



PeopleSoft Oracle TruCluster  
Available Server DIGITAL UNIX  
AlphaServer 4x00

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**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 PeopleSoft Oracle TruCluster Available Server DIGITAL 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.

**Appendix B: Test Scripts** – Contains scripts used to create and populate the PeopleSoft database and to initiate failover tests.

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## Introduction

*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 Accounting transactions and financial reporting.

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 application 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.

## Introduction

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 PeopleSoft Oracle TruCluster Available Server DIGITAL UNIX AlphaServer 4x00 HiTest Suite consists of the following software components:

- PeopleSoft Financials
- DIGITAL UNIX Operating System software
- TruCluster Available Server
- Oracle7 Database software

This Suite will provide a highly reliable and available database storage and retrieval system for recording financial transactions and generating financial reports.

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## 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 PeopleSoft Oracle TruCluster Available Server DIGITAL UNIX AlphaServer 4x00 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, business, accounting, and finance.
- **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: PeopleSoft Oracle TruCluster Available Server DIGITAL UNIX AlphaServer 4x00 DIGITAL HiTest Template**

<b>PeopleSoft HiTest AppSet</b>				
<b>Oracle TruCluster Available Server DIGITAL UNIX AlphaServer 4x00 HiTest Foundation</b>				
For documentation and updates: <a href="http://cosmo.tay.dec.com">http://cosmo.tay.dec.com</a> and <a href="http://www.partner.digital.com:9003">http://www.partner.digital.com:9003</a> For hardcopy of this Suite's HiTest Notes, order EK-HPSXA -HN.				
Line Item	Description	Part Number	Tested Range	
			Min	Max
<b>AppSet Software</b>				
1	<i>PeopleSoft contact: 1-888-773-8277</i> <b>PeopleSoft Online Financials 6.0</b>		0	1
2	<b>PeopleSoft Tool 6.01</b> <b>(PeopleSoft Edition, SQA Robot V5.1)</b>		0	1
3	<b>PeopleSoft General Ledger 6.0</b> <i>Batch Benchmark Kit</i>		0	1
<b>Foundation Hardware</b>				
4	<i>Select base system:</i> <b>AlphaServer 4000 5/466 (1G) Drawer, DIGITAL UNIX</b> <b>AlphaServer 4100 5/466 (1G) Drawer, DIGITAL UNIX</b> <i>Hardware includes:</i> <ul style="list-style-type: none"> <li>• 5/466 MHz CPU with 4 MB cache</li> <li>• Appropriate memory option</li> <li>• S3 TRIO64 1 MB Graphics adapter</li> <li>• DE500-AA 10/100 Mbit Fast Ethernet adapter</li> <li>• KZPDA-AA; FWSE SCSI adapter and SCSI cable for connection to BA36R-SB StorageWorks shelf included with the pedestal enclosure.</li> <li>• Integral FNSE (internal only SCSI bus) to support removable media drives (CD-ROM and Tapes)</li> <li>• Integral CD-ROM drive</li> <li>• Integral 1.44 MB Diskette drive</li> <li>• 450 Watt autosensing power supply</li> <li>• LK47W-A2 (U.S./English) keyboard</li> <li>• Three-button mouse</li> </ul> <i>For European orders, select country-specific keyboard and power cords.</i> <i>Software Includes:</i> <ul style="list-style-type: none"> <li>• DIGITAL UNIX Operating System, Version 4.0B (included with Foundation Hardware)</li> </ul>	<b>DA-53JEB-FA</b> <b>DA-51JAB-FB</b>	2	2
5	<i>Select the enclosure:</i> <b>Pedestal enclosure</b> <i>Hardware includes:</i> <ul style="list-style-type: none"> <li>• DS-RZ1CB-VW; 4.3 GB 7200 RPM UltraSCSI Disk</li> <li>• One BA36R-SB StorageWorks shelf; Pedestal supports up to two more shelves.</li> </ul>	<b>BA30P-AB/BB*</b>	1	1

\* A "/" is used to differentiate between the Americas and Asia Pacific products and European product variants: Americas and Asia Pacific variant / European variant.

<b>PeopleSoft HiTest AppSet</b>				
<b>Oracle TruCluster Available Server DIGITAL UNIX AlphaServer 4x00 HiTest Foundation</b>				
<i>For documentation and updates: <a href="http://cosmo.tay.dec.com">http://cosmo.tay.dec.com</a> and <a href="http://www.partner.digital.com:9003">http://www.partner.digital.com:9003</a> For hardcopy of this Suite's HiTest Notes, order EK-HPSXA -HN.</i>				
Line Item	Description	Part Number	Tested Range	
			Min	Max
6	<b>4.3 GB 7200 RPM UltraSCSI Disks</b> <i>Note: Up to six additional SCSI disks per StorageWorks shelf may be added to each system for local system storage. Installation of redundant shelf power supply reduces disk capacity by one. Test configuration uses four disks per system enclosure. Note: This part number replaces RZ29B-VW, which was used for testing this HiTest Suite.</i>	<b>DS-RZ1CB-VW<sup>+</sup></b>	6	6
7	<b>466 MHz CPU DIGITAL UNIX SMP UPG</b> <i>Note: Up to three additional CPUs may be added to each 4100 System; one to each 4000 system.</i>	<b>KN304-DB</b>	0	6
8	<b>450 Watt Power Supply</b> <i>Note: The power supply included with each system drawer supports two CPUs, memory, and I/O adapters. Add a second supply to support four CPUs or for redundancy (N+1) with a two CPU system. Add a third supply for redundancy (N+1) with a four CPU system (AlphaServer 4100).</i>	<b>H7291-AA</b>	0	4
9	<b>1 GB Memory Option</b> <i>Note: Add a 1 GB memory option for each CPU added to the 4x00 system.</i>	<b>MS330-FA</b>	0	6
10	<b>PCI one-port FWD SCSI controller</b> <i>Note: Two per system drawer</i>	<b>KZPSA-BB</b>	4	4
<b>Note: Order one each of items 11, 12, and 13 for each KZPSA-BB ordered. Cabling, terminators, and adapters used to interconnect KZPSA-BB SCSI controllers with HS250 StorageWorks RAID Array controllers in a shared SCSI bus configuration. (See Appendix A for detail.)</b>				
11	<b>10 meter 16-bit SCSI cable (external)</b>	<b>BN21K-10</b>	4	4
12	<b>SCSI Y Cable, 68 pin</b>	<b>BN21W-0B</b>	4	4
13	<b>SCSI Terminator</b>	<b>H879-AA</b>	2	2
<b>Note: When ordering cabinet and options required to configure StorageWorks subsystem, Customer should order "Configure to Order" and list SW822 part number (Item 14) first followed with Optional StorageWorks Devices (Items 15 and 16) to be included; otherwise, all hardware will arrive separately.</b>				
14	<b>StorageWorks Storage Array</b> <i>Hardware includes:</i> <ul style="list-style-type: none"> <li>• SW800GA/GB Cabinet with Power Controller</li> <li>• SW8XP-BA/BB (Backup) Power Controller</li> <li>• Three BA350-MB Disk Controller Shelves</li> <li>• Three BA35X-HF (Backup) Power Supplies for Disk Controller Shelves</li> <li>• 18 BA350-JA Disk Shelves</li> <li>• 18 BA35X-HH (Backup) Power Supplies for Disk Shelves</li> </ul>	<b>SW822-GA/GB<sup>*</sup></b>	1	1

<sup>+</sup> When UltraSCSI Drives are used in a BA356-series StorageWorks Shelf, ensure that the shelf contains a 180W power supply (DS-BA35X-HH).

<sup>\*</sup> A "/" is used to differentiate between Americas and Asia Pacific products and European product variants: Americas and Asia Pacific variant/European variant.

<b>PeopleSoft HiTest AppSet</b>				
<b>Oracle TruCluster Available Server DIGITAL UNIX AlphaServer 4x00 HiTest Foundation</b>				
<i>For documentation and updates: <a href="http://cosmo.tay.dec.com">http://cosmo.tay.dec.com</a> and <a href="http://www.partner.digital.com:9003">http://www.partner.digital.com:9003</a> For hardcopy of this Suite's HiTest Notes, order EK-HPSXA -HN.</i>				
Line Item	Description	Part Number	Tested Range	
			Min	Max
15	<b>StorageWorks RAID Array Dual SCSI Controller</b> <i>Each HSZ52-AJ Controller Option includes:</i> <ul style="list-style-type: none"> <li>• Two HSZ50 256 MB SCSI Controllers</li> <li>• An External Cache Battery Backup Power Supply which is installed in place of a (Backup) power supply in the associated disk storage shelves</li> <li>• Two 2-meter cables to interconnect Controllers with external cache batteries</li> <li>• Two H885-AA SCSI Tri-link Connectors, H879-AA SCSI Terminator, and a BN21L-0B cable to interconnect the two SCSI Controllers</li> </ul>	HSZ52-AJ	2	2
16	<b>4.3 GB 7200 RPM UltraSCSI Disk</b> <i>Note: This part number replaces RZ29B-VW, which was used for testing this HiTest Suite.</i>	DS-RZ1CB-VW <sup>+</sup>	36	72
<b>Foundation Software</b>				
<i>Note: Order the exact versions and revisions of the software shown below. Paper documentation can be ordered separately.</i>				
17	<b>StorageWorks Platform Software Kit</b> Includes: HSOF Software V5.1 StorageWorks Command Console SW V1.1  <i>Note: A platform software kit (QB-5JCAB-SA) must be ordered to support use of the HSZ52-AJ controller option. The StorageWorks Command Console SW V1.1 (Item 17) is installed as part of DIGITAL UNIX Operating System. The HSOF Software V5.1 on the PCMCIA program card (Item 18) is installed into one of the HSZ50 modules. A separate copy of the HSOF Software (Item 18) must be purchased for each HSZ50 module in the Storage subsystem.</i>	QB-5JCAB-SA	1	1
18	<b>HSZ50 Array Controller Operating Software (HSOF), V5.1</b>	QB-5CJAA-SA	3	3
<i>Note: Items 19 through 21 distributed on DIGITAL UNIX Alpha Software product library CD-ROM: QA-054AA-H8.</i>				
19	<b>DEC C++ for DIGITAL UNIX Systems, V 5.5</b>	QA-054AA-H8 QL-MTRAQ-AA	1	1
20	<b>DEC COBOL for DIGITAL UNIX Systems, V 2.4</b>	QL-2BZAQ-AA	1	1
21	<b>Micro Focus COBOL Compiler and Development Tools for DIGITAL UNIX, V 3.2</b>	QL-213AM-3B	1	1
22	<b>TruCluster Available Server Software, V1.4A</b> <i>Note: Distributed as part of the DIGITAL UNIX Associated Products CD-ROM: QA-MT4AA-H8</i>	QA-MT4AA-H8 QL-3RLAQ-AA	1	1
23	<b>Oracle7 Server (RDBMS), V 7.3.2.3.0</b> <i>Upgraded from 7.3.2.1 using patch</i>		1	1

<sup>+</sup> When UltraSCSI Drives are used in a BA356-series StorageWorks Shelf, ensure that the shelf contains a 180W power supply (DS-BA35X-HH).

<b>PeopleSoft HiTest AppSet</b>				
<b>Oracle TruCluster Available Server DIGITAL UNIX AlphaServer 4x00 HiTest Foundation</b>				
<i>For documentation and updates: <a href="http://cosmo.tay.dec.com">http://cosmo.tay.dec.com</a> and <a href="http://www.partner.digital.com:9003">http://www.partner.digital.com:9003</a> For hardcopy of this Suite's HiTest Notes, order EK-HPSXA -HN.</i>				
Line Item	Description	Part Number	Tested Range	
			Min	Max
24	Oracle7 Server/DIGITAL UNIX 4.0 compatibility Patch # 424307		1	1
25	Oracle Common Libraries and Utilities, V 7.3.2.3.0		1	1
26	Oracle Trace, V 4.0.0		1	1
27	Oracle Server Manager, V 2.3.2.0		1	1
28	Oracle Server Manager (Motif), V 2.3.2.0		1	1
29	PL/SQL, V 2.3.2.3.0		1	1
30	SQL*Plus, V 3.3.2.0.0		1	1
31	SQL*Net (V2), V 2.3.2.1.0		1	1
32	Toolkit 2.1 Base, Release 2.1.4.14.1		1	1
33	Toolkit 2.1 Extension, Release 2.1.4.14.1		1	1
34	SLAX Parser, Release 7.3.2.1.0		1	1
35	Precomp, Release 7.3.2.1.0		1	1
36	Oracle Pro*C, Release 2.2.2.0.0		1	1
37	Oracle Help, Release 2.1.1.0.0		1	1
38	SCRIBE SQR, Release 3.0.12.1		1	1
39	Oracle Networking		1	1
40	Oracle Protocol Adapter for TCP/IP, Release 2..3.2.1.0		1	1
41	Remote Operations Software, V 1.3.3		1	1
42	Oracle7 Enterprise Backup Utility (OEBU), V 2.0.12.4		1	1

**Table 2-2: Component Revision Levels**

Hardware Component	Hardware	Firmware	Software
SRM Console	--	V1.21-18	V4.8-6
SCSI host adapter (KZPDA-AA)	0002		--
FWD SCSI controller (KZPSA-BB)	0000	A10	--
Array controller (HSZ52-AJ)	A01	HSOF V5.1Z-0	--
4.3 GB disks (RZ29B-VW)		0016	--
466 MHz CPU (KN304-DB)	A03		--
Memory (MS330-FA)	A03		--
Fast Ethernet adapter (DE500-AA)	00012		--
StorageWorks Shelf Power Supply (BA35X-HH)	B01 or Greater		

## **Special Configuration Rules**

There are no special configuration rules for configuring the hardware for the PeopleSoft Oracle TruCluster Available Server Environment DIGITAL UNIX AlphaServer 4x00 HiTest System.



## 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.

### TruCluster Available Server

There are specific hardware rules and restrictions that govern TruCluster Available Server configurations. Overall the configurations were set up as follows:

Set the `bus_probe_algorithm` variable to new:

```
>>> set bus_probe_algorithm new
>>> init
```

Set the `boot_reset` variable to on:

```
>>> set boot_reset on
```

- Ensure the KZPSA adapters have different SCSI ID numbers (See Table 3-1.) The controllers in the first 4x00 were set to SCSI ID 7. Set the controllers in the second 4x00 to SCSI ID 6.
- Enable fast SCSI bus speed for each KZPSA adapter. (See Table 3-1.)

**Table 3-1: SCSI Controller Configuration**

Step	Action	Result
1	>>> show pk*	<pre>pkb0_fast      1 pkb0_host_id   7 pkb0_termprw  1 pkc0_fast      1 pkc0_host_id   7 pkc0_termprw  1</pre> <p>If any values need to be changed, refer to the next steps.</p>
2	>>> set pkb0_host_id 6 >>> set pkc0_host_id 6	Changes the SCSI ID of the KZPSA-BB controllers from 7 to 6. This was done on the second AlphaServer 4x00 system.
3	>>> set pkb0_fast 1 >>> set pkc0_fast 1	Fast SCSI mode is enabled when the value is set to 1 (0 = slow mode). Set this value for the controllers on both systems.

### Disk Storage Configuration

Use the StorageWorks HSZ50 Array Controller Utility for DIGITAL UNIX to configure the HSZ50 controllers and disks as follows:

- Configure the disks attached to the HSZ50 controllers as RAID-5 sets. There are 16 RAIDsets (each RAIDset consists of four 4.3 GB disks).
- Compute the chunk size for the Oracle7 database using the following equation and set chunk size to 16 (based on a 8K db\_block\_size and having 1 db\_blocks\_per\_chunk).

$$\frac{(db\_block\_size)*(\#\_of\_db\_blocks\_per\_chunk)}{512} = chunk\_size$$

$$\frac{(8192)*(1)}{512} = 16 \text{ disk blocks}$$

- Enable the Write-back Cache option in the HSZ50 array controller. The write-back cache allocates cache memory to both read and write operations. This allows the I/O to report completion faster.

In this HiTest Suite, the database consists of distributed raw devices. Each volume is a four disk RAID-5 stripe set, on one of three HSZ50 Array Controller pairs. Configure the distributed raw devices to provide a primary path across three HSZ50 Array Controller pairs for data files, and a primary path across the remaining three HSZ50 Array Controller pairs for the index files. This configuration maximizes I/O access paths, while minimizing I/O contention for data load and data retrieval.

### Operating System Installation

Install the DIGITAL UNIX 4.0B operating system with all kernel options. Install all DIGITAL UNIX subsets and the TruCluster software for TruCluster Available Server operation.

### Swap Space

Inadequate swap space might cause the Oracle application and many other system operations not to function properly, because DIGITAL UNIX maps the active virtual pages of each process to swap space. The response time and throughput of the system degrades rapidly if swapping occurs during processing.

Use the Deferred Swap Mode when installing DIGITAL UNIX, to reduce the amount of swap space required, and to reduce the system overhead required for mapping the address space during the creation of processes:

```
mv /sbin/swapdefault /sbin/swapdefault.old
```

Create primary and secondary swap spaces for each system.

Allocate swap space equal to one-to-three times the system physical memory space.

## UNIX Kernel Parameters (/etc/sysconfigtab)

Table 3-2 lists the parameter settings used for the UNIX kernel for both minimum and maximum configurations tested.

The settings are based on memory configuration suggested in the *Oracle7 Server for Digital UNIX Installation and Configuration Guide*.

Use the DIGITAL UNIX `vmstat` and `iostat` commands and the ORACLE `utlbstat.sql` and `utlestat.sql` (based on V\$ views) to gather memory and I/O statistics as a guide for tuning DIGITAL UNIX.

The most significant areas of operating system tuning are as follows:

- Semaphores
- Unified buffer cache (UBC)
- Swap space allocation
- Shared memory

The essential parameters listed in Table 3-2 are as follows:

### VM (Virtual Memory) Parameters

- These parameters control the allocation of pages in physical memory and keep track of the pages being swapped. VM UNIX is used to set up physical memory limit. The UBC parameters hold the actual file data and file system activities. UBC and the VM subsystem share and compete for all the main memory and use the same physical pages.
- The UBC is separate from the ORACLE database buffer cache. If the UBC grows too big, the ORACLE database buffer cache will then be swapped. This has a significant performance impact.
- The UBC is dynamic and potentially uses all physical memory. The parameter values of *ubc-minpercent* and *ubc-maxpercent* are set to control the amount of physical memory the UBC can use.

**Table 3-2: UNIX Kernel Parameters**

Parameter	Minimum Configuration Value	Maximum Configuration Value	Descriptions
vm parameters			
vm-maxvas	10737418240	4292967296	Maximum virtual address space for user maps
vm-mapentries	400	400	Maximum # virtual map entries a user can have
ubc-minpercent	1	1	Minimum percentage of memory at which page-stealing from UBC is prohibited
ubc-maxpercent	2	2	Maximum percentage of memory that UBC can consume
new-wire-method	0	0	Set to off
gh-chunks	0	0	Zero disables gh_chunks
vm-page-lock-count	64	64	Controlling the virtual memory page lock handling
rt parameters			
aio-max-num	1024	1024	Maximum # of concurrent asyc I/O requests that the can be outstanding at any time
aio-max-percent	2	2	Maximum percentage of physical memory for the asyc I/O that database can occupy
proc parameters			
max-proc-per-user	1024	1024	Maximum limit of process a user can create
max-threads-per-user	1024	1024	Maximum limit of threads a user can create
max-per-proc-data-size	10737418240	42924967296	Maximum data size per process
max-per-proc-address-space	10737418240	42924967296	Maximum address space per process
ipc parameters			
shm-max	2139095040	2139095040	Maximum size of shared memory segment
shm-seg	32	32	Maximum attached shared segment per process
msg-max	8192	8192	Maximum size of single System V message
msg-mnb	16384	16384	Maximum size in bytes of single message queue
msg-mni	1024	1024	Maximum # of message queues at any point in time
msg-tql	4096	4096	Maximum # of messages that can be queued
sem-aem	16384	16384	Maximum adjustment can be made to semaphore
sem-mni	200	200	Maximum # of semaphore at any point in time
num-of-sems	200	200	# of semaphore in use
sem-msl	200	200	Maximum # of semaphores can be used by a single process
sem-opm	200	200	Maximum # of operations that can be outstanding
sem-ume	200	200	Maximum # of undo operations that can be outstanding
sem-vmx	32767	32767	Maximum integer value s semaphore is allowed
ssm-threshold	8 MB	8 MB	Minimum threshold to enable use of shared page tables (mutually exclusive with gh_chunks)

## Applications

Install DIGITAL UNIX and Oracle applications.

### DIGITAL UNIX Layered Products

Install the full list of DIGITAL UNIX layered products including TruCluster Available Server that appears in Table 2-1.

### Oracle

Install the Oracle Server software and DIGITAL UNIX on separate disks to eliminate I/O contention.

Install Oracle7 Server, Version 7.3.2.1, the Parallel Query Option, PL/SQL, SQL\*Plus, and SQL\*Net using Oracle Installer from the Oracle7 Server CD.

Install the following Oracle upgrade and patches on the Server:

- Oracle7 Server Version 7.3.2.3
- Oracle DIGITAL UNIX V 4.0 patch 424307

Install Oracle SQL\*Net V2.3 on the PC Client.

### Oracle Initialization Parameters

The Oracle database instance is started using the parameter file to setup the System Global Area (SGA), database-wide defaults, database limit, control file structures, and to define various operating system parameters. In general, this initialization parameter file is named INIT.ORA or INITsid.ORA.

The following set of parameters affect tuning of Oracle performance:

- **db\_block\_size**

This parameter defines the size of an Oracle database block. In decision-support system applications, 32K block size would be a good choice. In online applications, a smaller block size should be chosen. We chose 8K for block size.

- **db\_block\_buffers**

This parameter specifies the numbers of database buffers allocated to the database instance. The size of buffer cache is determined by multiplying db\_block\_size and db\_block\_buffers. Large buffer cache substantially reduces disk I/O and improves performance. Using the available memory to enlarge the buffer cache is usually good for performance. However, it is critical to leave 5% free memory on the system during peak load. If all memory on the system is used, the performance is likely to grind to a halt. The value of SGA is also decided by the number of database buffers. This is a significant tuning parameter.

Refer to Chapter 5 for results of changing db\_block\_buffers on some sample queries.

- **shared\_pool\_size**

This parameter is used for storing shared SQL texts, PL/SQL blocks and data dictionary details. To tune the dictionary, set this value large enough to accommodate information about the dictionary, shared SQL statements, and session information; setting this value too large will hinder performance.

## System Installation and Setup

- **sort\_area\_size**

This is the memory that is allocated to each user process for sorting. This value will affect the performance of applications during query processing. Make sure this value is not increased to the point where swapping occurs. In general, sorting to disk is bad for performance. If temporary tablespace needs to be created for sorting, specify large table extents to allow sort\_area\_size of memory to be written to disk without throwing multiple extents. Usually the sort\_area\_size is set to 32K or 64K.

The most important shared memory consideration is SGA. As mentioned previously, the size and number of database block buffers and the size of the Oracle shared pool affect the Oracle SGA. The other factors contributing to the SGA include the size of the data that will be cached into memory and database buffer cache hit ratio, which is the percentage of time that the request for data is resolved by memory versus reading from disk.

Table 3-3 shows the optimizations made to the Oracle7 server and database for PeopleSoft 6.0 Financial DEMO Database.

### **Enabling Process Limits for the Oracle DBA User Account**

Edit the Oracle DBA User Account Process Settings to enable the use of larger parameter process values that are required for the Oracle 64-bit Option, according to *Oracle7 Server for Digital UNIX Installation and Configuration Guide*.

Using the UNIX C Shell, set each the Oracle DBA user account .login file as follows:

```
limit datasize unlimited
limit stacksize unlimited
limit memoryuse unlimited
limit addresspace unlimited
```

Table 3-3: Oracle Parameter Optimization

Parameter	Minimum Configuration Value	Maximum Configuration Value	Comment
db_block_size	8192	8192	Size of the Big Oracle Block (BOB).
db_block_buffers	16000	64000	This number should be maximized to provide the highest cache hit ratio without adversely affecting the memory requirements of other Oracle and system processes.
async_write	1	1	Enables the DIGITAL UNIX asynchronous I/O feature which allows the DB writer to perform multiple writes to multiple disks simultaneously without waiting for previous writes to finish.
sort_area_size	32768	32768	Memory area allocated to each process/thread performing sorts. This parameter should be maximized during intensive sort operations, such as index creation on large tables. This is highly sensitive to the parallel degree of the tables being sorted, as each thread will allocate this space.
sort_direct_writes	true	true	Setting this parameter will allocate memory in addition to the sort area to perform sort writes directly to disk, bypassing the buffer cache. Setting this parameter to auto disables the sort_write_buffer_size parameter.
sort_write_buffer_size	32768	32768	When sort_direct_writes is set to true, this parameter must be set to a value between 32768 and 131072, that is a multiple of 32768.
cache_size_threshold	180000	180000	This parameter controls the buffer cache space reserved for table scans. Tables with this or fewer Oracle blocks will be cached in the SGA during full table scans. This parameter is set sufficiently large enough to accommodate the smaller dimension tables.
ccf_io_size	4194304	4194304	Determines the number of bytes per write when creating a contiguous file.
db_file_multiblock_read_count	16	16	Due to an Oracle limit of 128 KB per I/O, this parameter was set to 16: the maximum based on the formula max_io_size/db_block_size (128 KB/8 KB).
shared_pool_size	419430400	419430400	This parameter affects the performance of the library cache (shared SQL and PL/SQL areas) and the dictionary cache. This parameter may be reduced if the cache hit ratio is not adversely affected. If cache misses are prevalent, the open_cursors parameter may need to be increased.
log_checkpoint_interval	100000000	100000000	Set sufficiently large number to disable time based checkpoints forcing checkpoints only to occur on log switches.

### PeopleSoft

Install the following PeopleSoft software and Windows 95 software on the PC using instructions in the *Installation and Administration for Oracle*:

- PeopleSoft Financials V6.0
- PeopleTools V6.01 (includes PeopleSoft Edition SQA Robot V5.1)

### Database Creation and Storage Considerations

Implementing a database using Oracle7 Server on a DIGITAL UNIX TruCluster Available Server requires special considerations to ensure proper and efficient use of the application. This section describes these considerations and provides an overview of how they were used.

The process used to create the database for this HiTest suite is discussed in Chapter 4.

### Raw Disk Handling Considerations

Oracle supports the use of file system and raw devices. Based on recommendations from PeopleSoft and Oracle, the database was implemented using raw devices to take advantage of DIGITAL UNIX asynchronous I/O capability. The amount of overall disk storage required to support PeopleSoft applications depends on the volume of data in the database, the database processes during peak load, as well as the expected growth and expansion over time. When using an Oracle application, it is advisable to spread Oracle database files over as many disks as possible.

Consider the following when setting up the raw disk:

- Use RAID controllers. This Suite had the disks set up as RAID-5 sets at the hardware level using the HSZ50 array controllers. RAID-5 provides disk striping with distributed parity, but provides only the capacity of  $n-1$  devices, where  $n$  = Number of RAIDset members. For example, four 4.3 GB drives have a 12.9 GB RAID-5 capacity.
- When possible, spread system disk, database tables, indexes, Oracle redo logs across physically separate raw disks.
- Plan to place data to raw disks on different SCSI Buses and HSZ controllers. This reduces I/O contention.
- Do not place backup on the same disk that was used to store database files.
- Based on the growth rate, minimize the number of extents (less than 5) in the storage clauses to improve performance and to avoid disk fragmentation.
- Use a symbol link to assign meaningful names to all the raw disks to improve manageability.
- Watch all the symbol links for all the disk partitions and make sure that there are no duplications for any disk partitions.
- During database creation, or when altering tablespace and datafiles once the database is created, make sure that the symbol link does not point to a disk partition that is already being used. Oracle knows the file by the link name but will not detect any overwriting of data to the same file (raw device), which can corrupt existing database datafiles.

An example of how the raw disk was setup and partitioned is shown in Chapter 4.



## Rollback Segments

Consider the following when setting up rollback segments:

- Every rollback segment created must have at least two extents.
- To cache rollback segments, make them small. Creating many small rollback segments for online application will provide better performance.
- Consider dropping and recreating (many small segments) before online processing.
- Batch job and transactions that are long running or change a lot of data need a larger rollback segment.
- To hold rollback segments using a raw disk, place the rollback tablespace in its own disk and controller.
- Rollback segments are created in the tablespace and assigned to the instance using Oracle initialization parameter `ROLLBACK_SEGMENTS` (in `INIT.ORA`), which should be in the instance-specific Oracle parameter file.

## Temporary Tables

Temporary tables are used for sorting. Consider the following when creating temporary tables:

- Create this tablespace on its own disk.
- Increase `sort_area_size` to support large sort operations.

## Control Files

A minimum of two files should exist per database. To meet this requirement:

- Distribute three control files across three separate raw disks served by two unique storage controllers.
- Edit the `CONTROL_FILES` parameter in the `INIT.ORA` file to include the new control files.

## Tablespace Configuration Considerations

Consider the following when configuring tablespaces:

- For better performance, place the tablespaces on separate disks.
- Balance the I/O load by storing some heavily accessed tables in the same tablespace as some of those less commonly accessed.
- Place each tablespace into a single data file and make sure the data file is contiguous on the disk.
- Put indexes in a tablespace separate from data.
- Try to put the tablespaces for an index on a different disk from the one that holds the index's table.
- Spread a large table across multiple raw disks if randomly accessed to reduce I/O contention.
- Base logical data separations on business function to evenly distribute workload and I/O across the system.

### Redo Logs

Consider the following when setting up redo logs:

- A minimum of two redo log files is required, but will get the best performance if three redo logs are created.
- Place all redo log files on their own disk file system and controller.
- Do not put a redo log file on the same disk as a database file. If your system does not have a spare disk to hold the log files, place the redo log file on the same disk as the index data files.
- There is usually no advantage in having the three redo log files on separate disks unless you are running in archivelog mode and experiencing I/O bottlenecks on the redo log disk. Then, you may benefit from placing the log files on different disks so that one file is being written while another is being archived.

### Available Server Environment Failover Setup

The TruCluster Available Server software monitors the member nodes, when a significant failure is detected on a server, the Available Server software reassigns the services that were being provided from the affected member to another server. This automatic reassignment is called failover.

Both Available Server Environment (ASE) member nodes and the clients must be setup for failover.

### Failover Setup for Member Nodes

The following procedure outlines the steps necessary for setting up ASE member nodes for failover operation:

1. Use the following command to copy the local Oracle system disk to the shared raw disk so that the Oracle disk can be used by the original node and the surviving node.

```
dd if=/dev/rz43c of=/dev/rzb18c
```

2. Copy the PeopleSoft financial application disk that is used for COBOL compilation and Process Scheduler to a file system on a shared disk.
3. Ensure that the group id for the Oracle accounts on both hosts in the ASE are configured identically.

---

#### Note

---

Steps 4 and 5 allow the Oracle listener to be started correctly during a service relocation/failover.

---

4. Copy the listener.ora file of the original node (depot4) to /etc/listener.ora of the surviving (depot5) node through the Oracle shared disk as follows:

```
cp $ORACLE_HOME/network/admin/listener.ora/ etc/listener.ora
```

5. Edit/modify the /etc/listener.ora file as follows to reflect surviving local node, which sets the host name to the surviving local node:

```

LISTENER =
  (ADDRESS_LIST =
    (ADDRESS =
      (PROTOCOL = TCP)
      (Host = depot5)
      (Port = 1521)))
STARTUP_WAIT_TIME_LISTENER = 0
CONNECT_TIMEOUT_LISTENER = 10
TRACE_LEVEL_LISTENER = 16
trace_directory_listener=/tmp
SID_LIST_LISTENER =
  (SID_LIST =
    (SID_DESC =
      (SID_NAME = PSF1)
      (ORACLE_HOME = /oracle/app/oracle/product/7.3.2)
      (PROGRAM=oracle)))

```

By default, the listener will use the following file when it starts up on depot4:

```
$ ORACLE_HOME/network/admin/listener.ora
```

This allows depot4 to correctly start the listener; however, if consistency is desired, then this file could be copied to /etc/listener.ora on depot4.

6. Create all the user-provided start/stop scripts on the local disk of both the original (depot4) and surviving (depot5) nodes. The action scripts are used to setup, start, and stop a service in an ASE, so that it can failover from one member to another. The Oracle and PeopleSoft application must run on only one system at a time. No other Oracle instances are running on the surviving node at the same time. Both applications must be able to start and stop using a series of action scripts.
7. Use the asemgr to create a user-defined service consisting of the Oracle and PeopleSoft application that can failover. The following asemgr menu will:
- Create unique user-defined service name 'failover'.
  - Select favor members as the Automatic Service Placement (ASP) policy. Because favor member checks the specified members (depot4, depot5) in order first, if one of them is available, it is selected to run the 'failover' user-defined service.
  - Use the action scripts previously mentioned to failover the Oracle and PeopleSoft application.

---

**Note**

---

The scripts reside in /var/adm/ase directory for both systems. (Refer to Appendix B for Script details.)

---

8. Use the asemgr main menu as follows:

```
asemgr
```

```
TruCluster Available Server (ASE)
```

## System Installation and Setup

### ASE Main Menu

- a) Managing the ASE -->
- m) Managing ASE Services -->
- s) Obtaining ASE Status -->
- x) Exit ?) Help

Enter your choice: :m

- c) Service Configuration -->
- r) Relocate a service
- on) Set a service on line
- off) Set a service off line
- res) Restart a service
- s) Display the status of a service
- a) Advanced Utilities -->
- x) Exit to the Main Menu ?) Help

Enter your choice [x]: c

### Service Configuration

- a) Add a new service
- m) Modify a service
- d) Delete a service
- s) Display the status of a service
- x) Exit to Managing ASE Services ?) Help

Enter your choice [x]: a

### Adding a service

Select the type of service:

- 1) NFS service
- 2) Disk service
- 3) User-defined service
- x) Exit to Service Configuration ?) Help

Enter your choice [1]: 3

You are now adding a new user-defined service to ASE.

### User-defined Service Name

The name of a user-defined service must be a unique service name within the ASE environment.

Enter the user-defined service name ('q' to quit): failover

You are now adding a new user-defined service to ASE.

Modifying user-defined scripts for `failover`:

- 1) Start action
- 2) Stop action
- 3) Add action
- 4) Delete action
- 5) Check action
- x) Exit - done with changes

Enter your choice [x]: 1

Modifying the start action script for `failover`:

- f) Replace the start action script
- e) Edit the start action script
- g) Modify the start action script arguments [failover]
- t) Modify the start action script timeout [60]
- r) Remove the start action script
- x) Exit - done with changes

Enter your choice [x]: f

Enter the full pathname of your start action script or "default" for the default script (x to exit): /var/adm/ase/start.sh

Modifying the start action script for `failover`:

- f) Replace the start action script
- e) Edit the start action script
- g) Modify the start action script arguments [failover]
- t) Modify the start action script timeout [60]
- r) Remove the start action script
- x) Exit - done with changes

Enter your choice [x]: x

Modifying user-defined scripts for `failover`:

- 1) Start action
- 2) Stop action
- 3) Add action
- 4) Delete action
- 5) Check action
- x) Exit - done with changes

Enter your choice [x]: 2

Modifying the stop action script for `failover`:

- f) Replace the stop action script
- e) Edit the stop action script
- g) Modify the stop action script arguments [failover]
- t) Modify the stop action script timeout [60]
- r) Remove the stop action script
- x) Exit - done with changes

Enter your choice [x]: f

Enter the full pathname of your stop action script or "default" for the default script (x to exit): /var/adm/ase/stop.sh

## System Installation and Setup

Modifying the stop action script for `failover`:

- f) Replace the stop action script
- e) Edit the stop action script
- g) Modify the stop action script arguments [failover]
- t) Modify the stop action script timeout [60]
- r) Remove the stop action script
- x) Exit - done with changes

Enter your choice [x]: x

Selecting an Automatic Service Placement (ASP) Policy

Select the policy you want ASE to use when choosing a member to run this service:

- b) Balanced Service Distribution
- f) Favor Members
- r) Restrict to Favored Members
- x) Exit to Service Configuration   ?) Help

Enter your choice [b]: f

Selecting an Automatic Service Placement (ASP) Policy

Select the favored member(s) IN ORDER for service 'failover':

- 1) depot4
- 2) depot5
- x) No favored members                   ?) Help

Enter a comma-separated list [x]: 1,2

Selecting an Automatic Service Placement (ASP) Policy

Do you want ASE to relocate this service to a more highly favored member if one becomes available while this service is running (y/n/?): n

Enter 'y' to add Service 'failover' (y/n): y

Adding service...

Starting service...

Service failover successfully added...

## Failover Setup for Clients

The following procedure provides the setup and configuration instructions needed to make failover work for the PeopleSoft client. Both the Oracle Server and the PeopleSoft Client must be configured.

1. On the Oracle side, the database name for the original node (depot4) is fsdmo. Create the database alias name fsdmo2 for the surviving node (depot5) in the psdbowner table on the ASE Oracle server using the following SQLPLUS command:

```
insert into psdbowner value ('fsdmo2','ps');
commit;
```

2. Edit tnsnames.ora and add the following entry for the new fsdmo2 alias name as follows:

```
cd $ORACLE_HOME/network/admin
```

```
Fsdmo2.world=(DESCRIPTION=(ADDRESS=(PROTOCOL=TCP)
(HOST=depot5)(PORT=1521)(CONNECT_DATA=(SID=PSF1)
(GLOBAL_NAME=PSFT.world)
```

Note

Steps 3 and 4 build two connection entries into tnsnames.ora file in the following directory:

```
C:\ORAWIN95\NETWORK\ADMIN
```

---

3. On the PeopleSoft client, click SQLNet Easy Configuration from Windows 95. To build a connection to the original node (depot4), enter the following using the SQL\*Net Easy Configuration window:

Add Database Alias	FSDMO
Choose Protocol	TCP/IP
Choose TCP/IP Hostname	DEPOT4
Database Instance	PSF1

4. Build a connection to the surviving node (depot5) by entering the following from the SQL\*Net Easy Configuration window:

Add Database Alias	FSDMO2
Choose Protocol	TCP/IP
Choose TCP/IP Hostname	DEPOT5
Database Instance	PSF1

5. Configure the Signon window for the PeopleSoft client as follows:

- a) Click PeopleSoft PT 6 - Oracle ➔ Configuration Manager

- b) Enter the Database Name as FSDMO or FSDMO2 to setup for the Signon Window in the next step.

6. Make the PeopleSoft Signon Window a shortcut to run

```
C:\FS600\bin\pstools.exe.
```

7. Choose Database Name as FSDMO2 to log into surviving node (depot5) and enter Database Name FSDMO for the original node (depot4)

8. Restart the PeopleSoft workstation before running the PeopleSoft Signon Window for logging into the ASE Oracle server.





---

## 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 PeopleSoft Oracle TruCluster Available Server DIGITAL UNIX AlphaServer 4100 HiTest Suite. Within the PeopleSoft Financials, the Asset Management, Accounts Payable, Accounts Receivable, and General Ledger modules were tested. Generally, the tests verified that the business processes functioned as expected. Overall test results and anomalies noted during testing are presented in the comments column of the test summary table associated with each PeopleSoft test.

Additionally, failover testing was performed to demonstrate that the TruCluster Available Server test configuration provided error-free, uninterrupted, system and application performance in the presence of hardware failures. Tests demonstrated successful failover with no impact on system or application performance.

### Test Environment

Figure 4-1 shows the PeopleSoft Oracle TruCluster DIGITAL UNIX AlphaServer 4x00 test environment. Detailed configuration information is provided in Appendix A.

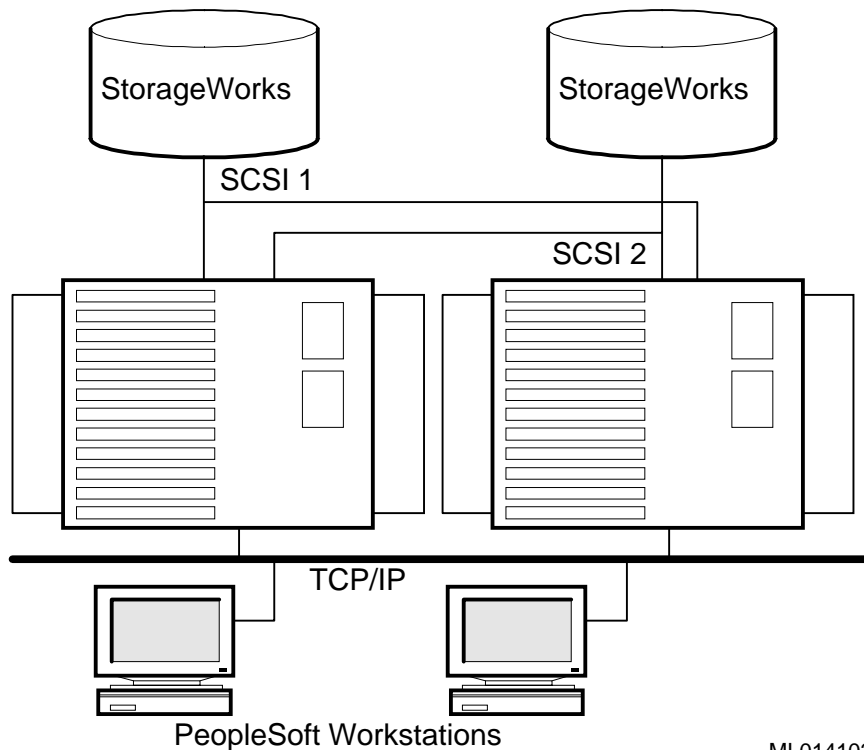
### Test Tools

The tools used for interoperability testing were two PeopleSoft workstations and test scripts. The PeopleSoft workstations were PCs running Windows 95 with:

- PeopleSoft Online Financials V6.0
- PeopleTools V6.01 (including PeopleSoft Edition, SQA Robot V5.1)
- SQL\*Net V2.3
- Microsoft Word V6.0
- Microsoft Excel V6.0

Test scripts were run on the PC to load and populate the test database.

**Figure 4-1: Test Environment**



## Test Configuration

The test load was generated from database creation, benchmark kit load, and client system input (Windows 95 PC). The minimum and maximum hardware configurations each have two AlphaServer 4x00 systems configured in a TruCluster Available Server Environment (ASE). PC workstations provide the operator interface for populating the database, performing financial transactions, and initiating financial queries to the database.

## Minimum Hardware Configuration

The minimum configuration includes two AlphaServer 4x00 systems, each having a single 466 MHz CPU with 4 MB cache, 1 GB memory, and 21.5 GB of local storage. The system is connected to database storage (16 RAID-5 sets with four 4.3 GB disks in each set).

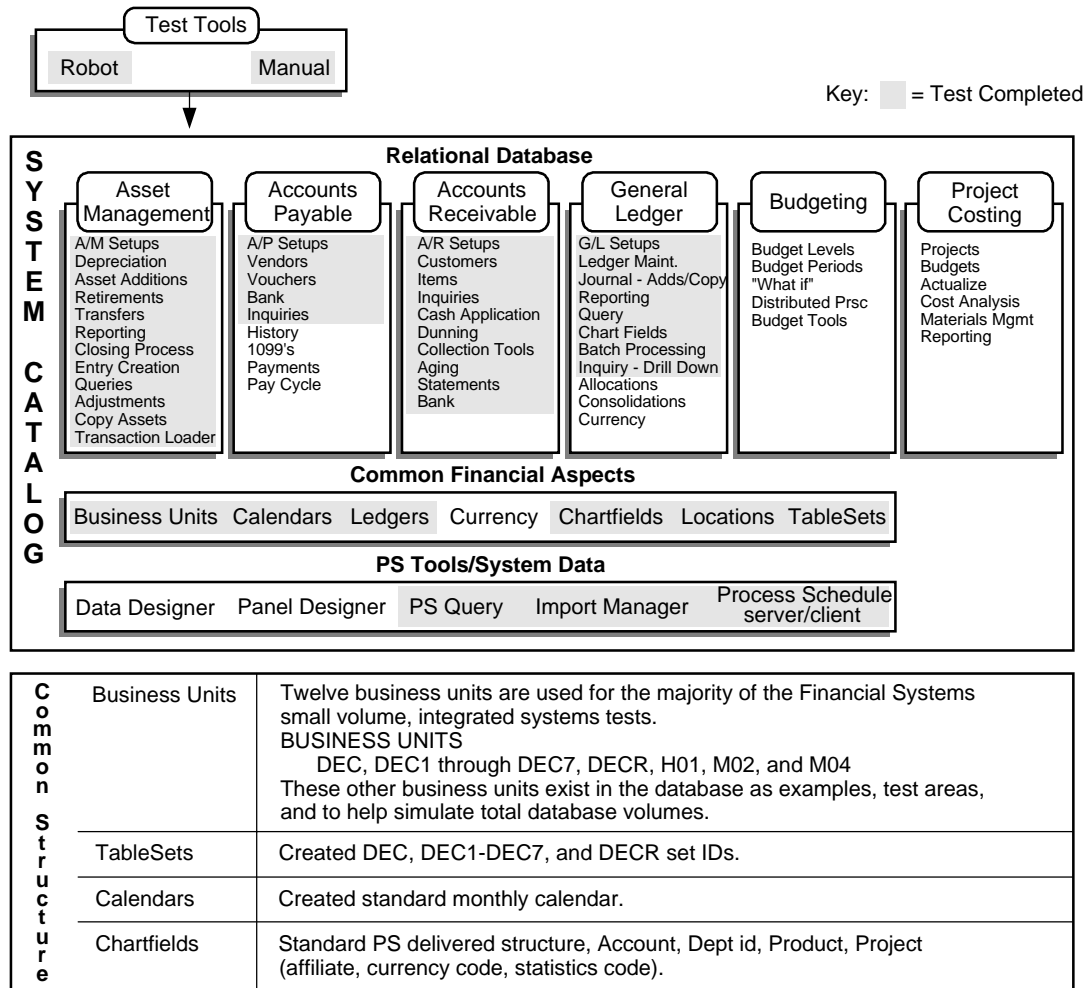
## Maximum Hardware Configuration

The maximum configuration includes two AlphaServer 4100 systems, each having four 466 MHz CPUs with 4 MB cache, 4 GB memory, and 21.5 GB of local storage. Both systems are connected to the same amount of database storage (shared) as the minimum configuration.

## PeopleSoft Financials System Configuration

Figure 4-2 shows the financial system configuration used for this HiTest template. Shaded areas indicate areas tested.

Figure 4-2: PeopleSoft Financials System Configuration



ML014103

## File System and Database Storage Map

The file system and database storage map for the maximum and minimum configurations tested is shown in Table 4-1. Performance considerations discussed in Chapter 3 guided the placement of the data files. The database consists of distributed raw devices. Each volume is a four disk RAID-5 stripe set, on one of two HSZ50 Array Controller pairs.

As shown in Table 4-1, the data files are primary pathed across two HSZ50 Array Controller pairs, while the index files are primary pathed across a separate set of two HSZ50 pairs. All file space is evenly dispersed across all HSZ50 Array Controller pairs. This configuration maximizes I/O access paths, while minimizing I/O contention for data load and data retrieval.

**Table 4-1: File Systems and Database Storage Map**

<b>SYSTEM SCSI BUS</b>	
<b>System Controller</b>	
/dev/rrc8c:	/backup
/dev/rz40a:	SYSTEM DISK
/dev/rz40b:	/usr
/dev/rz41c:	/var
/dev/rz43c:	/Oracle
<b>SCSI BUS #1</b>	
<b>HSZ50 Controller 1</b>	
/dev/rrz8b:	SYSTEM
/dev/rrz8c:	PSTEMP
/dev/rrzb8a:	INLARGE
/dev/rrzb8c:	ARAPP
/dev/rrzb8d:	BDAPP
/dev/rrz9c:	PSINDEX
/dev/rrzb9c:	AMAPP
/dev/rrzb9d:	BIAPP
/dev/rrz10d:	OMLARGE
<b>HSZ50 Controller 2</b>	
/dev/rrz10c:	ARAPP
/dev/rrz10a:	CTL-2
/dev/rrzb10c:	FSAPP1
/dev/rrzb10a:	FSLARGE
/dev/rrzb10d:	GLAPP
/dev/rrzb11a:	PCAPP
/dev/rrzb11c:	POAPP
/dev/rrz11c:	PSRBS
/dev/rrzb11d:	PTAPP
<b>SCSI BUS #2</b>	
<b>HSZ Controller 1</b>	
/dev/rrzb16d:	FSAPP
/dev/rrz16c:	GLLARGE
/dev/rrz16a:	PCLARGE
/dev/rrz16d:	POLARGE
/dev/rrzb17c:	FS600
/dev/rrz17a:	CTL-1
/dev/rrz17c:	APLARGE
/dev/rrzb16a:	BILARGE
/dev/rrzb16c:	AMLARGE
<b>HSZ Controller 2</b>	
/dev/rrz19b:	REDO1 LOGA_1
/dev/rrz19c:	REDO1 LOGB_1
/dev/rrz19d:	REDO1 LOGC_1
/dev/rrz18c:	ARLARGE
/dev/rrz18a:	BDLARGE
/dev/rrz17d:	INAPP
/dev/rrz18d:	OMAPP
/dev/rrzb18c:	ORACLE
/dev/rrzb19a:	PTPRC
/dev/rrzb19c:	PSIMAGE
/dev/rrzb19d:	PTTBL

### Tablespace Configurations

Based on the raw disk handling considerations and tablespace configuration considerations discussed in Chapter 3, the tablespaces for Asset Management (AM), Accounts Payable (AP), Accounts Receivable (AR), General Ledger (GL), other financial applications (BI, PC, BD, PO, IN, OM), and associated indexes were created to the partitions of the raw disks.

Separating tablespaces and indexes helps performance by allowing concurrent reads of indexes and their associated table data while minimizing I/O contention. Table 4-2 lists the tablespace name, symbolic link name and the size of the Oracle database files.

**Table 4-2: Tablespace Configurations**

Tablespace	Datafile Name (link)	Size (MB)
SYSTEM	/oracle/links/SYSTEM	200
PSRBS	/oracle/links/PSRBS	750
AMAPP	/oracle/links/AMAPP	90
AMLARGE	/oracle/links/AMLARGE	50
PSTEMP	/oracle/links/PSTEMP	600
APAPP	/oracle/links/APAPP	50
APLARGE	/oracle/links/APLARGE	50
ARAPP	/oracle/links/ARAPP	50
ARLARGE	/oracle/links/ARLARGE	80
BIAPP	/oracle/links/BIAPP	50
BILARGE	/oracle/links/BILARGE	50
BDAPP	/oracle/links/BDAPP	80
BDLARGE	/oracle/links/BDLARGE	50
FSAPP	/oracle/links/FSAPP	200
FSAPP!	/oracle/links/FSAPP!	150
FSLARGE	/oracle/links/FSLARGE	50
GLAPP	/oracle/links/GLAPP	140
GLLARGE	/oracle/links/GLLARGE	90
INAPP	/oracle/links/INAPP	50
INLARGE	/oracle/links/INLARGE	50
OMAPP	/oracle/links/OMAPP	150
OMLARGE	/oracle/links/OMLARGE	50
PCAPP	/oracle/links/PCAPP	50
PCLARGE	/oracle/links/PCLARGE	50
POAPP	/oracle/links/POAPP	50
POLARGE	/oracle/links/POLARGE	50
PTPRC	/oracle/links/PTPRC	50
PTAPP	/oracle/links/PTAPP	100
PSIMAGE	/oracle/links/PSIMAGE	500
PTTBL	/oracle/links/PTTBL	1200
PSINDEX	/oracle/links/PSINDEX	2500
TRAPP	/oracle/links/TRAPP	50
CPAPP	/oracle/links/CPAPP	50
MGAPP	/oracle/links/MGAPP	90

## Interoperability Tests and Results

### Redo Logs

A minimum of two redo log files is required; however, three redo logs provide the best performance. The redo logs listed in Table 4-3 were created using the guidelines discussed in Chapter 3.

**Table 4-3: Redo Logs**

File name (link)	Size (MB)
/oracle/links/LOGA_1	50
/oracle/links/LOGB_1	50
/oracle/links/LOGC_1	50

### Test Process and Results

Interoperability testing of the PeopleSoft Financials with Oracle, TruCluster ASE, DIGITAL UNIX, and AlphaServer 4x00 systems included:

- Creating the PeopleSoft Database
- Importing Data to GL database and populating the Asset Management Database (Database Load)
- PeopleSoft Asset Management (AM) Tests
- PeopleSoft Accounts Payable (AP) Tests
- PeopleSoft Accounts Receivable (AR) Tests
- PeopleSoft General Ledger (GL) Tests
- Failover Tests

In each of these test sequences, the appropriate functions were executed, then queries were made to the database to verify the functions executed as expected. Printouts resulting from each of the queries demonstrate test performance.

Additionally, failover testing was performed to verify that the TruCluster Available Server Environment (ASE) functioned as required to maintain operational status through physical system failures. Several tests were performed to demonstrate failover capability.

### Database Load

To create a PeopleSoft database means to create either a Demo database or a SYS database. The SYS database is a complete application and contains only the default, such as PeopleSoft chartfield tables, Account, DeptID, Product, ProjectID, panels, reports and so forth. The Financial Systems Demonstration Database (FSDMO) is a database with demonstration data included.

### PeopleSoft Database Creation

Based on all the considerations on DIGITAL UNIX and Oracle configuration and setup, the major steps used to create the PeopleSoft FSDMO database were as follows:

1. Database scripts were created on the PeopleSoft workstation. The database creation scripts used are detailed in Appendix B.
2. The database creation scripts were transferred to the Oracle server.
3. The FSDMO database was created with various tables on the Oracle server using the database creation scripts.

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### Note

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The Data Mover executes SQL statements against the PeopleSoft database, archives PeopleSoft tables or databases, and moves PeopleSoft databases across systems, database platforms, and hardware platforms.

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4. The Data Mover scripts generated in Step 1 were run on the PC client to create the database structures and populate the appropriate tables in accordance with the following procedure:
  - a) Run PSDMT.EXE from C:\FS600\BIN directory.
  - b) Run the FSDMOORA.DMS script from C:\FS600\SCRIPTS directory.

---

### Note

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It takes about an hour with this DIGITAL HiTest system to create the PeopleSoft FSDMO database tables on the DIGITAL UNIX Oracle server.

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5. The operator name and password (VP1/VP1) were defined and setup on the PC to signon to the FSDMO database.
6. The batch Micro Focus COBOL and SQR were compiled and setup on the Oracle server. For most of the background processes such as GL batch jobs, PeopleSoft uses Micro Focus COBOL and SCRIBE Structure Query Report Writer (SQR). SQR is a flexible SQL reporting language.
7. The Process Scheduler was setup on the Oracle server. The Process Scheduler provides a set of database tables and online panel, which users can use to define all of their offline batch processing programs and jobs (such as GL posting, GL editing and SQR). These functions allow the Process Scheduler to integrate with the online system, allowing the end users to have control of the reports and offline update processes. Instruction for setting up and starting the Process Scheduler are as follows:
  - a) Go to home directory:

```
cd $PS_HOME/bin
```
  - b) Setup the pspt.in file as follows:

```
ORACLE
FSDMO
VP1
VP1
PSUNX
```
  - c) Start the process scheduler using the following command:

```
./pspt
```

## Interoperability Tests and Results

### Oracle Data Import

The following files from the PeopleSoft General Ledger 6.0 benchmark kit were used to import high-volume PeopleSoft journal line and ledger data to the Oracle FSDMO database.

```
PS_JRNL_HEADER.dmp.Z
PS_LEDGER.dmp.Z
PS_JRNL_LN.dmp.Z
```

1. The script in Step 2 and the following pointers to each of the three files previously listed were used to sequentially import the PeopleSoft journal line and ledger data from the three files of the PeopleSoft General Ledger benchmark kit.

```
imp_tbl ps PS_JRNL_HEADER /fs600/gl600/JRNL_HEADER_logs &
imp_tbl ps PS_JRNL_LN /fs600/gl600/JRNL_LN_logs &
imp_tbl ps PS_LEDGER /var/gl600/LEDGER_logs
```

2. The following script was used to sequentially import each of the three tables listed in Step 1:

```
# Syntax imp_tbl <user> <dmp file> <Dump directory>
# Don't specify .dmp.Z suffix
# Only use this with single table exports

DumpDir=$3
ExpFile=$2.dmp
User=$1

mkfifo $DumpDir/dump_pipe$$
uncompress < $DumpDir/$ExpFile.Z > $DumpDir/dump_pipe$$ &
imp $User/sysadm ignore=y indexes=n file=$DumpDir/dump_pipe$$
fromuser=sysadm touser=$Userbuffer=10000000
log=$DumpDir/$2.imp.log tables=$2
rm $DumpDir/dump_pipe$$
```

---

### Notes

Although SQLLDR was not used on the Oracle server for this test, data from other HiTest projects showed the SQLLDR to be the most efficient mechanism for loading very large tablespaces. Using SQLPLUS to create and load tables is much faster than using PeopleSoft Import Manager. (See Chapter 5.)

---

### Populating the Database On PeopleSoft PC Client Using SQA Robot

SQA Robot 5.1 (PeopleSoft Edition), which is bundled with PeopleTool 6.01, was used extensively for testing on the PeopleSoft workstation.

Using PeopleSoft Import Manager or SQA Robot on the PC client to populate a database can ensure data integrity, but is very slow compared to SQLLDR and SQLPLUS.

The database was populated using SQA Robot script (AMCSV.REC) to read the external data file from AMDATA.CSV.



The following steps show how to read an external data file:

1. Create a CSV (Comma Separated Value as Excel spreadsheet format) text file (AMDATA.CSV).
2. Declare each field as a variable (Assetid, profile, dept, cost in AMDATA.CSV file).
3. Open the input file and check the following statement in AMCSV.REC file:  

```
open "C:\msoffice\excel\amdata.csv" for input as #1
```
4. Loop: Input the CSV data and check the following statements in AMCSV.REC file:  

```
do until EOF (1)

input #1, assetid, profile, dept, cost
--
--
loop
close #1
```
5. Use the "Input Keys" statement with the appropriate business unit and field name files.

Detailed AMDATA.CSV and AMCSV.REC (SQA Robot Scripts) scripts are provided in Appendix B.

## PeopleSoft Asset Management (AM)

PeopleSoft Asset Management supports multiple business unit, depreciation books by providing capital appropriation planning, budgeting, customizable depreciation options, projected maintenance and depreciation on assets, and multiple currencies for individual assets. It provides access to shared financial tables and integrates well with other financial modules such as GL.

Table 4-4 summarizes the PeopleSoft Asset Management structure. It also provides general comments regarding test results. The Process column lists the overall operational categories of asset management. The Function column specifies the functional entities within each process. The Task column defines the actual work to be performed within each Function. The Comments column provides notes regarding test performance of the associated task.

## PeopleSoft Asset Management Test Results

The overall success of the Asset Management testing is listed in the Comments column of Table 4-4. A discussion of the testing associated with each Asset Management Process is provided in the following sections.

### Business Rules and Asset Management Definition Tests

Activities were performed to create a business calendar, define the federal and Corporate books, create nine new business units (DEC, DEC1 through DEC7, and DECR) and seven categories of assets (sw, hw, bldg, equip, land, f&f, and auto).

### Asset Maintenance Test Results

Asset Maintenance tests were conducted to demonstrate the following asset maintenance functions:

- Add Assets (ADD)
- Transfer Assets (TRF)
- Retire and processing Reinstatements of Assets (RET)
- Adjust Asset Value (ADJ)
- Recategorization of Assets (RCT)

**Table 4-4: Asset Management Test Summary**

Process	Function	Task	Comments
<b>Business Rules Definition</b>	Define General Options	Create Detail Calendar	Created Calendar.
		Define Books	Corporate and Federal.
<b>Asset Definition</b>	Define Business Units	Add Business Unit to AM	Created 9 Business Units (DECR,DEC& DEC1-DEC7)
	Define Controls	Category Codes	Created 7, sw,hw,bld,eqp,land,f&f & auto
		Profiles	Created 7, sw,hw,bld,eqp,land,f&f & auto
<b>Asset Maintenance</b>	Add Asset	On-line express adds	Successful.
		On-line basic adds	Successful.
		Single Business Unit TXT File Copy Function	Successful. Need to be in, "Manage Assets" panel for script to work quickly. Also, TXT file does not like profile id, OFFICE EQ, because of the spacing.
		Multi-Business Unit TXT File Copy Function	Successful. Need to be in, "Manage Assets" panel for script to work effectively. Also, TXT file does not like profile id, OFFICE EQ, because of the spacing.
	Copy Assets	Copy	Done. However, can only copy assets in the same business unit.
	Adjustments	Adjust an Asset's cost	Successful.
	Transfers	Transfer within same Business Unit	Successful.
		Inter-Unit Transfer	Done. Need to watch for profile id changes.
	Retirements	Retire Assets	Successful.
	Reinstatements	Reinstate Assets	Successful.
<b>Depreciation Processing</b>	Depreciation for all business units: all assets and books	Run Depreciation on Client	Done. Even though script comes back as successful, depreciation does not calculate. This is due to needing the Robot Utility, "Process Scheduler Wait". The SQR stops running when the ROBOT script comes back as successful. Should work properly when utility is installed.
		Run Depreciation on Server	Unsuccessful. Get Error with Server. Same process monitor conflicts as with run depreciation on client.
<b>Query</b>	Run Open Transaction Query	Send Query to List Box	Successful. However, ROBOT cannot do this and process depreciation at the same time. Two separate steps required.
		Send Query to Excel	Unsuccessful. Path to Excel not found, need to have Excel already opened. If ROBOT is commanded to open Excel in script, processes become out of order. The repository gets updated and the test results come back as pass before data is retrieved by query. "Delayfor" does not work. Same scenario even if you open Excel before you run script.
<b>AM Close Processing</b>	Accounting Entries	Adds	Successfully completed.
		Transfers	Successfully completed.
		Retirements	Successfully completed.
		Accounting Entry Creation Check via Query	Successful.
	AM Close	Close out AM for Month and get ready to execute information into Ledger.	Successful.
<b>SQR Reporting</b>	Net Book Value Reports	Execute NBV report on Client	Successful.
		View NBV report in Excel	Successfully opens Excel, and parses data.

Table 4-5 shows the results of these maintenance functions. Also shown in Table 4-5 are the nine new business units created along with the existing business units (H01, M02, and M04) and the book names (CORP and FEDERAL) created during asset management activities. Table 4-5 was created by selecting the COST query record and initiating a PeopleTools Asset Cost Transaction query.

**Table 4-5: Asset Maintenance Functions Test Results**

Unit	Book Name	Trans Type	In/Out	Count Asset ID	Sum Total Cost
DEC	CORP	ADD		31	2,171,190.13
DEC	CORP	RET		1	-35,000.00
DEC	CORP	TRF	I	2	805,000.00
DEC	CORP	TRF	O	1	-55,000.00
DEC	FEDERAL	ADD		31	2,171,190.13
DEC	FEDERAL	RET		1	-35,000.00
DEC	FEDERAL	TRF	I	2	805,000.00
DEC	FEDERAL	TRF	O	1	-55,000.00
DEC1	CORP	ADD		16	909,500.00
DEC1	CORP	TRF	I	4	11,500.00
DEC1	FEDERAL	ADD		16	909,500.00
DEC1	FEDERAL	TRF	I	4	11,500.00
DEC2	CORP	ADD		12	115,000.00
DEC2	FEDERAL	ADD		12	115,000.00
DEC3	CORP	ADD		12	222,453.00
DEC3	FEDERAL	ADD		12	222,453.00
DEC4	CORP	ADD		17	784,613.98
DEC4	FEDERAL	ADD		17	784,613.98
DEC5	CORP	ADD		14	846,146.98
DEC5	FEDERAL	ADD		14	846,146.98
DEC6	CORP	ADD		14	592,000.01
DEC6	FEDERAL	ADD		14	592,000.01
DEC7	CORP	ADD		13	366,000.02
DEC7	CORP	TRF	I	1	5,500.00
DEC7	FEDERAL	ADD		13	366,000.02
DEC7	FEDERAL	TRF	I	1	5,500.00
DECR	CORP	ADD		227	14,652,944.90
DECR	CORP	ADJ		5	-52,000.00
DECR	CORP	RET		7	-71,500.00
DECR	CORP	TRF	I	6	762,740.00
DECR	CORP	TRF	O	12	-1,529,740.00
DECR	FEDERAL	ADD		227	14,652,944.90
DECR	FEDERAL	ADJ		5	-52,000.00
DECR	FEDERAL	RET		7	-71,500.00
DECR	FEDERAL	TRF	I	6	762,740.00
DECR	FEDERAL	TRF	O	12	-1,529,740.00
H01	CORP	ADD		24	111,677.00
H01	FEDERAL	ADD		24	111,677.00
M02	LOCAL	TRF	I	1	1,649.38
M02	REPORTING	TRF	I	1	1,216.00
M04	CORP	ADD		75	4,361,916.00
M04	CORP	ADJ		2	-260.00
M04	CORP	RCT	I	1	1,167.00
M04	CORP	RCT	O	1	-1,167.00
M04	CORP	RET		12	-1,701,515.00
M04	CORP	TRF	I	2	34,700.00
M04	CORP	TRF	O	3	-35,916.00
M04	FEDERAL	ADD		75	4,361,916.00
M04	FEDERAL	ADJ		2	-260.00
M04	FEDERAL	RCT	I	1	1,167.00
M04	FEDERAL	RCT	O	1	-1,167.00
M04	FEDERAL	RET		13	-1,702,731.00
M04	FEDERAL	TRF	I	2	34,700.00
M04	FEDERAL	TRF	O	2	-34,700.00

## Interoperability Tests and Results

### Depreciation Process Tests

Depreciation calculations for both historical and current assets were run successfully. Depreciation of assets was performed for all assets for all business units and books.

Table 4-6 provides a summary of all assets associated with each business unit, the associated book name, and the value loaded. Table 4-6 was created by selecting the COST query record and initiating a PeopleTools Asset Cost Transaction query.

Table 4-7 shows results of queries related to depreciation processing.

**Table 4-6: Asset Processing: Load of Assets and Costs**

Unit	Book Name	Count Asset ID	Sum Total Cost
DEC	CORP	35	2,886,190.13
DEC	FEDERAL	35	2,886,190.13
DEC1	CORP	20	921,000.00
DEC1	FEDERAL	20	921,000.00
DEC2	CORP	12	115,000.00
DEC2	FEDERAL	12	115,000.00
DEC3	CORP	12	222,453.00
DEC3	FEDERAL	12	222,453.00
DEC4	CORP	17	784,613.98
DEC4	FEDERAL	17	784,613.98
DEC5	CORP	14	846,146.98
DEC5	FEDERAL	14	846,146.98
DEC6	CORP	14	592,000.01
DEC6	FEDERAL	14	592,000.01
DEC7	CORP	14	371,500.02
DEC7	FEDERAL	14	371,500.02
DECR	CORP	257	13,762,444.90
DECR	FEDERAL	257	13,762,444.90
H01	CORP	24	111,677.00
H01	FEDERAL	24	111,677.00
M02	LOCAL	1	1,649.38
M02	REPORTING	1	1,216.00
M04	CORP	96	2,658,925.00
M04	FEDERAL	96	2,658,925.00

Table 4-7 shows the cumulative Year to Date (YTD) depreciation for all assets within each business unit. Table 4-7 was created by selecting the COST query record and initiating a PeopleTools Asset Cost Transaction query.

**Table 4-7: Depreciation Processing**

Unit	Book Name	Row Count	Sum YTD Depr
DEC	CORP	174	1,562.50
DEC	FEDERAL	127	801.28
DEC1	CORP	115	104.17
DEC1	FEDERAL	126	0.00
DEC2	CORP	57	0.00
DEC2	FEDERAL	50	0.00
DEC3	CORP	68	0.00
DEC3	FEDERAL	18	0.00
DEC4	CORP	13	0.00
DEC4	FEDERAL	8	0.00
DEC5	CORP	134	0.00
DEC5	FEDERAL	117	0.00
DEC6	CORP	65	0.00
DEC6	FEDERAL	82	0.00
DEC7	CORP	54	91.67
DEC7	FEDERAL	36	0.00
DECR	CORP	1,898	-1,758.34

DECR	FEDERAL	2,328	-801.28
H01	CORP	284	0.00
H01	FEDERAL	237	0.00
M02	LOCAL	5	937.33
M02	REPORTING	2	-937.33
M04	CORP	321	-937.33
M04	FEDERAL	384	0.00

**Close Processing Tests**

The results of activities to perform General Ledger interface transactions for adding (ADD), transferring (TRF), depreciating (DPR), retiring and reinstating covering assets (RET), adjusting the value of assets (ADJ), Prior Period Depreciation (PDP), and recording lease payments (LPY) are shown in Table 4-8. Table 4-8 was created by selecting the DIST\_LN query record and initiating a PeopleTools AM Accounting Entries query.

**Table 4-8: Asset Manager Feeder to General Ledger**

Unit	Trans Type	Acct	Count Asset ID	Sum Amount
M04	ADD	150000	1	300,000.00
M04	ADD	152000	1	50,000.00
M04	ADD	153000	10	0.00
M04	ADD	154000	23	78,816.00
M04	ADD	155000	22	586,000.00
M04	ADD	156000	13	1,267,100.00
M04	ADD	230000	2	-42,000.00
M04	ADD	674000	54	-2,239,916.00
M04	ADJ	154000	1	-560.00
M04	ADJ	155000	1	300.00
M04	ADJ	674000	2	260.00
M04	DPR	161000	1	-24.31
M04	DPR	162000	8	-6,249.99
M04	DPR	163000	38	-164,226.19
M04	DPR	164000	90	-21,806.81
M04	DPR	165000	96	-58,808.77
M04	DPR	166000	38	-315,099.96
M04	DPR	681100	1	24.31
M04	DPR	681200	8	6,249.99
M04	DPR	681300	38	164,226.19
M04	DPR	681400	90	21,806.81
M04	DPR	681500	96	58,808.77
M04	DPR	681600	38	315,099.96
M04	LPY	230000	11	5,940.86
M04	LPY	670000	11	1,682.02
M04	LPY	674000	22	-7,622.88
M04	PDP	164000	5	-192.41
M04	PDP	166000	1	-69,444.44
M04	PDP	681400	5	192.41
M04	PDP	681600	1	69,444.44
M04	RCT	151000	1	1,167.00
M04	RCT	154000	1	-1,167.00
M04	RCT	161000	1	-899.56
M04	RCT	164000	1	899.56
M04	RET	151000	1	-1,167.00
M04	RET	153000	1	-100,000.00
M04	RET	154000	5	-105,648.00
M04	RET	155000	3	-243,200.00
M04	RET	156000	2	-1,251,500.00
M04	RET	161000	1	923.87
M04	RET	163000	1	30,952.38
M04	RET	164000	3	35,097.68
M04	RET	165000	3	94,127.77
M04	RET	166000	1	1,249,999.99

## Interoperability Tests and Results

M04	RET	230000	2	14,742.50
M04	RET	675100	2	-3,424.21
M04	RET	675200	10	279,095.01
M04	TRF	154000	1	-1,216.00
M04	TRF	155000	4	0.00
M04	TRF	164000	1	937.33
M04	TRF	165000	2	0.00

### Net Book Value Asset Management SQR Report Test

The asset management net book value report is produced to show the status of assets at any point in time. The report is generated using an “As of Date” to allow selected point in time. The net book value report generated during this test is presented in Table 4-9.

The following steps describe how to run the Net Book Value SQR Report:

1. Create and set the operator VP1 as Operator Preference.
  - a) Data Designer Window ➔ Define Business Rules ➔ Define General Options
  - b) Define General Options Window ➔ Use E-P ➔ Operator Preference ➔ Asset Management
2. Create and set a Run Control ID nbvreport as follows:
  - a) Data Designer Window ➔ Manage Assets ➔ Manage Assets
  - b) Select File ➔ Preferences ➔ Edit Run Control
  - c) From Edit Run Control Window, click New
  - d) Set Run location to Server (PSUNX)
  - e) Set output file name (AMDP2110.LIS) and directory
3. Generate the SQR report as follows:
  - a) Manage Assets Window ➔ Report ➔ Asset Net Book Value
  - b) Enter nbvreport as Run Control ID
  - c) Set up the SQR variables as follows:
    - business unit (M04)
    - Book Name (CORP)
    - Department (21200)
    - As of Date (06/30/1997)
  - d) Click Run Control Button to display the Process Request Dialog for the SQR report
4. Set up the Process Scheduler Request on server as follows:
  - a) Click Asset Net Book Value by Catego AMDP2110 SQR Report
  - b) Click OK

5. Check if the SQR report is successfully done using the process monitor.

Manage Asset Window ➡ Start ➡ PeopleTools ➡ Process Monitor

6. The SQR report is written to the file directory that you specified in the Run Control ID setup (AMDP2110.LIS).

The result is an SQR report (Table 4-9) written to the file directory that you specified in the Run Control ID setup (AMDP2110.LIS). This test shows the process scheduler request and SQR were setup and processed successfully by the server.

# Interoperability Tests and Results

**Table 4-9: Net Book Value Report**

Report ID: AMDP2110 **NET BOOK VALUE DETAIL BY CATEGORY** Page No. 1  
 Bus. Unit: M04 -- US1 Manufacturing Run Date 06/19/1997  
 Book: CORP -- Corporate Run Time 23:20:10  
 Category: AUTO -- Automobile As of Date 06/30/1997

Dept/ Prod/ Proj	Asset ID	Description	Cost	Current Deprec	YTD Deprec	LTD Deprec	Net Book Value
21200	C00802	Motorcycle	15,000.00	312.50	312.50	312.50	14,687.50
21200	C00805	Motorcycle	12,500.00	260.42	260.42	260.42	12,239.58
21200	C00808	Motorcycle	11,000.00	229.17	229.17	229.17	10,770.83
21200	C00811	Motorcycle	10,000.00	208.33	208.33	208.33	9,791.67
21200	C01002	Motorcycle	15,000.00	0.00	0.00	0.00	15,000.00
21200	C01005	Motorcycle	12,500.00	0.00	0.00	0.00	12,500.00
21200	C01008	Motorcycle	11,000.00	0.00	0.00	0.00	11,000.00
21200	C01011	Motorcycle	10,000.00	0.00	0.00	0.00	10,000.00
Total for Project ID			97,000.00	1,010.42	1,010.42	1,010.42	95,989.58
Total for Product			97,000.00	1,010.42	1,010.42	1,010.42	95,989.58
Total for Department 21200			97,000.00	1,010.42	1,010.42	1,010.42	95,989.58
Total for AUTO			97,000.00	1,010.42	1,010.42	1,010.42	95,989.58

Report ID: AMDP2110 **NET BOOK VALUE DETAIL BY CATEGORY** Page No. 2  
 Bus. Unit: M04 -- US1 Manufacturing Run Date 06/19/1997  
 Book: CORP -- Corporate Run Time 23:20:10  
 Category: OFFCE -- Office Equipment As of Date 06/30/1997

Dept/ Prod/ Proj	Asset ID	Description	Cost	Current Deprec	YTD Dprec	LTD Deprec	Net Book Value
21200	C00801	Computer	3,500.00	0.00	0.00	0.00	3,500.00
21200	C00804	Computer	3,000.00	0.00	0.00	0.00	3,000.00
21200	C00807	Computer	5,500.00	0.00	0.00	0.00	5,500.00
21200	C00810	Computer	3,800.00	0.00	0.00	0.00	3,800.00
21200	C01001	Computer	3,500.00	0.00	0.00	0.00	3,500.00
21200	C01004	Computer	3,000.00	0.00	0.00	0.00	3,000.00
21200	C01007	Computer	5,500.00	0.00	0.00	0.00	5,500.00
21200	C01010	Computer	3,800.00	0.00	0.00	0.00	3,800.00
Total for Project ID			31,600.00	0.00	0.00	0.00	31,600.00
Total for Product			31,600.00	0.00	0.00	0.00	31,600.00
Total for Department 21200			31,600.00	0.00	0.00	0.00	31,600.00
Total for OFFCE			31,600.00	0.00	0.00	0.00	31,600.00

Report ID: AMDP2110 **NET BOOK VALUE DETAIL BY CATEGORY** Page No. 3  
 Bus. Unit: M04 -- US1 Manufacturing Run Date 06/19/1997  
 Book: CORP -- Corporate Run Time 23:20:11  
 Category: SOFT -- Software As of Date 06/30/1997

Dept/ Prod/ Proj	Asset ID	Description	Cost	Current Deprec	YTD Deprec	LTD Deprec	Net Book Value
21200	C00800	Software	1,500.00	0.00	0.00	0.00	1,500.00
21200	C00803	Software	500.00	0.00	0.00	0.00	500.00
21200	C00806	Software	1,200.00	0.00	0.00	0.00	1,200.00
21200	C00809	Software	2,500.00	0.00	0.00	0.00	2,500.00
21200	C01000	Software	1,500.00	0.00	0.00	0.00	1,500.00
21200	C01003	Software	500.00	0.00	0.00	0.00	500.00
21200	C01006	Software	1,200.00	0.00	0.00	0.00	1,200.00
21200	C01009	Software	2,500.00	0.00	0.00	0.00	2,500.00
Total for Project ID			11,400.00	0.00	0.00	0.00	11,400.00
Total for Product			11,400.00	0.00	0.00	0.00	11,400.00
Total for Department 21200			11,400.00	0.00	0.00	0.00	11,400.00
Total for SOFT			11,400.00	0.00	0.00	0.00	11,400.00
Total for Book ID CORP			140,000.00	1,010.42	1,010.42	1,010.42	138,989.58
Total for Report			140,000.00	1,010.42	1,010.42	1,010.42	138,989.58



### Tax Depreciation Report Test

The tax depreciation report is generated for tax purposes as part of the month, quarter, or year-end closing process. The results obtained when generating the tax depreciation report is shown in Table 4-10.

The following steps describe how to get the Tax Depreciation SQR Report:

1. Use the operator VP1 as Operator Preference when setting up to create Net Book Value report.
2. Use the Run Control ID nbvreport created from setting up Net Book Value report as follows:
  - a) From Edit Run Control Window, click Edit
  - b) Set Run location to Server (PSUNX)
  - c) Set output file name (AMTX3500.LIS) and directory
3. Generate the SQR (Structure Query Report) report as follows:
  - a) Manage Assets Window ➔ Report ➔ Tax Transaction - U.S.
  - b) Enter nbvreport as Run Control ID
  - c) Set up the SQR variables as follows:
    - Business Unit(M04)
    - Book Name(CORP)
    - Date Range From(06/01/1997) to (06/30/1997)
  - d) Click Run Control Button to display the Process Request Dialog for the SQR report
4. Set up the Process Scheduler Request on server.
  - a) Click Tax Depreciation Report AMTX3500 SQR Report
  - b) Click OK
5. Check if the SQR report is successfully done from the process monitor.
 

Manage Asset Window ➔ Start ➔ PeopleTools ➔ Process Monitor
6. The result is a SQR report written to the file directory that you specified in the Run Control ID setup (AMTX3500.LIS). The resultant report (Table 4-10) demonstrates that the process request and SQR processed successfully.

# Interoperability Tests and Results

**Table 4-10: Tax Depreciation Detail Report**

Report ID: AMTX3500                      **TAX DEPRECIATION DETAIL**                      Page No. 1  
 Bus. Unit: M04 -- US1 Manufacturing                      Run Date 06/19/1997  
 Book: CORP -- Corporate                      Run Time 23:28:09  
 Dept: --                      From Date 06/01/1997                      Thru Date 06/30/1997

Asset ID	Description	Rec Life	Est Life	Meth/ Sched	In-Service Date	Sec 179 Exp	Basis for Reduct	Basis for Deprec	Deprec Deduct
00000067	Ford Mustang 1995	0	60	SL-FM	11/19/1995	0.00	0.00	18,300.00	269.29
00000068	Harley-Davidson	0	48	SL-AM	11/07/1995	0.00	0.00	0.00	-0.00
00000069	Workstation1	0	36	SY-HY	08/09/1995	0.00	0.00	940.00	-28.69
00000070	Workstation2	0	36	SY-HY	08/09/1995	0.00	0.00	0.00	-0.00
00000071	Workstation3	0	36	SY-HY	08/09/1995	0.00	0.00	0.00	24.31
00000072	17" Color Monitor	0	36	SY-HY	08/09/1995	0.00	0.00	0.00	7.29
00000074	External Harddrive	0	36	SY-HY	08/09/1995	0.00	0.00	385.00	8.02
00000075	Mustang	0	60	SL-FM	01/01/1995	0.00	0.00	23,800.00	440.74
00000076	Forklift	0	120	SL-MM	02/14/1995	0.00	0.00	50,000.00	416.67
00000077	Trailer Truck	0	60	SL-FM	03/05/1995	0.00	0.00	120,000.00	2,000.00
00000078	Lab Tables	0	84	SL-FM	04/16/1995	0.00	0.00	0.00	1,190.48
00000079	Mfg Software	0	24	SY-HY	08/09/1995	0.00	0.00	0.00	34,722.22
00000080	Conveyor Belt	0	120	SL-MM	05/20/1995	0.00	0.00	0.00	-312.50
00000081	Semi-Truck	0	60	SL-FM	08/09/1995	0.00	0.00	0.00	3,583.33
00000082	Cubicles	0	84	SL-FM	06/03/1995	0.00	0.00	250,000.00	2,976.19
Total for In Service Fiscal Year 19 95						0.00	0.00	463,425.00	45,297.35
00000083	Warehouse Land	0	0	SL-AM	03/01/1995	0.00	0.00	300,000.00	0.00
Total for In Service Fiscal Year 0						0.00	0.00	300,000.00	0.00
00000084	Mrbl Conf Tbl	0	84	SL-FM	08/09/1995	0.00	0.00	35,000.00	416.67
00000085	Painting	0	84	SL-FM	08/09/1995	0.00	0.00	500,000.00	5,952.38
00000086	Sculpture	0	84	SL-FM	08/09/1995	0.00	0.00	1,000,000.00	11,904.76
00000087	Built in shelving	0	60	SL-MM	08/09/1995	0.00	0.00	50,000.00	833.33
00000088	Copy Machine	0	36	SY-AM	06/01/1995	0.00	0.00	0.00	-0.00
00000089	Ford Taurus	0	36	SL-FM	07/01/1995	0.00	0.00	0.00	472.22
00000090	Desktop System	0	36	SY-HY	08/09/1995	0.00	0.00	0.00	0.00
Total for In Service Fiscal Year 1995						0.00	0.00	1,585,000.00	19,579.36
00000098	Automobile	0	60	SL-FM	06/12/1997	0.00	0.00	15,000.00	0.00
00000099	Table	0	60	SL-FM	06/13/1997	0.00	0.00	15,000.00	0.00
00000100	Chairs	0	60	SL-FM	06/13/1997	0.00	0.00	5,500.00	0.00
C00001	Software	0	24	SY-HY	06/12/1997	0.00	0.00	0.00	0.00
C00002	Computer	0	36	SY-HY	06/12/1997	0.00	0.00	0.00	0.00
C00003	Motorcycle	0	48	SL-AM	06/12/1997	0.00	0.00	15,000.00	312.50
C00004	Software	0	24	SY-HY	06/12/1997	0.00	0.00	500.00	0.00
C00005	Computer	0	36	SY-HY	06/12/1997	0.00	0.00	3,000.00	0.00
C00006	Motorcycle	0	48	SL-AM	06/12/1997	0.00	0.00	12,500.00	260.42
C00007	Software	0	24	SY-HY	06/12/1997	0.00	0.00	1,200.00	0.00
C00008	Computer	0	36	SY-HY	06/12/1997	0.00	0.00	5,500.00	0.00

Report ID: AMTX3500                      **TAX DEPRECIATION DETAIL**                      Page No. 2  
 Bus. Unit: M04 -- US1 Manufacturing                      Run Date 06/19/1997  
 Book: CORP -- Corporate                      Run Time 23:28:09  
 Dept: --                      From Date 06/01/1997                      Thru Date 06/30/1997

Asset ID	Description	Rec Life	Est Life	Meth/ Sched	In-Service Date	Sec 179 Exp	Basis for Reduct	Basis for Deprec	Deprec Deduct
C00009	Motorcycle	0	48	SL-AM	06/12/1997	0.00	0.00	11,000.00	229.17
C00010	Software	0	24	SY-HY	06/12/1997	0.00	0.00	2,500.00	0.00
C00011	Computer	0	36	SY-HY	06/12/1997	0.00	0.00	3,800.00	0.00
C00012	Motorcycle	0	48	SL-AM	06/12/1997	0.00	0.00	10,000.00	208.33
C00800	Software	0	24	SY-HY	06/18/1997	0.00	0.00	1,500.00	0.00
C00801	Computer	0	36	SY-HY	06/18/1997	0.00	0.00	3,500.00	0.00
C00802	Motorcycle	0	48	SL-AM	06/18/1997	0.00	0.00	15,000.00	312.50
C00803	Software	0	24	SY-HY	06/18/1997	0.00	0.00	500.00	0.00

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C00804	Computer	0	36	SY-HY	06/18/1997	0.00	0.00	3,000.00	0.00	
C00805	Motorcycle	0	48	SL-AM	06/18/1997	0.00	0.00	12,500.00	260.42	
C00806	Software	0	24	SY-HY	06/18/1997	0.00	0.00	1,200.00	0.00	
C00807	Computer	0	36	SY-HY	06/18/1997	0.00	0.00	5,500.00	0.00	
C00808	Motorcycle	0	48	SL-AM	06/18/1997	0.00	0.00	11,000.00	229.17	
C00809	Software	0	24	SY-HY	06/18/1997	0.00	0.00	2,500.00	0.00	
C00810	Computer	0	36	SY-HY	06/18/1997	0.00	0.00	3,800.00	0.00	
C00811	Motorcycle	0	48	SL-AM	06/18/1997	0.00	0.00	10,000.00	208.33	
C00900	Software	0	24	SY-HY	06/18/1997	0.00	0.00	1,500.00	0.00	
C00901	Computer	0	36	SY-HY	06/18/1997	0.00	0.00	3,500.00	0.00	
C00902	Motorcycle	0	48	SL-AM	06/18/1997	0.00	0.00	15,000.00	312.50	
C00903	Software	0	24	SY-HY	06/18/1997	0.00	0.00	500.00	0.00	
C00904	Computer	0	36	SY-HY	06/18/1997	0.00	0.00	3,000.00	0.00	
C00905	Motorcycle	0	48	SL-AM	06/18/1997	0.00	0.00	12,500.00	260.42	
C00906	Software	0	24	SY-HY	06/18/1997	0.00	0.00	1,200.00	0.00	
C00907	Computer	0	36	SY-HY	06/18/1997	0.00	0.00	5,500.00	0.00	
C00908	Motorcycle	0	48	SL-AM	06/18/1997	0.00	0.00	11,000.00	229.17	
C00909	Software	0	24	SY-HY	06/18/1997	0.00	0.00	2,500.00	0.00	
C00910	Computer	0	36	SY-HY	06/18/1997	0.00	0.00	3,800.00	0.00	
C00911	Motorcycle	0	48	SL-AM	06/18/1997	0.00	0.00	10,000.00	208.33	
Total for In Service Fiscal Year 1997							0.00	0.00	240,500.00	3,031.25
C01000	Software	0	24	SY-HY	06/19/1997	0.00	0.00	1,500.00	0.00	
C01001	Computer	0	36	SY-HY	06/19/1997	0.00	0.00	3,500.00	0.00	
C01002	Motorcycle	0	48	SL-AM	06/19/1997	0.00	0.00	15,000.00	0.00	
C01003	Software	0	24	SY-HY	06/19/1997	0.00	0.00	500.00	0.00	
C01004	Computer	0	36	SY-HY	06/19/1997	0.00	0.00	3,000.00	0.00	
C01005	Motorcycle	0	48	SL-AM	06/19/1997	0.00	0.00	12,500.00	0.00	
C01006	Software	0	24	SY-HY	06/19/1997	0.00	0.00	1,200.00	0.00	
C01007	Computer	0	36	SY-HY	06/19/1997	0.00	0.00	5,500.00	0.00	
C01008	Motorcycle	0	48	SL-AM	06/19/1997	0.00	0.00	11,000.00	0.00	
C01009	Software	0	24	SY-HY	06/19/1997	0.00	0.00	2,500.00	0.00	
C01010	Computer	0	36	SY-HY	06/19/1997	0.00	0.00	3,800.00	0.00	
C01011	Motorcycle	0	48	SL-AM	06/19/1997	0.00	0.00	10,000.00	0.00	

Report ID: AMTX3500 TAX DEPRECIATION DETAIL Page No. 3  
 Bus. Unit: M04 -- US1 Manufacturing Run Date 06/19/1997  
 Book: CORP -- Corporate Run Time 23:31:39  
 Dept: -- From Date 06/01/1997 Thru Date 06/30/1997

Asset ID	Description	Rec Life	Est Meth/ Life Sched	In-Service Date	Sec 179 Exp	Basis for Reduct	Basis for Deprec	Deprec Deduct
	MACRS GDS =		0.00					
	MACRS ADS =		0.00					
	ACRS GDS =		0.00					
	ACRS ADS =		0.00					
	other/Sec168 =		67,907.97					
	Total for In Service Fiscal Year	0			0.00	0.00	70,000.00	0.00
	Total for Regulation				0.00	0.00	2,658,925.00	67,907.97
	Total for Book ID CORP				0.00	0.00	2,658,925.00	67,907.97
	Total for Report				0.00	0.00	2,658,925.00	67,907.97

### PeopleSoft Accounts Payable

The PeopleSoft Accounts Payable includes maintaining vendor information, entering vouchers and scheduling them for payments, approving and matching vouchers, defining, scheduling and forecasting payments. It integrates easily with Purchasing and GL. The payable journal can create journal entries directory to the related GL tables. Multiple payables business unit can be rolled up into a single GL business unit.

Table 4-11 summarizes the PeopleSoft Accounts Payable structure and provides general comments regarding test results. The Process column lists the overall operational categories of Accounts Payable. The Function column specifies the functional entities within each process. The Task column defines the actual work to be performed within each Function. The Comments column provides notes regarding test performance of the associated task in this HiTest Suite.

**Table 4-11: Accounts Payable Process Test Summary**

<b>Process</b>	<b>Function</b>	<b>Task</b>	<b>Comment</b>
<b>Journal Generator</b>	Define Journal Generator	Define Journal Source	Done
		Define Journal Generator Template	Done
		Define Accounting Entry Definition	Done
<b>Accounting Entries</b>	Define Accounting Entry Template	Define Accounting Entry Template	Done
<b>Tax Structure</b>	Define VAT Tax	Define VAT Transaction Code	Done
		Define VAT Authority	Done
<b>Processing Setup</b>	Payment Processing	Define Payment Terms Codes	Done
<b>Banking Environment Setup</b>	Define Banking Environment	Define Business Calendar	Done
		Define Bank Locations	Done
		Bank Accts Information & Contacts	Done
		Bank Account Reconciliation	Done
		Account Information	Done
		Define Bank Payment Methods	Done
<b>Payables</b>	Define AP	Define Payables Business Unit 1&2	Done
<b>Business Unit Def</b>	Business unit	Define Payables Accounting & Vouchering Options	Done
		Define Payables Payment Options	Done
		Define Payables Vat Options 1 & 2	Done
<b>Miscellaneous</b>	Miscellaneous	Define Contract Set Control	Done
<b>Tables</b>	Tables Setup	Define Vendor Set Controls	Done
		Define Vouchering Origins	Done
		Define Vendor Pay Group Codes	Done
		Test Vendor Numbering	Done
		Test Vendor Pay Groups	Done
	Voucher Inquiry	Test Voucher Inquiry	Done
<b>Vendors</b>	Setup Vendors	All Vendor Identifying Information	Done
		All Vendor Contracts	Done
<b>Voucher Processing</b>	Test Voucher processing	Add vouchers w/various pymt terms	Done
		Test Correcting Voucher	Done
		Test Deleting Voucher	Done
		Test Voucher Balancing	Done
		Test Voucher Numbering	Done
		Test Duplicate Invoice Checking	Done

Table 4-12 shows the overall results of the Accounts Payable test process. Table 4-12 was created using the results of the following three queries:

- Query 1 – Selecting the VENDOR query record and initiating a AP Vendor Header Table PeopleTools query.
- Query 2 – Selecting the VOUCHER query record and initiating a PeopleTools AP Voucher Header Table query.
- Query 3 – Selecting the PAYMENT\_TBL query record and initiating a PeopleTools AP Disbursements query.

**Table 4-12: Accounts Payable Database Statistics**

Query 1		Query 2		Query 3			
Set ID	Count Vendor ID	Unit	Count Voucher	Set ID	Count Pymt	Count Ref	Pymt Amt
DEC	6	DEC	16	MFG	2	2	100.00
DEC1	3	DECR	45	MFG	1	1	426.94
DECR	46	H01	6	MFG	1	1	16,309.31
HC	29	M02	1	MFG	1	1	23,192.60
MFG	36	M04A	59	MFG	1	1	42,591.37
		M60	2	MFG	1	1	64,375.27
		M64	1	MFG	1	1	96,091.41
				MFG	1	1	254,329.77
				MFG	1	1	478,681.53
				MFG	1	1	2,500,748.32
				MFG	1	1	5,780,025.00

### PeopleSoft Accounts Receivable

The PeopleSoft Accounts Receivable includes extensive customer management capabilities to track credit limits, risk classifications, disputes, and collection status. These features allow the organizations to monitor credit information, deductions, prepayments and write-offs.

The functions that would normally be performed in Accounts Receivable were tested to demonstrate that these processes performed as expected in this HiTest Suite. Table 4-13 summarizes the PeopleSoft Accounts Receivable structure and provides general comments regarding test results. The Process column lists the overall operational categories of Accounts Receivables and the Function column specifies the functional entities within each process. The Task column defines the actual work to be performed within each Function and the Comments column provides notes regarding test performance of the associated task in this DIGITAL HiTest Suite.

**Table 4-13: Accounts Receivables Process Testing**

Process	Function	Task	Comments
<b>Accounts Receivables Control Tables Setup</b>	Define AR Control	Define Subcustomer Qualifier 1	Completed
		Define Subcustomer Qualifier 2	Completed
		Define Dispute Status Codes	Completed
		Define Collection Status Codes	Completed
		Define Aging Specifications	Completed
		Define Payment Terms Timing	Completed
		Define Payment Terms	Completed
		Define Reference Qualifier Code	Completed
		Define Business Unit Options	Completed
<b>Customer Maintenance</b>	Customer Add	Add Customer	Completed
		Add Customer Contacts	Completed
	Customer Credit information	Define Customer Credit Profile	Completed
	Customer Correspondence	Define Bill To Customers	Completed
		Define Ship To Customers	Completed
		Define Correspondence customers	Completed
		Define Corporate Customers	Completed
		Define Remit From Customers	Completed
<b>Item Processing Setup</b>	Item Tables Definition	Define Group Type	Completed
		Define Origin ID	Completed
		Define Distribution Codes	Completed
		Define System Functions	Completed
		Define Entry Types	Completed
		Define Entry Reasons	Completed
		Define Item Entry Type	Completed

Table 4-14 shows the accounts receivable database statistics. Table 4-14 was created using the results of three queries:

- Query 1 – Selecting the CUSTOMER query record and initiating the AR Customer Header Information PeopleTools query.
- Query 2 – Selecting the CUST\_DATA query record and initiating a PeopleTools AR Customer/Info/Balances query.
- Query 3 – Selecting the ITEM query record and initiating a PeopleTools AR Customer Items query.

**Table 4-14: Accounts Receivable Database Statistics**

Query 1		Query 2		Query 3		
Set ID	Count Customer ID	Unit	Count Payment Amount	Unit	Count Item ID	Sum Customer Balance
HC	27	M02	5	M02	24	208,196,949.12
MFG	38	M04	16	M04	192	761,309,473.28
		M05	2	M05	6	98,665.59
		M30	2	M30	15	344,323,191.00
		M60	5	M60	54	689,309,322.96
		M64	3	M64	20	123,723,008.89

### PeopleSoft General Ledger (GL)

The PeopleSoft General Ledger can enter journals online or in batch to maintain a flexible chart of accounts and many ledgers, effective-data financial information. It provides outstanding financial reporting and report summarization by using PeopleSoft trees. The GL supports open item and interunit accounting, allocations for flexible distribution of expense, multiple currencies, average daily balance calculations, consolidations to combine information of multiple financial entities. It also maintains budgets and year-end close processing. GL is the foundation of all the financial modules.

The PeopleSoft General Ledger tests verified the business processes function as expected in this HiTest Template. Table 4-15 lists the Process, Function, Task, and test engineer comments regarding the general ledger test performed. The Process column lists the overall operational categories of General Ledger and the Function column specifies the functional entities within each process. The Task column defines the actual work to be performed within each Function and the Comments column provides notes regarding test performance of the associated task in this HiTest Suite.

**Table 4-15: General Ledger Test Summary**

Process	Function	Task	Comments
<b>Business Rules Definition</b>	Define General Options	Establish Account Types	Done, created five (A,L,Q,R,X)
		Create Journal Sources	Done, created seven all in same script (am,pay,man,ar,ap,dpr,pdp)
<b>General Ledger Defined</b>	Define Business Units	Add Business Units to G/L	Done, created eight (changed script 8 different times: DEC, DEC1-DEC7)
	Define Chartfield Values	Add G/L Accounts	Done, created 12 accounts in DEC-DEC7 & DECR
		Establish Statistical Codes	Done. Created four codes, (asp,std,avc,day) for BU's DEC-DEC7 & DECR
<b>Journal Processing</b>	Create Online Journal Entries	Add Express Journals	Done. However, there are COBOL limitations. Can only edit journals via "Process Journal Edit" request function. The icon to edit journals within the journal entry does not work; get COBOL program error message. The icon to post journals also derives the same error message.

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		Add Interunit Journals	Done. However, same COBOL limitations as mentioned previously. Cannot retrieve journal entry in business unit that the journal was NOT created in. (Need to establish interunit account numbers and link them to the corresponding business unit.)
		Copy a Journal Entry	Done. However, can only copy to same BU that original was created in. Process is slow. Script contains, "Delayfor" command for Process Monitor. Need to use the ROBOT process scheduler wait logic in ROBOT; however, logic is not recognized in ROBOT.
	Batch Processing	Batch Edit Journals	Successfully runs on Server.
		Batch Post Journals	Done. However, did not post all selected criteria due to problems with data control setup.
<b>Financial Inquiries</b>	Ledger & Account Inquiries	View Ledger and Account Detail and Drill Down to Journal Lines	Successful. Performed two separate inquiries. Criteria included:  Business Unit M04 for period 1 thru 1 in 1996 on the "actuals" ledger for account # 610000 department id 53100 and also inquired down to the journal line level.  Business Unit M04 for period 9 thru 9 for 1996 on the "actuals" ledger for account #100106 and also inquired down to the journal line level.
	Journal Inquire	View Journal Info	Successful.
	Run G/L Detail	Execute G/L Detail to run on Server	Process scheduler problems.
		Execute G/L Detail on Client	Successful. Sends detail to a file. File can then be viewed in Excel. (A separate script was created to parse data and view data in Excel, GLDVIEW.)
	PS QUERY	Create query and run G/L Detail	Done. Script creates query and also executes. Have to use criteria box to create query. Robot does not like the short cut option when selecting criteria.
	PSNVISION (No Excel link: Need to open Excel first. )	Run Reports	The "Run Reports" option for both Balance Sheet and Income Statement does not work due to Error in "Tree Account Roll Up" structure. When this error is corrected, reports should run correctly.
		View Reports	Unsuccessful for both View Balance Sheet and View Income Statement options. In both cases, NVISION cannot locate or find certain files or directories which enables these reports to run.
		Open Reports	Unsuccessful. Can find reports and report names; however, still encounter "Tree Account Roll Up" problems.



Table 4-16 shows General Ledger database statistics. Table 4-16 was created by selecting the JRNL\_LN query record and initiating the GL Journal Line Data PeopleTools query. This table shows the data from 10 business units with a journal line row count of over 470,000.

**Table 4-16: General Ledger Database Statistics**

Unit	Count Journal
F01	290
H01	2,234
M02	2,192
M04	462,944
M05	28
M30	2,051
M60	2,056
M61	36
M64	2,052
MFG	63

**General Ledger Journal Processing**

The results of a detailed Journal entry query to one business unit is shown in Table 4-17. Table 4-17 was created by selecting the JRNL\_HEADER query record and initiating the GL Journal Line Header Data PeopleTools query.

**Table 4-17: General Ledger Journal Entries Detail**

Unit	Journal	Year	Per	Ledger Grp	Description	Debits	Credits
F01	0000005194	0	0	ACTUALS		0.00	50.00
F01	0000005200	0	0	ACTUALS		2,500.00	550.87
F01	0000005201	0	0	ACTUALS		2,500.00	550.87
F01	0000005207	0	0	ACTUALS		2,500.00	550.87
F01	0000005208	0	0	ACTUALS		2,500.00	550.87
F01	000005194A	1997	6	ACTUALS		0.00	50.00
F01	000005194B	1997	6	ACTUALS		0.00	50.00
F01	000005194C	1997	6	ACTUALS		0.00	50.00
F01	000005194D	1997	6	ACTUALS		0.00	50.00
F01	000005194E	1997	6	ACTUALS		0.00	50.00
F01	000005194F	1997	6	ACTUALS		0.00	50.00
F01	000005194G	1997	6	ACTUALS		0.00	50.00
F01	ADBLOAD	1995	1	ACTUALS	ADB Load: 1-8/95	280,000.00	280,000.00
F01	ADBLOAD	1995	2	ACTUALS	ADB Load: 1-8/95	280,000.00	280,000.00
F01	ADBLOAD	1995	3	ACTUALS	ADB Load: 1-8/95	280,000.00	280,000.00
F01	ADBLOAD	1995	4	ACTUALS	ADB Load: 1-8/95 1/95 - 8/95	280,000.00	280,000.00
F01	ADBLOAD	1995	5	ACTUALS	ADB Load: 1-8/95 1/95 - 8/95	280,000.00	280,000.00
F01	ADBLOAD	1995	6	ACTUALS	ADB Load: 1-8/95	280,000.00	280,000.00

## Interoperability Tests and Results

					1/95 - 8/95		
F01	ADBLOAD	1995	7	ACTUALS	ADB Load: 1-8/95 1/95 - 8/95	280,000.00	280,000.00
F01	ADBLOAD	1995	8	ACTUALS	ADB Load: 1-8/95 1/95 - 8/95	280,000.00	280,000.00
F01	950930LOAD	1995	9	ACTUALS	Load Sept Bal for A	3,470,000.00	3,470,000.00
F01	950930LOD2	1995	9	ACTUALS	Load beg. Bal (BS)	3,540,000.00	3,540,000.00
F01	951031LOAD	1995	10	ACTUALS	Load Oct activ ADB	508,000.00	508,000.00
F01	951031LOD2	1995	10	ACTUALS	Load Oct activ ADB	280,000.00	280,000.00
F01	951130LOAD	1995	11	ACTUALS	Load Nov activ ADB	405,500.00	405,500.00
F01	951130LOD2	1995	11	ACTUALS	Load Nov activ ADB	344,000.00	344,000.00
F01	951231LOAD	1995	12	ACTUALS	Load Dec activ AD	574,500.00	575,500.00
F01	951231LOD2	1995	12	ACTUALS	Load Dec activ ADB	273,000.00	273,000.00
	950930LOAD	1995	9	ACTUALS	Load Sep bal A	3,470,000.00	3,470,000.00
F01	951031LOAD	1995	10	ACTUALS	Load Oct activ ADB	508,000.00	508,000.00
F01	951130LOAD	1995	11	ACTUALS	Load Nov activ ADB	405,500.00	405,500.00
F01	951231LOAD	1995	12	ACTUALS	Load Dec activ AD	575,500.00	574,500.00

### Financial Inquiries to General Ledger: Single Business Unit

General Ledger financial inquiries were made to gather journal entry details for a single business unit. The results of the queries are detailed in Table 4-18. Table 4-18 was created by selecting the LEDGER\_ADB query record and initiating the GL ADB (Average Daily Balance) Ledger Data PeopleTools query.

**Table 4-18: General Ledger FO1 Balances**

Unit	Ledger	Count Acct	Total Amt
F01	ACTUALS	1	-1,300,000.00
F01	ACTUALS	1	-240,000.00
F01	ACTUALS	1	-200,000.00
F01	ACTUALS	1	-100,000.00
F01	ACTUALS	1	-55,000.00
F01	ACTUALS	1	35,000.00
F01	ACTUALS	1	65,000.00
F01	ACTUALS	1	100,000.00
F01	ACTUALS	1	150,000.00
F01	ACTUALS	1	135,000.00
F01	ACTUALS	1	1,000,000.00
F01	ACTUALS	1	350,000.00
F01	ACTUALS	1	200,000.00
F01	ACTUALS	1	95,000.00
F01	ACTUALS	1	55,000.00
F01	ACTUALS	1	30,000.00
F01	ACTUALS	1	-35,000.00
F01	ACTUALS	1	-150,000.00
F01	ACTUALS	2	-65,000.00
F01	ACTUALS	2	-9,000.00

F01	ACTUALS	2	70,000.00
F01	ACTUALS	2	12,000.00
F01	ACTUALS	2	9,000.00
F01	ACTUALS	2	-15,000.00
F01	ACTUALS	2	-10,000.00
F01	ACTUALS	2	-12,000.00
F01	ACTUALS	6	0.00
F01	ACTUALS	9	-110,000.00
F01	ACTUALS	9	120,000.00
F01	ACTUALS	10	-20,000.00
F01	ACTUALS	10	10,000.00
F01	ACTUALS	10	40,000.00
F01	ACTUALS	12	-40,000.00
F01	ACTUALS	18	5,000.00
F01	ACTUALS	19	-5,000.00

**Financial Inquiries to General Ledger: All Business Units**

General Ledger financial inquiries were made to gather journal entry details for nine business business units from both ACTUALS and REPORTS ledger with row count over 270,000 accounts. The results of the queries are detailed in Table 4-19. Table 4-19 was created by selecting the LEDGER query record and initiating the GL Ledger Data PeopleTools query.

**Table 4-19: General Ledger Database Query Results for all Business Units**

Unit	Ledger	Count Acct	Sum Total Amt
F01	ACTUALS	139	0.00
H01	ACTUALS	2,041	514,044.90
M02	ACTUALS	1,961	129,927.00
M02	REPORTS	286	0.00
M04	ACTUALS	265,000	1,893,884,307.34
M04	REPORTS	4,337	21.00
M05	ACTUALS	26	124,400.00
M05	REPORTS	913	0.00
M30	ACTUALS	1,824	0.00
M30	REPORTS	410	0.00
M60	ACTUALS	1,825	0.00
M60	REPORTS	410	0.00
M61	ACTUALS	18	0.00
M61	REPORTS	18	0.00
M64	ACTUALS	1,824	0.00
M64	REPORTS	410	0.00

### Failover Test Process and Results

The TruCluster Available Server software will detect and respond to the following failure events:

- Member node failure (host down)
- Critical SCSI path failure
- Device failure
- Network interface failure
- Network partition failure (Two Available Server Environment member nodes cannot communicate with each other over the cluster interconnect.)

A service can be automatically relocated by ASE if a failure stops a member system from providing the service. Use asemgr menu to manually use the user-defined service 'failover' to make sure that ASEMGR can relocate the service 'failover' between the original node (depot4) and the surviving node (depot5). This stops the service on the member (depot4) currently running the service and starts the service on the member (depot5) you selected. You can override the service's placement policy by selecting a member to run the service.

### Manual Test of Failover Using ASEMGR

The procedure for executing failover and obtaining test results is as follows:

1. Use the following asemgr menu to define service 'failover' to make sure that ASEMGR can relocate the failover between the two member nodes.

Managing ASE Services

```

c) Service Configuration    -->
r) Relocate a service
on) Set a service on line
off) Set a service off line
res) Restart a service
s) Display the status of a service
a) Advanced Utilities      -->
x) Exit to the Main Menu           ?) Help
```

Enter your choice [x]: r

Select the service you want to relocate

Services:

```

1) failover on depot4
x) Exit to Managing ASE Services    ?) Help
```

Enter your choice [x]: 1

Select member to run 'failover' service:

```

) depot4
2) depot5
x) Exit without making changes     ?) Help
```

Enter your choice: 2

Relocating service `failover` to member `depot5`...

Relocation successful.

Managing ASE Services

- c) Service Configuration -->
- r) Relocate a service
- on) Set a service on line
- off) Set a service off line
- res) Restart a service
- s) Display the status of a service
- a) Advanced Utilities -->
- x) Exit to the Main Menu ?) Help

Enter your choice [x]: r

Select the service you want to relocate Services:

- 1) failover on depot4
- x) Exit to Managing ASE Services ?) Help

Enter your choice [x]: 1

Select member to run 'failover' service:

- ) depot4
- 2) depot5
- x) Exit without making changes ?) Help

Enter your choice: 2

Relocating service `failover` to member `depot5`...

Relocation successful.

Managing ASE Services

- c) Service Configuration -->
- r) Relocate a service
- on) Set a service on line
- off) Set a service off line
- res) Restart a service
- s) Display the status of a service
- a) Advanced Utilities -->
- x) Exit to the Main Menu ?) Help

Enter your choice [x]: r

Select the service you want to relocate

Services:

- 1) failover on depot5
- x) Exit to Managing ASE Services ?) Help

Enter your choice [x]: 1

## Interoperability Tests and Results

Select member to run 'failover' service:

- 1) depot4
- ) depot5
- x) Exit without making changes      ?) Help

Enter your choice: 1

Relocating service `failover` to member `depot4`...

Relocation successful.

2. Using asemgr, make sure that 'failover' can be set online, offline, and restart on both member nodes.

Managing ASE Services

- c) Service Configuration      -->
- r) Relocate a service
- on) Set a service on line
- off) Set a service off line
- res) Restart a service
- s) Display the status of a service
- a) Advanced Utilities      -->
- x) Exit to the Main Menu      ?) Help

Enter your choice [x]: off

Select the service you want to set off line:

- 1) failover on depot4
- x) Exit to previous menu      ?) Help

Enter your choice [x]: 1

Setting service `failover` offline - Off line successful.

Managing ASE Services

- c) Service Configuration      -->
- r) Relocate a service
- on) Set a service on line
- off) Set a service off line
- res) Restart a service
- s) Display the status of a service
- a) Advanced Utilities      -->
- x) Exit to the Main Menu      ?) Help

Enter your choice [x]: on

Select the service you want to set on line:

- 1) failover - OFFLINE
- x) Exit to previous menu      ?) Help

Enter your choice [x]: 1

Setting service `failover` online - On line successful.

Managing ASE Services

```

c) Service Configuration    -->
r) Relocate a service
on) Set a service on line
off) Set a service off line
res) Restart a service
s) Display the status of a service
a) Advanced Utilities      -->
x) Exit to the Main Menu           ?) Help

```

Enter your choice [x]: res

Select the service you want to restart:

```

1) failover on depot4
x) Exit to previous menu           ?) Help

```

Enter your choice [x]: 1

Stopping service...

Starting service...

Restarting service `failover` - restart successful.

- Using the `df` command to obtain the following information presentations, verify that `/oracle` and `/fs600` are mounted, Oracle Software is running, and the process scheduler is running.

Filesystem	512-blocks Used	Available	Capacity	Mounted
/dev/rz40a	253278	74962	52988	77% /
/proc	0	0	0	100% /proc
/dev/rz40b	5836378	003204	4249536	20% /usr
/dev/rz41c	8123912	5036150	2275370	69% /var
/dev/rz42c	8123912	2457730	4853790	34% /fs501
/dev/rzc8c	48732428	16678970	27180214	39% /backup
/dev/rzb18c	8123912	1827520	5484000	25% /oracle
/dev/rzb17c	8123912	5289632	2021888	73% /fs600

- Execute the `ps ax/grep ora` command to verify that Oracle software is running:  
The `cd $PS_HOME/bin` command shows the following display that verifies that the Process scheduler is running:

```

./pspt -status
PeopleSoft pspt Started
oracle 4411  1 7.7 13:08:56 ttypl  0:00.86 PSRUN PTPUPRCS
Scheduler daemon is running.

```

## Failover Test Results for Hardware Failures

The following hardware failures were tested and the results are explained in the following paragraphs:

- Routine shutdown of the member node that the service was running on
- Power failure of one member node

## Interoperability Tests and Results

- Machine halt on one member node
- Disconnection of network connections on one member node
- Hotswapping of a single disk

The TruCluster Available Server and 'failover' user-defined scripts performed without problems in all cases.

During the Disk hotswap test, one member of a four-member RAIDset was pulled out. The RAIDset automatically pulled in a spare disk and rebuilt it.

Failover is not instantaneous, it takes time for other nodes to recognize that the node providing this service has failed. In the case of power down or system reboot, it happens quickly. In the case of a network connection failure it takes longer. There is also the inherent delay in starting the PeopleSoft Process scheduler being failed over.

There are limitations to failover and availability. The system keeps running only if you have levels of redundancy greater than or equal to the number of failures. For example, if two nodes crash simultaneously, then the service becomes unavailable.

Testing of critical SCSI path failures, device I/O failures, and network interface failures to create Alert scripts to notify the ASE administrator will be provided in the future.

### Failover Test Results for PeopleSoft Clients and Oracle7 Server

After the favor member (depot4) failed, the surviving node (depot5) would restart the Oracle database and PeopleSoft application. After the successful failover, the only change the PeopleSoft Window 95 client has to make is as follows:

---

#### Note

---

The following test results were obtained using the procedure documented summary information as specified in detail in Failover Test Setup.

---

1. Click PeopleSoft PT 6 - Oracle ➔ Configuration Manager to setup the default database name to FSDMO2 and restart the system. Use the PeopleSoft Signon Window (Run c:\FS600\bin\pstools.exe) as defined in step 2.

2. Enter the following signon information:

Database Name: FSDMO2

FSDMO2 is the database alias for FSDMO (database name of the original node depot4) configured by the Oracle SQLNet.

3. Restart the PeopleSoft workstation before signon.

After signon to the surviving node (depot5), users are able to query, insert, update, and delete rows from the PeopleSoft data panel to access the Oracle database without problems.

The case where the Oracle database and PeopleSoft application fails over to the original node (depot4) from the surviving node (depot5) was also tested. For this test case, the user chooses FSDMO as follows:

1. Click PeopleSoft PT 6 - Oracle ➔ Configuration Manager to setup the default database name to FSDMO and restart the system. Use the PeopleSoft Signon Window (Run c:\FS600\bin\pstools.exe) as defined in step 2.



2. Enter the following signon information:

Database Name: FSDMO

3. Restart the PeopleSoft workstation before signon.

After signon to the original node (depot4), the user can also access the database successfully.



---

## System Limits and Characterization Data

This chapter describes any system limits that may have been determined as a result of testing along with information about the system characteristics during testing. Areas covered include:

- Performance issues with PeopleSoft import manager
- Automating data panel input using SQA Robot
- Performance chart with elapsed time of sample queries by business function

### Performance Issues Using the PeopleSoft Import Manager

Because the import manager runs on client workstation, PeopleTools executes the PeopleCode program to edit and to process each row. This ensures data integrity, but is very slow compared to other database load tools.

One way to avoid this performance problem is to split the source table into small files and run the imports simultaneously from multiple available workstations.

Another strategy to ensure data and table integrity with the input data is to use the faster and more powerful tools which run on the DIGITAL UNIX Oracle Database server. For example, when using import manager to load the ps\_open\_trans table for the 'CORP' book, 1000 rows were completed in one hour. SQL\*Plus was then used to create the FEDERAL book entries from the previously loaded CORP book. This ensured the data and table integrity. SQL\*Plus created a temporary table first, which was then used to load the next 1000 FEDERAL rows. This took approximately two minutes. The following are examples of the SQL statements:

- ```
create table booktmp as select * from ps_open_trans
  where business_unit = 'DEC' and book = 'CORP'
```
- ```
update booktmp set book = 'FEDERAL' where business_unit = 'DEC'
```
- ```
insert into ps_open_trans select * from booktmp
```

### Automating Data Panel Input Using SQA Robot

A database can be populated on a PeopleSoft PC Client using SQA Robot. The SQA Robot can read CSV data files to populate a PeopleSoft database as indicated in Chapter 4. By building test cases for the input data panel, SQA Robot can also be used to verify the following:

- Panel opens correctly
- Field values have been saved to the database correctly

## System Limits and Characterization Data

- Panel works correctly through the panel group
- Data base values are displayed correctly
- Database transaction is successful

These features would help a new PeopleSoft user to convert smoothly from an old database to a new PeopleSoft database and also provide data integrity. In addition, these features can also automate the time-consuming and routine data panel input procedures.

## Performance Chart for Sample Query statistics

All the representative, commonly used query results shown in Chapter 4 were built using PeopleTools ➔Query. The queries had the following characteristics:

- The queries were designed to search and exercise the FSDMO database.
- The query records were selected and grouped by business functions (AM, AP, AR, GL) from the PeopleTools query tree. Trees are a powerful way to group and represent data and tables in a record format so the end user can understand and use them.
- All query data resides on the Oracle server, in a single database with a PC client.
- The StartTimer and StopTimer functions of SQA Robot were used to report the elapsed time for all the queries from the PC client.
- Fourteen SQA test scripts were written for the 14 queries as shown in the performance chart in Table 5-1.
- After recording the SQA scripts, the 14 SQA test scripts were played back twice.
- To ensure warm cache in index or full table scan, the result from the second run was picked from every query to build the performance chart shown in Table 5-1.

**Table 5-1: Performance Chart for Sample Query Statistics**

| Query Record from PeopleTools Query Tree | PeopleTools Query type         | Query Results Reference                                                                                                | Minimum Configuration Elapsed time<br>One 466 MHz CPU<br>db_block_buffer 16000 | Maximum Configuration Elapsed time<br>Four 466 MHz CPUs<br>db_block_buffer 16000 | Maximum Configuration Elapsed time<br>Four 466 MHz CPUs<br>db_block_buffer 64000 |
|------------------------------------------|--------------------------------|------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|----------------------------------------------------------------------------------|----------------------------------------------------------------------------------|
| COST                                     | Asset Cost Transaction         | Table 4-2                                                                                                              | 0.674                                                                          | 0.660                                                                            | 0.660                                                                            |
| COST                                     | Asset Cost Transaction         | Table 4-3                                                                                                              | 0.744                                                                          | 0.688                                                                            | 0.645                                                                            |
| COST                                     | Asset Depreciation Transaction | Table 4-4                                                                                                              | 0.605                                                                          | 0.627                                                                            | 0.626                                                                            |
| DIST_LN                                  | AM Accounting Entries          | Table 4-5                                                                                                              | 0.647                                                                          | 0.755                                                                            | 0.673                                                                            |
| VENDOR                                   | AP Vendor Header Table         | Table 4-9                                                                                                              | 0.644                                                                          | 0.590                                                                            | 0.617                                                                            |
| VOUCHER                                  | AP Voucher Header Table        | Table 4-9                                                                                                              | 0.617                                                                          | 0.604                                                                            | 0.605                                                                            |
| PAYMENT_TBL                              | AP Disbursements               | Table 4-9                                                                                                              | 0.632                                                                          | 0.604                                                                            | 0.588                                                                            |
| CUSTOMER                                 | AR Customer Header Information | Table 4-11                                                                                                             | 0.592                                                                          | 0.590                                                                            | 0.603                                                                            |
| CUST_DATA                                | AR Customer/Info/Balances      | Table 4-11                                                                                                             | 0.590                                                                          | 0.564                                                                            | 0.592                                                                            |
| ITEM                                     | AR Customer Items              | Table 4-11                                                                                                             | 0.645                                                                          | 0.644                                                                            | 0.594                                                                            |
| JRNL_LN                                  | GL Journal Line Data           | Table 4-13<br>(selected from a total of 10 bus. units with a total row count over 470,000 lines (ps_jrn_ln Table.)     | 11.590                                                                         | 11.416                                                                           | 11.398                                                                           |
| JRNL_HEADER                              | GL Journal Line Header Data    | Table 4-14                                                                                                             | 0.647                                                                          | 0.598                                                                            | 0.647                                                                            |
| LEDGER_ADB                               | GL ADB ledger data             | Table 4-15                                                                                                             | 0.601                                                                          | 0.601                                                                            | 0.605                                                                            |
| LEDGER                                   | GL Ledger Data                 | Table 4-16<br>(Selected from nine business units both ACTUALS and REPORTS ledger with row count over 270,000 accounts) | 7.255                                                                          | 7.400                                                                            | 7.142                                                                            |

### Performance Analysis for Sample Query Statistics

Several tests were performed to determine the impact of CPU speed, memory size, and `db_block_buffers` parameter settings on the query times associated with the queries tested and documented in Table 5-1. The results are as follows:

#### Test Result One

Using the same `/etc/sysconfigtab` and `init.ora` (`db_block_buffers=16000`) files, the 14 query test scripts were performed sequentially on a configuration using a 400 MHz CPU (4 MB cache) and a configuration using a 466 MHz CPU (4MB cache). The 466 MHz CPU (4 MB cache) showed improved performance. Therefore, these queries are sensitive to the speed of a single CPU.

#### Test Result Two

When using the same `/etc/sysconfigtab` and `init.ora` (`db_block_buffers=16000`) files again and performing the same queries on the maximum configuration with four built-in 466 MHz CPU (4 MB cache), the performance of these queries did not change much on queries that took less than a second and were executed sequentially. But those queries that took more than six seconds (the queries on `JRNL_LN` and ledger data) improved slightly.

#### Test Result Three

When changing the parameters for 4 GB memory in `/etc/sysconfigtab` and also changing the most significant parameter (`db_block_buffer=64000`) in the `init.ora` file and running the same queries on the maximum configuration, the performance of those queries that took less than one second remained the same. The two queries that took more than six seconds continued to improve slightly. Since the queries usually requires sequential scanning of the whole tables, adding more memory to the point where the tables can be cached completely, helps the performance of these queries.

### Overall Performance Indications Based on Performance Chart and Query Statistics

Test results and the performance chart of sample query statistics indicate the following information regarding system characterization:

- Tuning the `db_block_buffer` and adding more memory decreases the query time where long query times had been experienced.
- Approximately 2 MB memory is required for each user process; an application with 1000 users to stay connected at the same time needs 2 GB of memory. Since sorting and other processing also requires memory, inadequate memory will significantly reduce the performance due to heavy swapping of the user processes. Memory configurations having a large memory capacity is required to support large numbers of concurrent database users. A Very Large Memory (VLM) having 4 GB or more addressable physical memory is always helpful in this type environment, provided the memory is being effectively configured and tuned for better performance.
- The following UNIX parameters have to be increased to support a large volume of users. They are required to support the Oracle login from the PeopleSoft clients. For example, the max processes and max threads per user must be increased to 4096 as follows:

```
max-proc-per-user=4096
max-threads-per-user=4096
```
- It is advisable to allocate some memory for future expanding user processes; however, allocating too much memory can be wasteful.

- Maximum configuration with more memory results in better performance. The larger the database, the more beneficial it is to performance. Ideally, when database buffers can cache all the tables and indexes of a database, it will minimize the number of I/O to disk providing best possible performance. Adding memory to the database buffers will improve performance to a certain degree; beyond that, the memory will be wasted by caching unnecessary data.
- If there is enough workload, in general, adding memory is useful for buffer cache, sorting and accommodating a large number of concurrent users, providing that users are accessing varying data. A large buffer cache is the most important factor for performance improvement.
- The amount of memory (sort\_area\_size) allocated to support sort/merge database activity has to be considered. This is a per process parameter, so the number of processes actively doing sorting should be considered.
- For batch jobs (SQR and GL Editing and posting), memory requirements also have to be considered. For example, you might configure the system to run GL Edit and Post batch jobs overnight when there is no online users. Finding out the peak load times and the times users will submit the batch jobs are very important to estimate the memory required for running GL application.
- Tuning other parameters such as db\_block\_buffers, shared\_pool\_size with db\_block\_buffers, and sort\_area\_size will also help to improve query performance.
- Query performance with multiple users will be measured in the future.





# 6

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## Problems and Resolutions

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.

---

### Note

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The PeopleSoft General Ledger 6.0 Batch benchmark kit was used to import journal line data and tables to the FSDMO database and for compiling the General Ledger-related COBOL modules.

---

The following problems were identified and resolved during testing:

### Oracle Software Groups and Ownership

|                   |                                                                                                                                                                                                                                                                                                                  |
|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Problem</b>    | Unable to open Oracle database due to file protection error.                                                                                                                                                                                                                                                     |
| <b>Resolution</b> | Make sure to properly set the protections on all the shared raw disks used by the database.<br><br>All devices used by the database in the /dev directory on each node should be owned by Oracle.<br><br>Execute the following command from root to set the protections:<br><code>chown oracle:dba /dev/*</code> |

### Oracle SQLNet Installation on PeopleSoft Workstation

|                   |                                                                                                                                                                                                                                                                                                                                                                                        |
|-------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Problem</b>    | Successfully configuring Oracle SQLNet 2.2, to connect to the ASE Oracle server, the Oracle server and PeopleSoft workstation can ping each other without any trouble. However, after the user enters the proper database name FSDMO on the PeopleSoft signon window, the following error occurs:<br><pre>ora 3121<br/>" no interface driver connected - function not performed"</pre> |
| <b>Resolution</b> | SQLNet 2.2 on the PeopleSoft workstation would not work with Oracle 7.3 server. Install SQLNet 2.3 and configure a new tnsnames.ora file on the client and reboot. SQLNet 2.3 provides the connectivity to the PeopleSoft database on the Oracle server.                                                                                                                               |

## PeopleSoft Batch COBOL Software

- Problem** The PeopleSoft software with Micro Focus COBOL V3.2 compiles successfully on PeopleSoft UNIX server (in PS\_HOME/install, compiled by ./pscbl.mak), but the GL batching applications (GL edit or GL posting) fails with the following error message in the GLPJEDIT\_2831.log file of the \$PS\_HOME/log/FSDMO directory:
- ```
PeopleSoft prcs_bat Started
Using RDBMS ORACLE
Database name FSDMO
Process instance 2831
prcs_bat: ----- Error-----
prcs_bat: Environmental variable, PS_DB, not set
prcs_bat: ----- Error-----
usage: rm [-efirR} file ---
```
- Resolution** The compilation of COBOL to get the GL related .int file will not give an error even if the environment variable is not setup properly.
- Do not forget to execute psconfig.sh in \$PS\_HOME directory first before compiling COBOL. Psconfig.sh will set the environment variable for the compilation.
- Problem** When Process scheduler is not started or hung, a lot of batch process related to COBOL will not work.
- Resolution** Kill and restart the Process scheduler as follows:
- ```
cd $PS_HOME/bin
```
- To stop and restart the process scheduler on the Oracle server, execute the following command first:
- ```
./pspt -kill
```
- then execute the following command to restart the process scheduler:
- ```
./pspt
```
- If necessary, manually kill the PSRUN process before starting the scheduler.

## Setup Process Scheduler and Signon Problems

|                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Problem</b>    | Unable to perform testing of the batch functionality on the UNIX database server. The reason for this was, the PeopleSoft Process Scheduler was unable to correctly logon to Oracle as the SYSADM user. (After setting up the pspt.in file in the \$PS_HOME/bin directory and executing ./pspt script.)                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Resolution</b> | As a workaround, setup FSDMO to use VP1 as user and password on the workstation to signon to the Oracle server successfully. The steps are as follows: <ol style="list-style-type: none"> <li>Use the following SQL on the Oracle server to cleanup the oprdefn table:<br/> <pre>SQLPlus&gt; update sysadm.psoprdfn set accessid = 'SYSADM', accesspswd = 'SYSADM', operpswd = '0000000000000000', oprtype = 'O';</pre> </li> <li>Log on the database as VP1/VP1 through the PeopleSoft workstation signon Window. This will encrypt the password so that the process scheduler can connect.</li> <li>cd \$PS_HOME/bin and setup the pspt.in file as follows to start process scheduler:<br/> <pre>ORACLE FSDMO VP1 VP1 PSUNX</pre> </li> </ol> |

## PeopleSoft Signon Error Message on Disk Full

|                   |                                                                                                                                                                                                                                                |
|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Problem</b>    | Unable to signon from the PeopleSoft clients. After clicking on the signon Window of PeopleSoft client, the user gets the following error message from the SQL Access Manager:<br><br><pre>Internal error-could not create shared cache.</pre> |
| <b>Resolution</b> | This error message is misleading, the actual problem is that the C: drive of the PeopleSoft client is nearly full and SQL access manager cannot find room on the disk.<br><br>Delete unused files from the disk and signon again.              |

## Oracle Database Creation - SQL Error

|                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Problem</b>    | In creating FSDMO database on Oracle server, the SQL gives the following error:<br><pre>ORA 1552. "cannot use system rollback segment for non-system tablespace."</pre>                                                                                                                                                                                                                                                                                                                     |
| <b>Resolution</b> | SQL script to add rollback on rollback segments must be provided to the instance. The Oracle instance rollback segments must be created and brought on line before creating table and indexes.<br><br>Make sure to edit initPSF1.ora to include mounting of Oracle rollback segments.<br><br>Shut down and restart the instance.<br><br>This involves setting the rollback segments parameter as follows:<br><pre>ROLLBACK_SEGEMENTS=( rbsbig) or Alter rollback_segments xxxx online</pre> |

## tar and dump Command Failed to Copy Oracle disk

- Problem** Both the tar and dump command fail to copy the local Oracle disk to the shared disk. The display shows that these commands cannot handle Oracle disk that involves links.
- Resolution** The workaround is to use the dd command as follows:  
`dd if=/dev/rz43c of=/dev/rzb18c ibs=50000`

## Unable to Mount Database and Start/Stop Scripts Hang

- Problem** Attempts to perform ASE failover to the standby node would fail, and give the error as follows:  
ORA-00210: cannot open control file '/oracle/links/CTL\_1'  
ORA-07362: sfifi: open error, unable to open file.  
DEC OSF/1 (AXP) Error: 1: Not owner
- The underlying message would make this appear to be a file ownership or lock problem, when it is a problem with the Oracle user accounts default group number.
- The control files include the group id for the creator and is checked when mounting the database and will not match if the Oracle user accounts are created with the different default group numbers.
- Care should be taken when establishing an Available Server Environment to set these accounts up identically within the same default group if possible.
- Resolution** This problem can be avoided if the Oracle accounts on both hosts in the ASE are configured identically. However, when this has not occurred, the previous error is preventing database mounting.
- Use the VIPW to edit the password file and set the default group to the proper value. The proper value can be obtained from the /etc/passwd file on the first server or from the tracefile (\$ORACLE\_HOME/rdbms/log/) created, as a result of the failure to mount the database. The tracefile will contain the following entry:  
Group id mismatch for /oracle/links/CTL\_1 (15, 79)
- Where the expected default group is the first value in the parenthesis and the second value is the current default group.
- Problem** When using the ASEMGR to set up the user-defined service and to copy the start/stop scripts to the Oracle shared disk, the system hung when attempting to relocate service to the surviving node. The stop/start scripts are not available.
- Resolution** Copy the same start/stop scripts to the local disk resided on both the original node and surviving node.

**Problem** After Oracle server failover, click the signon Window of PeopleSoft client, the user will get the following error:

```
ora - 12203
```

```
"TNS:Unable to connect to destination"
```

**Resolution** In this case, the TNS entries are set up correctly on both the server and client sides, the user might forget to use the new failover database name and reboot. The user on the Workstation has to run the Configuration Manager to make the database name correspond to the proper surviving node for the new signon window.

Make sure to restart the system.

**Problem** Occasionally, Process scheduler cannot be started during failover.

**Resolution** Check the status of process scheduler on the surviving node as follows:

```
cd $PS_HOME/bin
```

```
./pspt -status
```

If the process scheduler is not running, start it manually as follows:

```
./pspt
```

## Unable to Start Oracle Listener During ASE Failover

**Problem** Oracle listener cannot be started correctly on the surviving node during ASE failover. The daemon.log file in /var/adm/syslog.dated/ directory shows Adapter error in Listener startup.

**Resolution** Problem with Failover Setup and Configuration for TruCluster Available Oracle Server. Setup as follows:

Copy the listener.ora file from the original node to /etc/listener.ora of the surviving node.

Edit/modify/remove the listener entry for the surviving node (depot5) in the new /etc/listener.ora file. See Chapter 3.



# A

---

## Detailed Hardware Configuration

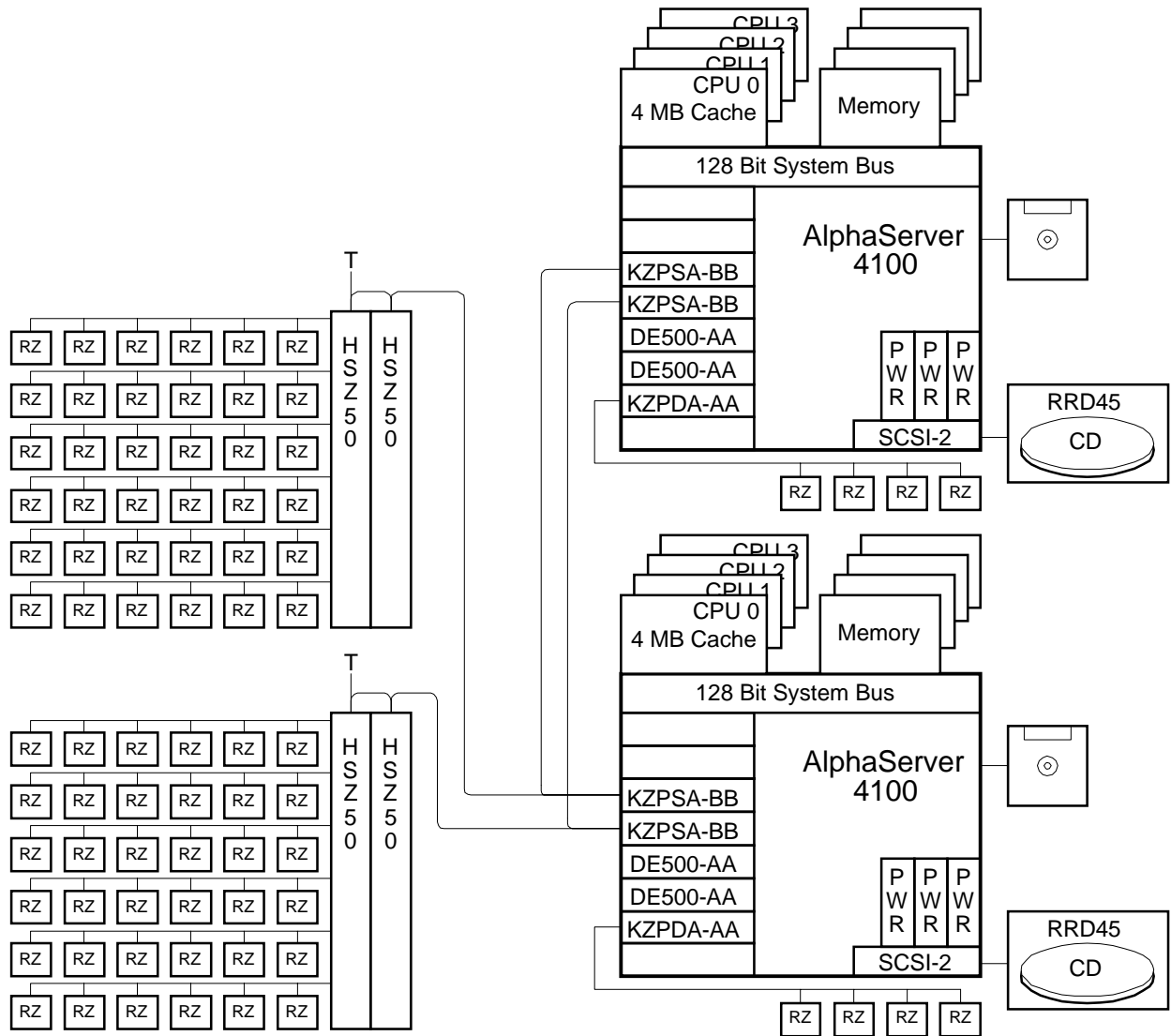
This appendix describes the minimum and maximum hardware configuration for the following:

- System Diagram
- Configuration Cabling
- AlphaServer 4100 Configurations, including
  - System Motherboard
  - PCI Backplane
- StorageWorks Configuration

## System Diagram

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

Figure A-1: System Diagram



ML014101



## Configuration Cabling

Table A-1 lists the major cables in the HiTest Template. Use this table in conjunction with the overview to interconnect the computing and storage hardware for TruCluster Available Server environment.

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### Note

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Make certain that the Internal KZPSA SCSI termination resistors on each KZPSA modules are disabled. The internal termination resistors (Z1, Z2, Z3, Z4, and Z5) on each KZPSA-BB must be removed.

---

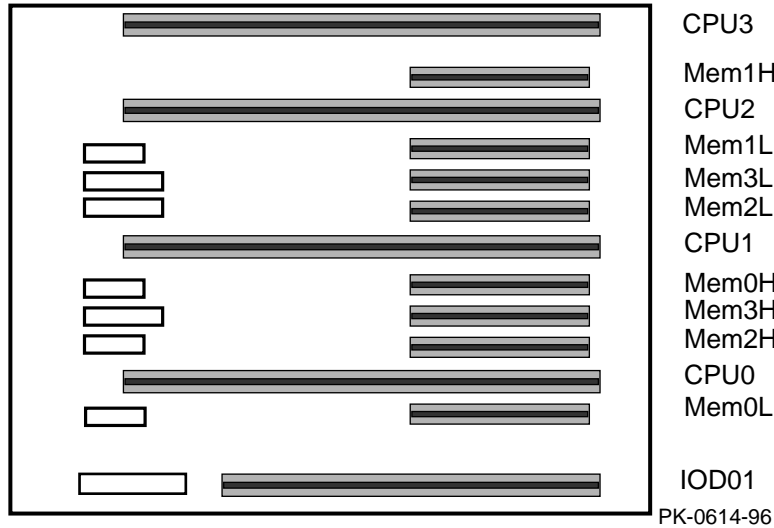
**Table A-1: Configuration Cabling**

| Part Number                                                                                                                                                                  | Qty | Description           | From                                                                        | To                                                                     |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|-----------------------|-----------------------------------------------------------------------------|------------------------------------------------------------------------|
| BN21W-0B                                                                                                                                                                     | 1   | SCSI Y Cable, 68 pin  | -----                                                                       | First KZPSA-BB in AlphaServer System enclosure #1                      |
| BN21W-0B                                                                                                                                                                     | 1   | SCSI Y Cable, 68 pin  | -----                                                                       | Second KZPSA-BB in AlphaServer System enclosure #1                     |
| BN21W-0B                                                                                                                                                                     | 1   | SCSI Y Cable, 68 pin  | -----                                                                       | First KZPSA-BB in AlphaServer System enclosure #2                      |
| BN21W-0B                                                                                                                                                                     | 1   | SCSI Y Cable, 68 pin  | -----                                                                       | Second KZPSA-BB in AlphaServer System enclosure #2                     |
| H879-AA                                                                                                                                                                      | 2   | SCSI Terminator       | -----                                                                       | SCSI Y cables attached to KZPSA-BB in AlfaServer System enclosure #2   |
| BN21K-10                                                                                                                                                                     | 2   | 10 meter SCSI cable   | SCSI Y cables attached to KZPSA-BBs in AlphaServer System enclosure #2      | SCSI Y cables attached to KZPSA-BBs in AlphaServer System enclosure #1 |
| BN21K-10                                                                                                                                                                     | 1   | SCSI bus cables       | SCSI Y cable attached to first KZPSA-BB in AlphaServer System enclosure #1  | H885-AA on HSZ50 in Controller Shelf #1 in StorageWorks Cabinet        |
| BN21K-10                                                                                                                                                                     | 1   | SCSI bus cables       | SCSI Y cable attached to second KZPSA-BB in AlphaServer System enclosure #1 | H885-AA on HSZ50 in Controller Shelf #2 in StorageWorks Cabinet        |
| <b>Note:</b> The following cables, connectors, and terminators are supplied as part of the HSZ52-AJ controller option and are used to interconnect the HSC controller pairs. |     |                       |                                                                             |                                                                        |
| H885-AA                                                                                                                                                                      | 4   | Tri-link connectors   | -----                                                                       | Each HSZ50 Controller                                                  |
| BN21L-0B                                                                                                                                                                     | 2   | Shared SCSI bus cable | H885-AA on HSZ50                                                            | H885-AA on HSZ50                                                       |
| H879-AA                                                                                                                                                                      | 2   | SCSI bus terminators  | -----                                                                       | H885-AA on HSZ50                                                       |

## AlphaServer 4100 Configurations

Figure A-2 and Table A-2 show the AlphaServer 4000 and AlphaServer 4100 system motherboard and describe the minimum and maximum hardware configurations used in this HiTest Template.

**Figure A-2: AlphaServer 4000/AlphaServer 4100 Motherboard Layout**



PK-0614-96

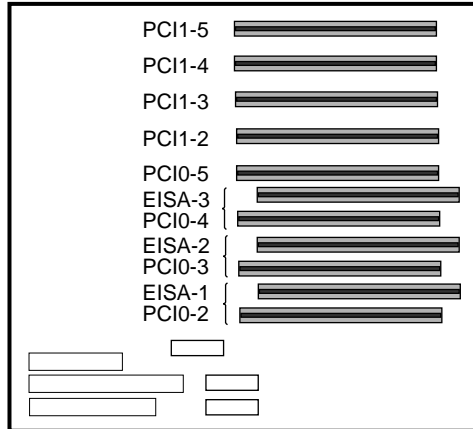
**Table A-2: AlphaServer 4000/AlphaServer 4100 Motherboard (Minimum and Maximum Configurations)**

| Slot  | Minimum Configuration Options | Maximum Configuration Options | Description                         |
|-------|-------------------------------|-------------------------------|-------------------------------------|
| CPU3  |                               | KN304-DB                      | 466 MHz CPU 4 MB cache              |
| Mem1H |                               | MS330-FA                      | Memory pair 1 (2 of 2)              |
| CPU2  |                               | KN304-DB                      | 466 MHz CPU 4 MB cache              |
| Mem1L |                               | MS330-FA                      | Memory pair 1 (1 of 2)              |
| Mem3L |                               | MS330-FA                      | Memory pair 3 (1 of 2)              |
| Mem2L |                               | MS330-FA                      | Memory pair 2 (1 of 2)              |
| CPU1  |                               | KN304-DB                      | 466 MHz CPU 4 MB cache              |
| Mem0H | MS320-FA                      | MS330-FA                      | Memory pair 0 (2 of 2)              |
| Mem3H |                               | MS330-FA                      | Memory pair 3 (2 of 2)              |
| Mem2H |                               | MS330-FA                      | Memory pair 2 (2 of 2)              |
| CPU0  | KN304-DB                      | KN304-DB                      | 466 MHz CPU 4 MB cache              |
| Mem0L | MS320-FA                      | MS330-FA                      | Memory pair 0 (1 of 2)              |
| IOD01 | Bridge                        | Bridge                        | System Bus to PCI bus bridge module |

## AlphaServer 4100 PCI Slot Usage

Figure A-3 and Table A-3 show the PCI slot usage for the minimum and maximum configurations of this HiTest Template.

**Figure A-3: AlphaServer 4100 PCI Slot Usage**



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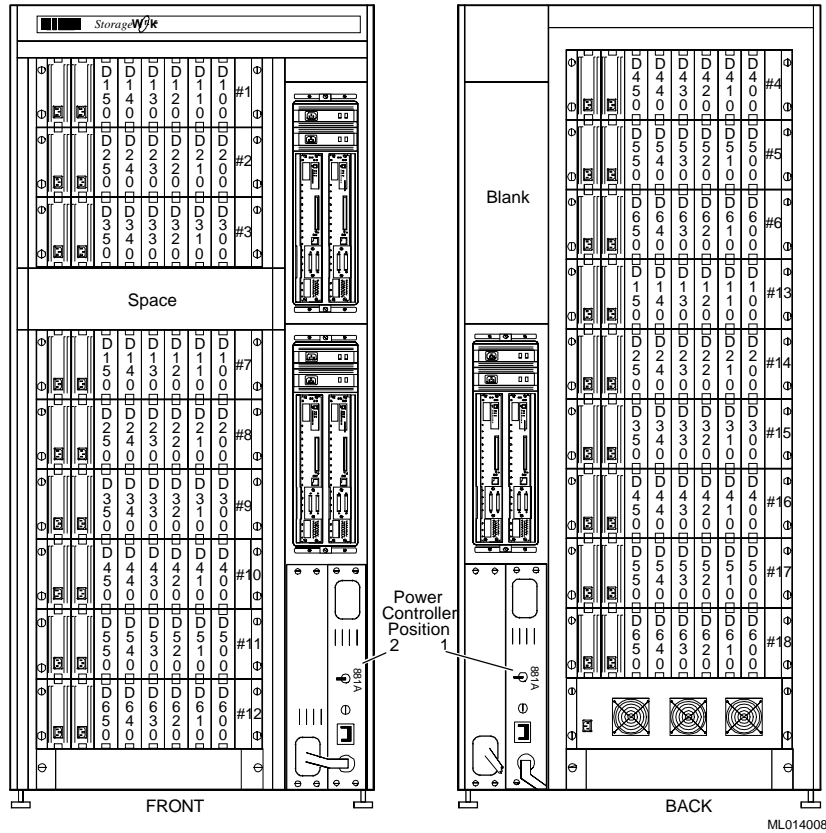
**Table A-3: PCI Slot Usage (Minimum and Maximum Configurations)**

| Slots             | Minimum Configuration Options | Maximum Configuration Options | Description         |
|-------------------|-------------------------------|-------------------------------|---------------------|
| PCI1-3            | KZPSA-BB                      | KZPSA-BB                      | FWD SCSI controller |
| PCI1-2            | KZPSA-BB                      | KZPSA-BB                      | FWD SCSI controller |
| PCI1-1            | KZPDA-AA                      | KZPDA-AA                      | FWD SCSI controller |
| PCI0-5            | DE500-AA                      | DE500-AA                      | Ethernet controller |
| EISA-3/<br>PCI0-4 | DE500-AA                      | DE500-AA                      | Ethernet controller |
| EISA-2/<br>PCI0-3 | ---                           | ---                           | ---                 |
| EISA-1/<br>PCI0-2 | ---                           | ---                           | ---                 |
| PCI0-1            | ---                           | ---                           | ---                 |

## StorageWorks Cabinet SCSI Disks Unit Address Identification

Figure A-4 shows front and back views of the SW822 StorageWorks cabinet.

**Figure A-4: SW822 Cabinet Unit Address Identification**



## HSZ50 SCSI Cable Tables

Table A-4, Table A-5, and Table A-6 define the point-to-point SCSI cable connections to be used between the HSZ50 ports and the BA350 Modular Storage shelves of the SW822 cabinet.

**Table A-4: HSZ50 #1 (Top Front) Connections**

| Source | Destination      | Part Number | Length |
|--------|------------------|-------------|--------|
| Port 1 | BA356 #1 (Front) | BN21H-01    | 1 m    |
| Port 2 | BA356 #2 (Front) | BN21H-01    | 1 m    |
| Port 3 | BA356 #3 (Front) | BN21H-01    | 1 m    |
| Port 4 | BA356 #4 (Rear)  | BN21H-02    | 2 m    |
| Port 5 | BA356 #5 (Rear)  | BN21H-02    | 2 m    |
| Port 6 | BA356 #6 (Rear)  | BN21H-02    | 2 m    |

**Table A-5: HSZ50 #2 (Bottom Front) Connections**

| Source | Destination       | Part Number | Length |
|--------|-------------------|-------------|--------|
| Port 1 | BA356 #7 (Front)  | BN21H-01    | 1 m    |
| Port 2 | BA356 #8 (Front)  | BN21H-01    | 1 m    |
| Port 3 | BA356 #9 (Front)  | BN21H-01    | 1 m    |
| Port 4 | BA356 #10 (Front) | BN21H-01    | 1 m    |
| Port 5 | BA356 #11 (Front) | BN21H-01    | 1 m    |
| Port 6 | BA356 #12 (Front) | BN21H-01    | 1 m    |

**Table A-6: HSZ50 #3 (Back) Connections**

| Source | Destination      | Part Number | Length |
|--------|------------------|-------------|--------|
| Port 1 | BA356 #13 (Rear) | BN21H-02    | 2 m    |
| Port 2 | BA356 #14 (Rear) | BN21H-02    | 2 m    |
| Port 3 | BA356 #15 (Rear) | BN21H-02    | 2 m    |
| Port 4 | BA356 #16 (Rear) | BN21H-02    | 2 m    |
| Port 5 | BA356 #17 (Rear) | BN21H-02    | 2 m    |
| Port 6 | BA356 #18 (Rear) | BN21H-02    | 2 m    |

---

**Note**

---

Each HSZ50 pair is cascaded using BN21L-0B cables and H885 Tri-link connectors, giving the cabinet a total of six (6) HSZ50s. An H885 Tri-link connector and BN21L-0B cable is supplied as part of each HSZ52-AJ option.

---



# B

## Test Scripts

Test scripts were used to build the databases (tables, tablespace, and indexes), perform the database test queries, and execute failover tests. This appendix provides the actual scripts used.

### Create Database Script

The following script was used to create the database.

```
REM * Set terminal output and command echoing on; log output of this script.
REM *

set termout on
set echo on
spool bld01_ps01.lis
connect internal
startup nomount pfile=$ORACLE_HOME/dbs/initPSF1_0.ora
create database FSDMO
maxdatafile 1000
maxinstances 3
maxlogfiles 40
maxlogmembers 4
character set "US7ASCII"
datafile
    '/oracle/links/SYSTEM' size 110m
logfile
    '/oracle/links/LOGA_1' size 50m,
    '/oracle/links/LOGB_1' size 50m,
    '/oracle/links/LOGC_1' size 50m;

REM - Creates data dictionary views.
@$ORACLE_HOME/rdbms/admin/catalog.sql

REM - Scripts for procedural option
@$ORACLE_HOME/rdbms/admin/catproc.sql

REM - Grant public access to all views used by the char-mode SQLDBA.
@$ORACLE_HOME/rdbms/admin/utlmontr.sql

spool create2
set echo on

REM * Create additional rollback segment in SYSTEM before creating tablespace.
REM *
create rollback segment r00 tablespace system
storage (initial 16k next 16k minextents 2 maxextents 20);
```

## Test Scripts

```
REM * Use ALTER ROLLBACK SEGMENT ONLINE to put r00 online without shutting
REM * down and restarting the database.
REM *

alter rollback segment r00 online;

REM * Create a tablespace for rollback segments.
REM * Rollback segment configuration guidelines:
REM *   1 rollback segments for every 4 concurrent xactions.
REM *   No more than 50 rollback segments.
REM *   All rollback segments the same size.
REM *   Between 2 and 4 homogeneously-sized extents per rollback segment.
REM * Attempt to keep rollback segments to 4 extents.
REM *
create tablespace PSRBS datafile
      '/oracle/links/PSRBS'      size    750M
default storage (
      initial          1M
      next             1M
      pctincrease      0
);
REM *
create tablespace PSTEMP datafile
      '/oracle/links/TEMP1'      size    6000M
default storage (
      initial          1M
      next             1M
      pctincrease      0
);
REM *
```

## Create Tablespace Script

The following script was used to create the tablespaces.

```
Remark * This script is used to create tablespaces for the PeopleSoft 6 Financial
Remark * Products. Use the 'Remark' statement to "comment out" tablespaces
Remark * That are not required for the products that you are installing.
Remark * Users of Oracle 7.2 and higher can choose to use the autoextending
Remark * tablespace feature. Syntax is remarked at the end of this script.
```

```
spool fsddl_psf1.lis
```

```
Remark * The AMAPP tablespace is required for ALL products
```

```
CREATE TABLESPACE AMAPP DATAFILE '/oracle/links/AMAPP' SIZE 90M
DEFAULT STORAGE (INITIAL 64K NEXT 128K MAXEXTENTS 110 PCTINCREASE 0)
```

```
/
```

```
Remark * The AMLARGE tablespace is required for the following products:
```

```
Remark *   AM (Asset Management)
```

```
Remark *   GL (General Ledger)
```

```
Remark *   PC (Project Costing)
```

```
Remark *   PO (Purchasing)
```

```
CREATE TABLESPACE AMLARGE DATAFILE '/oracle/links/AMLARGE' SIZE 50M
DEFAULT STORAGE (INITIAL 64K NEXT 128K MAXEXTENTS 110 PCTINCREASE 0)
```



```
/
Remark * The APAPP tablespace is required for the following products:
Remark *     AP (Payables)
Remark *     PO (Purchasing)
```

```
CREATE TABLESPACE APAPP DATAFILE '/oracle/links/APAPP' SIZE 50M
DEFAULT STORAGE (INITIAL 64K NEXT 128K MAXEXTENTS 110 PCTINCREASE 0)
```

```
/
Remark * The APLARGE tablespace is required for the following products:
Remark *     AM (Asset Management)
Remark *     AP (Payables)
Remark *     AR (Receivables)
Remark *     PC (Project Costing)
```

```
CREATE TABLESPACE APLARGE DATAFILE '/oracle/links/APLARGE' SIZE 50M
DEFAULT STORAGE (INITIAL 64K NEXT 128K MAXEXTENTS 110 PCTINCREASE 0)
```

```
/
Remark * The ARAPP tablespace is required for ALL products
```

```
CREATE TABLESPACE ARAPP DATAFILE '/oracle/links/ARAPP' SIZE 50M
DEFAULT STORAGE (INITIAL 64K NEXT 128K MAXEXTENTS 110 PCTINCREASE 0)
```

```
/
Remark * The ARLARGE tablespace is required for the following products:
Remark *     AP (Payables)
Remark *     AR (Receivables)
Remark *     BI (Billing)
Remark *     PC (Project Costing)
Remark *     PO (Purchasing)
```

```
CREATE TABLESPACE ARLARGE DATAFILE '/oracle/links/ARLARGE' SIZE 80M
DEFAULT STORAGE (INITIAL 64K NEXT 128K MAXEXTENTS 110 PCTINCREASE 0)
```

```
/
Remark * The BIAPP tablespace is required for the following products:
Remark *     AR (Receivables)
Remark *     BI (Billing)
Remark *     PC (Project Costing)
```

```
CREATE TABLESPACE BIAPP DATAFILE '/oracle/links/BIAPP' SIZE 50M
DEFAULT STORAGE (INITIAL 64K NEXT 128K MAXEXTENTS 110 PCTINCREASE 0)
```

```
/
Remark * The BILARGE tablespace is required for the following product:
Remark *     BI (Billing)
```

## Test Scripts

```
CREATE TABLESPACE BILARGE DATAFILE '/oracle/links/BILARGE' SIZE 50M
DEFAULT STORAGE (INITIAL 64K NEXT 128K MAXEXTENTS 110 PCTINCREASE 0)
/
```

```
Remark * The BDAPP tablespace is required for the following products:
Remark *      BD (Budgeting)
Remark *      AR (Receivables)
Remark *      GL (General Ledger)
```

```
CREATE TABLESPACE BDAPP DATAFILE '/oracle/links/BDAPP' SIZE 80M
DEFAULT STORAGE (INITIAL 64K NEXT 128K MAXEXTENTS 110 PCTINCREASE 0)
/
```

```
Remark * The BDLARGE tablespace is required for the following product:
Remark *      BD (Budgeting)
Remark *      AR (Receivables)
Remark *      GL (General Ledger)
```

```
CREATE TABLESPACE BDLARGE DATAFILE '/oracle/links/BDLARGE' SIZE 50M
DEFAULT STORAGE (INITIAL 64K NEXT 128K MAXEXTENTS 110 PCTINCREASE 0)
/
```

```
Remark * The FSAPP tablespace is required for ALL products
```

```
CREATE TABLESPACE FSAPP DATAFILE '/oracle/links/FSAPP' SIZE 200M
DEFAULT STORAGE (INITIAL 64K NEXT 128K MAXEXTENTS 110 PCTINCREASE 0)
/
```

```
Remark * The FSAPP1 tablespace is required for ALL products
```

```
CREATE TABLESPACE FSAPP1 DATAFILE '/oracle/links/FSAPP1' SIZE 150M
DEFAULT STORAGE (INITIAL 64K NEXT 128K MAXEXTENTS 110 PCTINCREASE 0)
/
```

```
Remark * The FSLARGE tablespace is required for the following products:
Remark *      AM (Asset Management)
Remark *      AP (Payables)
Remark *      BI (Billing)
```

```
CREATE TABLESPACE FSLARGE DATAFILE '/oracle/links/FSLARGE' SIZE 50M
DEFAULT STORAGE (INITIAL 64K NEXT 128K MAXEXTENTS 110 PCTINCREASE 0)
/
```

```
Remark * The GLAPP tablespace is required for ALL products
```

```
CREATE TABLESPACE GLAPP DATAFILE '/oracle/links/GLAPP' SIZE 140M
```

```
DEFAULT STORAGE (INITIAL 64K NEXT 128K MAXEXTENTS 110 PCTINCREASE 0)
```

```
/
```

```
Remark * The GLLARGE tablespace is required for the following products:
```

```
Remark *      AR (Receivables)
```

```
Remark *      GL (General Ledger)
```

```
Remark *      PC (Project Costing)
```

```
Remark *      PO (Purchasing)
```

```
CREATE TABLESPACE GLLARGE DATAFILE '/oracle/links/GLLARGE' SIZE 90M
```

```
DEFAULT STORAGE (INITIAL 64K NEXT 128K MAXEXTENTS 110 PCTINCREASE 0)
```

```
/
```

```
Remark * The INAPP tablespace is required for the following products:
```

```
Remark *      IN (Inventory)
```

```
Remark *      GL (General Ledger)
```

```
Remark *      PC (Project Costing)
```

```
Remark *      PO (Purchasing)
```

```
CREATE TABLESPACE INAPP DATAFILE '/oracle/links/INAPP' SIZE 50M
```

```
DEFAULT STORAGE (INITIAL 64K NEXT 128K MAXEXTENTS 110 PCTINCREASE 0)
```

```
/
```

```
Remark * The INLARGE tablespace is required for the following products:
```

```
Remark *      IN (Inventory)
```

```
Remark *      PC (Project Costing)
```

```
Remark *      PO (Purchasing)
```

```
CREATE TABLESPACE INLARGE DATAFILE '/oracle/links/INLARGE' SIZE 50M
```

```
DEFAULT STORAGE (INITIAL 64K NEXT 128K MAXEXTENTS 110 PCTINCREASE 0)
```

```
/
```

```
Remark * The OMAPP tablespace is required for the following products:
```

```
Remark *      IN (Inventory)
```

```
Remark *      OM (Order Management)
```

```
Remark *      AR (Receivables)
```

```
Remark *      GL (General Ledger)
```

```
CREATE TABLESPACE OMAPP DATAFILE '/oracle/links/OMAPP' SIZE 150M
```

```
DEFAULT STORAGE (INITIAL 64K NEXT 128K MAXEXTENTS 110 PCTINCREASE 0)
```

```
/
```

```
Remark * The OMLARGE tablespace is required for the following products:
```

```
Remark *      IN (Inventory)
```

```
Remark *      OM (Order Management)
```

```
Remark *      AR (Receivables)
```

## Test Scripts

Remark \* GL (General Ledger)

```
CREATE TABLESPACE OMLARGE DATAFILE '/oracle/links/OMLARGE' SIZE 50M
DEFAULT STORAGE (INITIAL 64K NEXT 128K MAXEXTENTS 110 PCTINCREASE 0)
/
```

Remark \* The PCAPP tablespace is required for the following product:

Remark \* PC (Project Costing)

```
CREATE TABLESPACE PCAPP DATAFILE '/oracle/links/PCAPP' SIZE 50M
DEFAULT STORAGE (INITIAL 64K NEXT 128K MAXEXTENTS 110 PCTINCREASE 0)
/
```

Remark \* The PCLARGE tablespace is required for the following product:

Remark \* PC (Project Costing)

```
CREATE TABLESPACE PCLARGE DATAFILE '/oracle/links/PCLARGE' SIZE 50M
DEFAULT STORAGE (INITIAL 64K NEXT 128K MAXEXTENTS 110 PCTINCREASE 0)
/
```

Remark \* The POAPP tablespace is required for the following products:

Remark \* AP (Payables)

Remark \* AR (Receivables)

Remark \* IN (Inventory)

Remark \* PC (Project Costing)

Remark \* PO (Purchasing)

```
CREATE TABLESPACE POAPP DATAFILE '/oracle/links/POAPP' SIZE 50M
DEFAULT STORAGE (INITIAL 64K NEXT 128K MAXEXTENTS 110 PCTINCREASE 0)
/
```

Remark \* The POLARGE tablespace is required for the following products:

Remark \* PC (Project Costing)

Remark \* PO (Purchasing)

```
CREATE TABLESPACE POLARGE DATAFILE '/oracle/links/POLARGE' SIZE 50M
DEFAULT STORAGE (INITIAL 64K NEXT 128K MAXEXTENTS 110 PCTINCREASE 0)
/
```

Remark \* The PSIMAGE tablespace is required for ALL products

```
CREATE TABLESPACE PSIMAGE DATAFILE '/oracle/links/PSIMAGE' SIZE 500M
DEFAULT STORAGE (INITIAL 64K NEXT 128K MAXEXTENTS 110 PCTINCREASE 0)
/
```

Remark \* The PTAPP tablespace is required for ALL products

```
CREATE TABLESPACE PTAPP DATAFILE '/oracle/links/PTAPP' SIZE 100M
DEFAULT STORAGE (INITIAL 64K NEXT 128K MAXEXTENTS 110 PCTINCREASE 0)
/
```

Remark \* The PTPRC tablespace is required for ALL products

```
CREATE TABLESPACE PTPRC DATAFILE '/oracle/links/PTPRC' SIZE 50M
DEFAULT STORAGE (INITIAL 64K NEXT 128K MAXEXTENTS 110 PCTINCREASE 0)
/
```

Remark \* The PTTBL tablespace is required for ALL products

```
CREATE TABLESPACE PTTBL DATAFILE '/oracle/links/PTTBL' SIZE 1200M
DEFAULT STORAGE (INITIAL 64K NEXT 128K MAXEXTENTS 110 PCTINCREASE 0)
/
```

Remark \* The PSINDEX tablespace is required for ALL products

```
CREATE TABLESPACE PSINDEX DATAFILE '/oracle/links/PSINDEX' SIZE 2500M
DEFAULT STORAGE (INITIAL 64K NEXT 128K MAXEXTENTS 110 PCTINCREASE 0)
/
```

Remark \* The TRAPP tablespace is required for the following products:

Remark \* The TRAPP tablespace is required for ALL products

```
CREATE TABLESPACE TRAPP DATAFILE '/oracle/links/TRAPP' SIZE 50M
DEFAULT STORAGE (INITIAL 64K NEXT 128K MAXEXTENTS 110 PCTINCREASE 0)
/
```

Remark \* The CPAPP tablespace is required for the following products:

Remark \* The CPAPP tablespace is required for ALL products

```
CREATE TABLESPACE CPAPP DATAFILE '/oracle/links/CPAPP' SIZE 50M
DEFAULT STORAGE (INITIAL 64K NEXT 128K MAXEXTENTS 110 PCTINCREASE 0)
/
```

Remark \* The MGAPP tablespace is required for the following products:

Remark \* The MGAPP tablespace is required for ALL products

```
CREATE TABLESPACE MGAPP DATAFILE '/oracle/links/MGAPP' SIZE 90M
DEFAULT STORAGE (INITIAL 64K NEXT 128K MAXEXTENTS 110 PCTINCREASE 0)
/
```

## SQA Robot Scripts and External CSV Data File for Populating Database

### AMDATA.CSV

```
ASSETID,PROFILE,DEPT,COST
C00001,FURNITURE,13000,5000
C00002,FURNITURE,14000,5000
C00020,OFFICE EQ,21300,12000
C00021,OFFICE EQ,13000,12000
C00050,LEASEHOLD,21300,25000
C00051,LEASEHOLD,13000,25000
C00060,BLDG,21300,125000
C00061,BLDG,13000,125000
C00070,COMPUTERS,21300,7000
C00071,COMPUTERS,21300,7000
```

### SQA Robot script file AMCSV.REC

```
Sub Main
    Dim Result As Integer
    Dim Assetid as string
    Dim Profile as string
    Dim Dept as string
    Dim Cost as string

    'Initially Recorded: 06/09/97 10:53:19
    open "C:\msoffice\excel\amdata.csv" for input as #1
    do until EOF (1)
        input #1, assetid, profile, dept, cost

        'Test Procedure Name: assets added thru csv func
        Window SetContext, "Caption=Manage Assets", ""
        MenuSelect "Use->Asset ExpressAdd->General 1"

        Window SetContext, "Caption=Add -- Asset ExpressAdd", ""
        InputKeys "{BKSP}M04{TAB}"
```

```

'PushButton Click, "Asset Identification"
InputKeys AssetId

Window SetContext, "Caption=Add -- Asset ExpressAdd", ""
PushButton Click, "Text=OK"
Window SetContext, "Caption=Manage Assets - Use - Asset
ExpressAdd", ""
InputKeys Profile
EditBox Click, "Name=COST.DEPTID(0)", "Coords=30,14"
InputKeys dept
EditBox Click, "Name=COST.QUANTITY(0)", "Coords=96,8"
InputKeys "{TAB}"
InputKeys cost
PushButton Click, "Name=ADD_WRK.DEFAULT_PB"
MenuSelect "File->Save"

Window SetContext, "Caption=Manage Assets - Use - Asset
ExpressAdd", ""
Toolbar Click, "ObjectIndex=1;\;ItemID=41491", ""
Loop
close #1
End Sub

```

## Failover Test Scripts

The start/stop scripts provided in this section are basic examples for the Oracle and PeopleSoft application. Additional work on the start/stop scripts is necessary if you are adding error handling in the scripts and are running NFS, AdvFS, or if you are also running Oracle on the surviving node.

In these scripts, the start action script (start.sh) calls dbstart.sh to start the Oracle and PeopleSoft applications. The stop action script (stop.sh) calls dbstop.sh to stop the Oracle and PeopleSoft applications.

### Start Action Script (start.sh)

```

# A skeleton example of a start action script.
#
# check and see if Oracle is running here, and if not, start it
# up.
# (For preliminary testing, we're not checking on what instance
# is involved, just that it's running).
#

```

## Test Scripts

```
echo "Starting Oracle itself with hostname=`hostname -s`"
#
# Check the file system and mount Oracle on the shared disk.
#
echo "Mount Oracle disk with hostname='hostname -s'"
fsck -p /dev/rzbl8c
mount /dev/rzbl8c /oracle
#
# Check the file system and mount PeopleSoft financial 6.0 on
# the shared disk,
#
echo "Mount PeopleSoft disk with hostname='hostname -s'"
fsck -p /dev/rzbl7c
mount /dev/rzbl7c /fs600
su - oracle -c /var/adm/ase/dbstart.sh
#
echo "Starting Oracle check"
#
ps ax | grep -v grep | grep -q ora_smon
#
#
# If anything in the logger cat it to stdout which will then be
# sent to the syslog daemon.log
#
#
If [ -f ${LOGGER} ]; then
    cat ${LOGGER}
fi
rm -f ${LOGGER}
#
# Any non zero exit will be considered a failure.
#
exit ${returnValue}
```



**Databases Start Action Script (dbstart.sh)**

```

sleep 10
/oracle/app/oracle/product/7.3.2/bin/svrmgrl <<!
CONNECT INTERNAL
startup pfile=/oracle/app/oracle/product/7.3.2/dbs/initPSF1.ora
EXIT
!
#
echo "Starting Oracle listener with hostname=`hostname -s`"
#
lsnrctl start
#
echo "Starting PeopleSoft configuration with
hostname=`hostname-s`"
#
cd /fs600/gl600
/psconfig.sh
#
echo "Starting PeopleSoft Process Scheduler with
hostname=`hostname -s`"
#
cd bin
./pspt
sleep 20

```

**Stop Action Script (stop.sh)**

```

#
# skeleton example of a stop action script.
#
# Check and see if Oracle is running on this node, and if so
# stop it using the standard shutdown script. Note that this
# might not work if db activity isn't quiescent.
#
ps ax | grep -v grep | grep -q ora_smon
echo "Stopping Oracle itself with hostname=`hostname -s`"
su - oracle -c /var/adm/ase/dbstop.sh
sleep 15
echo "Dismount Oracle disk with hostname=`hostname -s`"
sync
umount /oracle
echo "Dismount PeopleSoft disk with hostname=`hostname -s`"
sync

```

## Test Scripts

```
umount /fs600
#
# exit 0 = success - service stopped successfully
# exit 1 = failure - could not stop service
# exit 99 = failure - could not stop service (service busy)
#
exit ${returnValue}
```

### Database Stop Action Script (dbstop.sh)

```
sleep 10
/oracle/app/oracle/product/7.3.2/bin/svrmgrl <<!
CONNECT INTERNAL
shutdown immediate
EXIT
!
echo "Stopping Oracle listener with hostname=`hostname -s`"
lsnrctl stop
echo "Kill PeopleSoft Process scheduler with
hostname=`hostname -s`"
cd /fs600/gl600/bin
./pspt -kill
sleep 20
```