articles. Both posting and reading of articles were successful.
  
  The reader achieved an average of 28.3 articles per minute with a total of over 17.4 GB being read.
  
  The posting achieved an average throughput of 18.43 articles posted per minute with a total of over 18 GB being posted. The maximum configuration was slightly faster than the minimum configuration.
This chapter describes any problems that may have been encountered during the testing that have not been fixed and eliminated. The resolution provides the system manager or user with a fix or workaround for the problem.

The following problems were identified during testing:

**Application**

**Netscape Enterprise Server**

| Problem | An error occurs when trying to read more than 185 web pages, due to the lack of cache space. The error message is “Unable to access object.” |
| Resolution | This error should not occur if the kernel is built using the parameters given in Table 3-1. If this error does occur, increase vm-mapentries to the recommended value of 20000 by adding the following lines to `/etc/sysconfigtab:` |
| | `vm:  
   *vm-mapentries=20000*` |
| Reboot the system so the new value can take effect. |

| Problem | On initial installation only, the News server did not post articles. |
| Resolution | This is an unreproducible transient problem. In the unlikely event that you encounter this error, reinstall the News Server software. |

**TruCluster Available Server**

<p>| Problem | When converting Netscape products to Available Server configuration, the documentation points to the wrong directory. |
| Resolution | Substitute the following directory specification: |
| | <code>/ns-home/httpacl/generated-https-*.acl</code> |
| for the directory specification provided in the documentation: |
| | <code>/ns-home/http/generated-https-*.acl</code> |</p>
<table>
<thead>
<tr>
<th>Problem</th>
<th>Setting a secondary network interface does not work from within ASEMGR.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resolution</td>
<td>At the present time, the Available Server is limited to a single network interface. Use primary networks only.</td>
</tr>
</tbody>
</table>
A

Detailed Hardware Configuration

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

- System Diagrams
- AlphaServer 4x00 configurations, including:
  - System motherboard
  - PCI slot usage
- Storage Configuration Cabling
- Disk Architecture

System Diagram

Figure A-1 and Figure A-2 show system diagrams of the minimum and maximum configurations of the HiTest Suite.

Figure A-1: Minimum Configuration System Diagram
Figure A-2: Maximum Configuration System Diagram
AlphaServer 4x00 Configurations

The following sections show the AlphaServer 4x00 configurations.

System Motherboard

Figure A-3 and Table A-1 show the AlphaServer 4x00 system motherboard and describe the minimum and maximum hardware configuration. The configuration is similar for the AlphaServer 4000.

Figure A-3: System Motherboard

Table A-1: AlphaServer 4x00 System Motherboard (Minimum and Maximum Configurations)

<table>
<thead>
<tr>
<th>Slot</th>
<th>Minimum Part Number</th>
<th>Maximum Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU3*</td>
<td>open</td>
<td>open</td>
<td></td>
</tr>
<tr>
<td>Mem1H</td>
<td>open</td>
<td>MS330-FA</td>
<td>Memory pair 1 (2 of 2)</td>
</tr>
<tr>
<td>CPU2*</td>
<td>open</td>
<td>open</td>
<td></td>
</tr>
<tr>
<td>Mem1L</td>
<td>open</td>
<td>MS330-FA</td>
<td>Memory pair 1 (1 of 2)</td>
</tr>
<tr>
<td>Mem3L</td>
<td>open</td>
<td>open</td>
<td></td>
</tr>
<tr>
<td>Mem2L*</td>
<td>open</td>
<td>open</td>
<td></td>
</tr>
<tr>
<td>CPU0</td>
<td>open</td>
<td>KN304-DB</td>
<td>466 MHz CPU 4 MB cache</td>
</tr>
<tr>
<td>Mem0H</td>
<td>MS330-EA</td>
<td>MS330-FA</td>
<td>Memory pair 0 (2 of 2)</td>
</tr>
<tr>
<td>Mem3H*</td>
<td>open</td>
<td>open</td>
<td></td>
</tr>
<tr>
<td>Mem2H*</td>
<td>open</td>
<td>open</td>
<td></td>
</tr>
<tr>
<td>CPU0</td>
<td>KN304-DB</td>
<td>KN304-DB</td>
<td>466 MHz CPU 4 MB cache</td>
</tr>
<tr>
<td>Mem0L</td>
<td>MS330-EA</td>
<td>MS330-FA</td>
<td>Memory pair 0 (1 of 2)</td>
</tr>
<tr>
<td>IOD01</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* These slots do not exist on the AlphaServer 4000 system.
AlphaServer 4x00 PCI Slot Usage

Figure A-4 shows AlphaServer PCI slot usage. Table A-2 shows the PCI slot usage for the minimum and maximum hardware configurations of this HiTest Template.

Figure A-4: AlphaServer 4x00 PCI Motherboard

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

<table>
<thead>
<tr>
<th>Slot</th>
<th>Minimum Configuration Options</th>
<th>Maximum Configuration Options</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCI1-5</td>
<td>KZPSA-BB</td>
<td>KZPSA-BB</td>
<td>PCI FWD SCSI Adapter</td>
</tr>
<tr>
<td>PCI1-4</td>
<td>open</td>
<td>KZPSA-BB</td>
<td>PCI FWD SCSI Adapter</td>
</tr>
<tr>
<td>PCI1-3</td>
<td>KZPDA-AA</td>
<td>KZPDA-AA</td>
<td>PCI to SCSI adapter</td>
</tr>
<tr>
<td>PCI1-2</td>
<td>DE500-AA</td>
<td>DE500-AA</td>
<td>Ethernet adapter</td>
</tr>
<tr>
<td>PCI0-5</td>
<td>open</td>
<td>KZPSA-BB</td>
<td>PCI FWD SCSI Adapter</td>
</tr>
<tr>
<td>PCI0-4</td>
<td>open</td>
<td>KZPSA-BB</td>
<td>PCI FWD SCSI Adapter</td>
</tr>
<tr>
<td>PCI0-3</td>
<td>open</td>
<td>DEFPA-AA</td>
<td>PCI to FDDI adapter</td>
</tr>
<tr>
<td>PCI0-2</td>
<td>PB2GA-JB</td>
<td>PB2GA-JB</td>
<td>PCI-based S3 Trio Video card</td>
</tr>
</tbody>
</table>
Storage Configuration Cabling

Table A-3 lists the major cables in the HiTest Template. Use this table with Figure A-1 and Figure A-2.

Table A-3: Storage Configuration Cabling

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Min Qty</th>
<th>Max Qty</th>
<th>Description</th>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>BN21W-0B</td>
<td>2</td>
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<td>8/16-bit SCSI buses</td>
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<td>StorageWorks shelves</td>
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Disk Architecture

Table A-4 lists the architecture of the disk subsystem for the HSZ52 StorageWorks Array Controllers. The stripesets on SCSI1 are mirrored on SCSI3 through the use of Logical Storage Manager (LSM), which results in a RAID configuration of RAID 0+1.

Table A-4: Disk Architecture

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<thead>
<tr>
<th>SCSI Bus</th>
<th>Logical Unit (LUN)</th>
<th>Stripeset</th>
<th>RAID Level</th>
<th>Member Drives</th>
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</table>
### Detailed Hardware Configuration

<table>
<thead>
<tr>
<th>SCSI Bus</th>
<th>Logical Unit (LUN)</th>
<th>Stripeset</th>
<th>RAID Level</th>
<th>Member Drives</th>
</tr>
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