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SAP SQL Server
Windows NT Prioris ZX

DIGITAL HiTest Notes

Part Number: EK-HSPNE-HN. A01

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Preface

This document provides an overview of DIGITAL HiTest Suites and detailed technical information about the SAP SQL Server Windows NT Prioris ZX HiTest Suite. This information includes the HiTest AppSet, the HiTest Foundation, configuration details, installation instructions, tuning parameters, problems encountered and their solutions, tests and test results, and system diagrams. Together, a HiTest Foundation and HiTest AppSet (Application Set) comprise all of the components in a HiTest Suite. The HiTest Foundation includes the hardware, operating system, middleware, and database software. The HiTest AppSet contains a collection of software specific to one class of customer solutions.

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.

Organization

This document is organized as follows:

Chapter Title	Description
Chapter 1 – Advantages of DIGITAL HiTest Suites	Provides a summary of the benefits of DIGITAL HiTest Suites and an overview of the Suite covered in this document.
Chapter 2 – Configuration Data	Includes tables of configuration data about the hardware and software components that define the DIGITAL HiTest Template, and special configuration rules if any.
Chapter 3 – System Installation and Setup	Presents information for installing and setting up this DIGITAL HiTest Suite.
Chapter 4 – Tests and Results	Describes how the tests were set up including database organization, where data and programs were placed, and how the tests were run. It also describes system limits and characterization data.
Chapter 5 – Problems and Solutions	Discusses any problems and solutions that were discovered during testing.
Chapter 6 – Detailed Hardware Configuration	Contains more detailed information about the configuration of the hardware and software components listed in the Configuration Data chapter.

Customer Feedback

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

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

Ordering Information

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

This document and other HiTest documents can be downloaded from the DIGITAL HiTest web site, which also provides access to other HiTest information such as configuration tools and parts updates.

```
http://cosmo.tay.dec.com/public/configsys/config_systems.htm
```

You can also visit the Technical Support Center web page, which provides additional information such as pointers to benchmark centers and major technical training and events:

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

Related Documents

This document references the following manuals:

- *Prioris ZX 6200 Series Installation Guide* (ER-930WW-IA)

- *R/3 Installation on Windows NT Microsoft SQL-Server Database*

- *StorageWorks RAID Array 310 Configuration and Maintenance Guide* (EK-SMCS2-UG)

- *StorageWorks RAID Array 310 Installation Guide* (EK-SMRAA-IG)

- *StorageWorks RAID Array 310 Users Guide* (AA-QU63C-TE)

For a copy of *R/3 Installation on Windows NT Microsoft SQL-Server Database* order from SAP (SAP-NR. 51001731).

All the RAID Array documents are included in the RAID Array 310 CDs.

1
Advantages of DIGITAL HiTest Suites

This chapter describes what a HiTest Suite is, the suite components and advantages, and customer add-ons.

What Is a DIGITAL HiTest Suite?

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 SAP Solution and Internet Servers.

In each HiTest Suite, the components are selected and the configurations designed to ensure high system reliability, application performance, and ability to upgrade. The suite's hardware and software components have been successfully tested for interoperability.

The specifications for allowed ranges of hardware and software components, part numbers, description, and revision information are listed in the *DIGITAL HiTest Template* in Chapter 2.

DIGITAL HiTest Suite Components

The SAP SQL Server Windows NT Prioris ZX HiTest Suite contains two groups of components: the *DIGITAL HiTest Foundation* and the *DIGITAL HiTest AppSet.* The DIGITAL HiTest AppSet contains application software unique to the targeted market. The DIGITAL HiTest foundation contains the operating system, middleware, database software, and hardware and can be used as a configuration guideline for the base platform for many applications and target markets.

This Suite will meet the needs of low to medium SAP configurations. The ZX meets the request of SAP's Hardware Requirements for an Intel environment.

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.

Additional Hardware and Software

Besides the hardware and software specified in a DIGITAL HiTest Suite, additional hardware and software can be added to a HiTest System. Add-on hardware consists of accessory components such as printers, modems, and scanners that are supported by the operating system and other software. Adding these components should not affect interoperability and, therefore, the system can still be considered a DIGITAL HiTest System.

Customers who purchase a DIGITAL HiTest System that is configured below the maximum specified in the Template, can later add additional hardware up to the specified maximum range and still maintain the integrity of a DIGITAL HiTest System.

If additional hardware components beyond the maximum specified in the Template are configured into a system, you still have the assurance that the rest of the system has been thoroughly tested for component interoperability. Therefore, the risk of experiencing problems is greatly reduced.

2
Configuration Data

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

Hardware and Software Components

Table 2-1 identifies the range of hardware and software components that can be configured using the SAP SQL Server Windows NT Prioris ZX HiTest Suite. This is the DIGITAL HiTest Template. The ranges of hardware provided in this template include 512 MB of memory, one through seven 4.3 GB internal disks, one RAID Array 310, and a 15/30 GB DAT tape drive.

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

The DIGITAL HiTest Template consists of three categories:

- AppSet Software – Includes software specific to one class of customer solutions, in this case SAP solutions and Internet Servers.

- 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 and 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, order at least the minimum quantity, but be cautious about exceeding 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 Chapter 6.

Configuration Data

Table 2-1: SAP Windows NT Prioris DIGITAL HiTest Template

<table>
<tr><td colspan="6" style="text-align:center">SAP HiTest AppSet</td></tr>
<tr><td colspan="6" style="text-align:center">SQL Server Windows NT Prioris ZX 6200 HiTest Foundation</td></tr>
<tr><td colspan="6" style="text-align:center">For documentation and updates: http://cosmo.tay.dec.com and
http://www.partner.digital.com:9003/cgi-bin/comet</td></tr>
<tr><td>Line Item</td><td>Description</td><td>Part Number</td><td colspan="2">HiTest Range</td></tr>
<tr><td></td><td></td><td></td><td>Min</td><td>Max</td></tr>
<tr><td colspan="5" style="text-align:center">AppSet Software</td></tr>
<tr><td>1</td><td>SAP R/3 Version 3.1H
For more information, contact SAP at:
http://www.sap.com</td><td></td><td>1</td><td>1</td></tr>
<tr><td colspan="5" style="text-align:center">Foundation Hardware</td></tr>
<tr><td>2</td><td>DIGITAL Prioris ZX 6200, 512 KB, 200 MHz

<i>Hardware includes</i>:
• Dual CPUs with 512 KB cache
• 512 MB Memory
• Wide SCSI controller Adaptec 3940W
• SCSI 12X CD-ROM drive
• RX23L-AB 1.44 MB Floppy drive
• Adaptec AHA 3940 W

<i>Software includes</i>:
   • ServerWORKS CD-ROM</td><td>FR-933WW-BA ❶</td><td>1</td><td>1</td></tr>
<tr><td>3</td><td>Country kit (accessories, keyboard, docs, mouse, and power cord)</td><td>FR-PCA6K-AG❶</td><td>1</td><td>1</td></tr>
<tr><td>4</td><td>15/30 GB 5.25-inch DLT tape drive</td><td>FR-PCXLT-AB</td><td>1</td><td>1</td></tr>
<tr><td>5</td><td>4.3 GB 7200 RPM UltraSCSI internal Disks
Note: This part number replaces FR-PCWVR-AZ, which was used for testing this HiTest Suite.</td><td>FR-CECBA-CA</td><td>1</td><td>7</td></tr>
<tr><td>6</td><td>RAID Array 310 Hardware Subsystem

<i>Includes</i>:
• RA310 controller
• 16 MB cache
• StorageWorks 7 SSB pedestal with two power supplies</td><td>FR-SWXRA-Z1</td><td>1</td><td>1</td></tr>
<tr><td>7</td><td>RAID Array 310 Platform Kit

<i>Includes</i>:
• Adaptec 2944UW PCI Ultra WD adapter
• 2 meter SCSI cable
• Drivers, utilities, and software license</td><td>FR-SWIKT-DA</td><td>1</td><td>1</td></tr>
<tr><td>8</td><td>4.3 GB 7200 RPM UltraSCSI external Disks
Note: This part number replaces FR-SWXD3-WE, which was used for testing this HiTest Suite.</td><td>FR-RZ1CB-VW</td><td>6</td><td>7</td></tr>
<tr><td>9</td><td>PCI Ethernet Adapter</td><td>FR-DE500-BA</td><td>1</td><td>1</td></tr>
<tr><td>10</td><td>4 meter 10-base-T unshielded TP cable</td><td>BN25G-04</td><td>1</td><td>1</td></tr>
<tr><td>11</td><td>2 meter SCSI cable</td><td>BN31G-02</td><td>1</td><td>1</td></tr>
<tr><td>12</td><td><i>Select one high-resolution color monitor (the 17 inch is recommended):</i>

15" flat-square 0.28 dot pitch
17" flat-square 0.28 dot pitch</td><td>

FR-PCXBV-EZ❶
FR-PCXBV-FZ❶</td><td>1</td><td>1</td></tr>
<tr><td colspan="5">❶Indicates that geography-specific part number variants are available. Check the appropriate price book for details.</td></tr>
</table>

Line Item	Description	Part Number	Required By	
			Fdn	App
Foundation Software				
13	**Windows NT Server, Version 4.0** Please purchase from a Microsoft reseller or contact Microsoft at `http://www.microsoft.com`		Yes	Yes
14	**Windows NT Service Pack 3** Please purchase from a Microsoft reseller or contact Microsoft at `http://www.microsoft.com`		Yes	Yes
15	**Microsoft SQL Server 6.5** Please purchase from a Microsoft reseller or contact Microsoft at `http://www.microsoft.com`		Yes	Yes
16	**Microsoft SQL Service Pack 3** Please purchase from a Microsoft reseller or contact Microsoft at `http://www.microsoft.com`		Yes	Yes
17	**System Management Server (SMS) 1.2** Please purchase from a Microsoft reseller or contact Microsoft at `http://www.microsoft.com`		Opt'l	Opt'l
18	**Microsoft Resource Kit** Please purchase from a Microsoft reseller or contact Microsoft at `http://www.microsoft.com`		Yes	Yes
19	**Hard copy of the Suite's HiTest Notes**	**EK-HSPNE-HN**	Yes	Yes

SAP HiTest AppSet — SQL Server Windows NT Prioris ZX 6200 HiTest Foundation. For documentation and updates: http://cosmo.tay.dec.com and http://www.partner.digital.com:9003/cgi-bin/comet

Table 2-2: Component Revision Levels

Hardware Component	Hardware	Firmware	Software
Phoenix BIOS	–	4.05	–
DAC 960 BIOS	–	3.00.07	–
ADAPTEC BIOS	–	1.24.01	–
Prioris 6200 MP/2	1.05	–	–
Adaptec 3940W Controller	1.15	4.E00	–
4.3 GB disks (FR-CECBA-CA)	A01	0702	–
Fast Ethernet Adapter (FR-DE500-BA)	B01	1.1	–
Tape Drive (FR-PCXLT-AB)	A02	0172	–
Software Component	**Version/ Revision**	**Patch Level**	
Windows NT Server	4.0	Service Pack 3 (Build 1381)	
SAP R/3	3.1H	–	
System Management Server	1.2	Service Pack 1 (Build 786)	
Prioris System Configuration Utility (SCU)	1.05	–	
MS SQL Server	6.5	Service Pack 3	
ServerWORKS Quick Launch CD	3.2	–	
Adaptec 3940W Controller Configuration Utility	S6	–	

Special Configuration Rules

The *Prioris ZX 6200 Series Installation Guide* provides detailed configuration information needed to properly install memory and PCI options.

_____ **Note**_____

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

The following configuration rules also apply:

- The CD-ROM drive should always be connected to the Adaptec 3940 controller.

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

- Configuration of SCSI devices:
  Server Enclosure:
  Backplane-Modus: Split-Bus Modus (Backplane Jumper M1 +M3 jumpered)

- Adaptec-Configuration of AHA 3940W (minimum configuration):
  Channel 0:
      ID6 – NT, Pagefile, SQL, SAP
  Channel 1:
      ID4 – CD-ROM
      ID5 – DLT2000

3
System Installation and Setup

This chapter provides useful information when preparing to install and set up a DIGITAL HiTest System configured from this DIGITAL HiTest Suite. System preparation includes installing hardware, operating system and applications.

Hardware Installation

The hardware was installed and interconnected as shown in Chapter 6.

Prioris System Configuration Utility (SCU)

If PCI or EISA options are added to the system, run the SCU to configure them. Also if the memory size has changed, run SCU (leave with `save & exit`) otherwise after every reboot a SCU error has to be confirmed by pressing F1.

System Firmware

Phoenix BIOS upgrade utility located in the BIOS update kit can be obtained from:

```
http://www.PC.digital.com/~ftp/index/ix_Prioris_zx6.htm
```

Operating System Installation

This section describes the operating system installation.

Disk Storage Configuration

This section describes disk storage configurations for the SAP SQL Server Windows NT Prioris ZX 6200 system. SAP recommends using RAID hardware.

For the internal disk:

1. Create a 2 GB partition during the NT setup.

2. Convert the system partition to NTFS after the NT installation has finished.

3. Create the second partition with NT Disk Administrator after the NT installation. (It is NTFS-formatted, too.)

4. Configure and setup the RA310 using standard HyperTerminal.

See the following sections for more information.

HyperTerminal Setup

This section describes, how to setup a HyperTerminal.

1. Select the following:
   a. `Start button`
   b. `Programs`
   c. `Accessories`
   d. `HyperTerminal`
2. Click the Icon `Location Information`.
   Answer the three questions as follows:

   a. `What country are you in now ? USA`
   b. `What area (or city) code are you now ? 0`
   c. `If you dial a number to access an outside line, what is it ? 0`
3. Press `Close` on the second page.

4. Answer `no` to the question `Do you want to create a Modem?`

5. When you see Connection Description, enter `HSZ20` as name and press Return.

6. On the Icon Connect to use the `Com 1` and press Return.

7. Setup the `Com 1` as follows:

   a. Bits per second: 9600
   b. Data bits: 8
   c. Parity: none
   d. Stop bits: 1
   e. Flow Control: Xon/Xoff
8. Connect the cable from RA310 console to the Com 1 Connector from the Prioris.

Now you can communicate via HyperTerminal with the RA310.

Setup and Configure the RA310

This section describes the setup and configuration of the RA310 with one stripeset and one mirror:

1. Setup the SCSI target:
   ```
   HSZ>set this_controller id = (0,1)
   ```

2. Setup the preferred target:
   ```
   HSZ>set this PREFERRED_ID = 1
   ```

3. Verify the disk layout:
   ```
   HSZ> show disk
   no devices
   ```
   If you see no disks, use the command `run config`.
   From the config you get the following output:
   ```
   Config Local Program Invoked
   Config is building its tables and determining what devices
   exist
   add disk DISK100 1 0 0
   add disk DISK110 1 1 0
   add disk DISK120 1 2 0
   add disk DISK130 1 3 0
   add disk DISK200 2 0 0
   add disk DISK210 2 1 0
   Config - Normal Termination
   HSZ>
   ```

4. Create one stripeset and one mirror:
```
HSZ>add stripe s1 disk100 disk110 disk120 disk130
HSZ>add mirror m1 disk200 disk210
```

5. Initialize two storagesets:
```
HSZ>init s1 save_configuration
HSZ>init m1 save_configuration
```

6. Verify the controller, battery and cache status:
```
HSZ> show this full
Controller:
        HSZ20 AY11111111 Firmware V27Z-0, Hardware A01
        Not configured for dual-redundancy
        SCSI address 7
        Time: NOT SET
Host port:
        SCSI target(s) (0, 1), preferred target(s) (1)
Cache:
        16 megabyte write cache, version 2
        Cache is GOOD
        Battery is GOOD
        No unflushed data in cache
        CACHE_FLUSH_TIMER = 5 (seconds)
        CACHE_POLOCY = A
        Host Functionality Mode = D
Licensing information:
        RAID (RAID Option) is ENABLED, license key is VALID
        MBCA (Writeback Cache Option) is ENABLED, license key is VALID
        MIRR (Disk Mirroring Option) is ENABLED, license key is VALID
Extended information:
        Terminal speed 9600 baud, eight bit, no parity, 1 stop bit
        Operation control: 00000004 Security state code: 36404
        Configuration backup enabled on 6 devices
```

7. Create units for each storageset and switch on the writeback_cache:
```
HSZ>add unit d0 s1
HSZ>add unit d100 m1
HSZ>set d0 writeback_cache
HSZ>set d100 writeback_cache
```

8. Verify storage information:
```
HSZ>show storage full
Name    Storageset                              Uses       Used by
-------------------------------------------------------------
s1      stripset                                DISK100    d0
                                                DISK110
                                                DISK120
                                                DISK130
        Switches:
          CHUNKSIZE = 256 blocks
        State:
          DISK100  (member 0) is NORMAL
          DISK110  (member 1) is NORMAL
          DISK120  (member 2) is NORMAL
          DISK130  (member 3) is NORMAL
        Size: 33510112
```

```
      m1      mirrorset                         DISK200   d100
                                                DISK210
           Switches:
             POLICY (for replacement) = BEST_PERFORMANCE
             COPY (priority) = NORMAL
             READ_SOURCE = LEAST_BUSY
             MEMBERSHIP = 2, 2 members present
           State:
             DISK200 (member 0) is NORMAL
             DISK210 (member 1) is NORMAL
           Size: 8377528 blocks


  SPARESET   spareset

  FAILEDSET failedset
           Switches:
             NOAUTOSPARE
```

9. Verify all units:

```
HSZ>show units full
LUN                                        Uses
-------------------------------------------------
d0                                         s1
    Switches:
      RUN     NOWRITE_PROTECT     READ_CACHE
      WRITEBACK_CACHE
      MAXIMUM_CACHED_TRANSFER_SIZE = 32
    State:
      AVAILABLE
      Write cache good
      PREFERRED_PATH = THIS_CONTROLLER
    Size: NOT YET KNOWN
d100                                       m1
    Switches:
      RUN     NOWRITE_PROTECT     READ_CACHE
      WRITEBACK_CACHE
      MAXIMUM_CACHED_TRANSFER_SIZE = 32
    State:
      AVAILABLE
      Write cache good
      PREFERRED_PATH = THIS_CONTROLLER
    Size: 8377528 blocks
```

Windows NT Installation

Perform the following steps to install the Windows NT Server (the steps where only a confirmation is requested are not mentioned):

1. Insert the NT Setup bootdisk and NT CD-ROM and power up your system.

2. Follow the instructions from NT setup.

3. Create disk partitions:

    a. Select "unpartitioned space" at ID0, bus0 on aic78xx

    b. Create a 2 GB partition

    c. Press Enter to install NT on the new partition

    d. Format the partition with NTFS

4. Gather Information about your computer with the graphical interface:

    a. name and organization   enter proper value

    b. registration   enter CD key

    c. licensing model   select a model

    d. computer name   enter name

    e. server type   select standalone server

    f. administrator account   enter password

    g. emergency repair disk   create one

    h. select components   select needed components

5. Install Windows NT Networking:

    a. wired to a network   yes

    b. MS IIS   install of needed

    c. network adapter   click <search>

    d. network protocol   R/3 requires only TCP/IP

    e. TCP/IP properties   configure TCP/IP

    f. Domain / Workgroup   enter proper value

6. If previously selected, install MS IIS now.

7. Date/Time Properties   select timezone, adjust date/time

8. Display properties   select a display mode

9. After a reboot, continue to create and format the second partition.

Applications

This section describes how to install the AppSet software.

Install SAP R/3 as follows:

1. Follow the *SAP Installation Guide R/3 Installation on Windows NT Microsoft SQL-Server Database* (SAP-Nr. 51001731)

2. Be sure to have the latest OSS (R/3 Online Service System) notes mentioned in Chapter 1 of the SAP Installation Guide.

4

Tests and Results

The DIGITAL HiTest program tests for several types of problems that affect the system. The HiTest program works together with other organizations to obtain and share test information for other categories.

This chapter describes the overview of test results, how the tests were set up, and where the data and programs were placed.

Also covered in this chapter is the test environment, tools used for testing, test configuration, system limits and characterization data, and the test process.
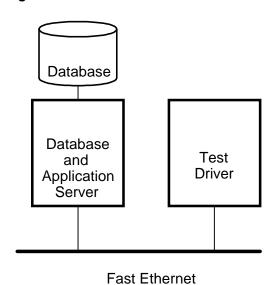
Overview of Results

Interoperability testing was performed successfully on the SAP SQL Server Windows NT Prioris ZX HiTest Suite. The tests verified that the business processes functioned correctly.

Test Environment

Figure 4-1 shows SAP Windows NT Prioris test environment.

Figure 4-1: Test Environment

Test Tools

The following tools were used for interoperability testing:

- *ftp* to move the benchmark kit to the driver and the central instance.

- *car* to unpack the kit.

- *cleandb* to import the benchmark clients.

- *mmpv* (period shifter) to bring the booking period of the SAP transactions into the current month (must be rerun at import and at the start of every month)

A couple of manual steps were necessary to setup the benchmark environment. They are described in *hints.html* in the documentation directory of the benchmark.

The following test tools were used to create the load and measure the behavior of the system:

- *mkapl* to define the load parameters (number of users, number of loops)

- *mksim* to create all scripts and additional directories for a load

- *benchrun* to start one load

- *Performance monitor* to watch the overall CPU, memory and disk behavior of the HiTest system

- R/3 transaction ST02 to watch the memory behavior of R/3

- R/3 transaction SM50 to watch the behavior of the various R/3 processes

Test Configuration

To stress test the HiTest configuration and to prove its viability, a standardized SAP benchmark method is being used. To put a meaningful load onto the HiTest System, the following conditions must be met:

- A system (called driver) is connected to the DB and Application Server through an Ethernet connection.

- The driver simulates the user load with the help of SAP-written scripts and executables. This benchmark environment is available for all customers if a person from the specific Competence Center is available and runs the tests.

_____ **Note** _____

Do not use this benchmark software in Production Environments. You will get no support from SAP.

_____

- Get the benchmark software from SAP network together with the newest VERY_IMPORTANT.doc. All Competence Centers know the location of this Kit.

- Create a user on the driver who will drive the benchmark and modify the environment. Check and modify the network so that all systems can connect to each other.

- Unpack the benchmark kit with SAP's tarlike utility CAR.EXE.

- For stressing NT systems from UNIX driver, you have to create the following directory on the driver:
  -/usr/sap/<SID>/sys/profile

- Copy all R/3 profiles from the NT HiTest System to this location.

Minimum Configuration

The minimum configuration included four disks as stripeset and two disks as mirror as shown in Table 4-1.

Table 4-1: Disk Configuration for the Minimum Configuration

Disk Drive Group Name	Number of Disk Drives	Disk Drive Locations	Disk Drive Content and Data	Group Type	Usable Capacity
s1	4	Drive 1 – Bus 1 Drive 2 – Bus 1 Drive 3 – Bus 1 Drive 4 – Bus 1	Data for SQL Server	RAID 0	17.2 GB
m1	2	Drive 5 – Bus 2 Drive 6 – Bus 2	Transaction log SQL Server	RAID 1	4.3 GB
					Usable Total: **21.5 GB**

Maximum Configuration

The maximum configuration included five disks as stripeset and two disks as mirror as shown in Table 4-2.

Table 4-2: Disk Configuration for the Maximum Configuration

Disk Drive Group Name	Number of Disk Drives	Disk Drive Locations	Disk Drive Content and Data	Group Type	Usable Capacity
s1	4	Drive 1 – Bus 1 Drive 2 – Bus 1 Drive 3 – Bus 1 Drive 4 – Bus 1 Drive 5 – Bus 1	Data for SQL Server	RAID 5	17.2 GB
m1	2	Drive 6 – Bus 2 Drive 7 – Bus 2	Transaction log SQL Server	RAID 1	4.3 GB
					Usable Total: **21.5 GB**

System Limits and Characterization Data

It was not in the scope of our testing to specifically determine system limitations or provide comprehensive performance characterization. The focus was a functional testing in a typical client situation.

Sizing information can be referred at:
`http://www.fra.dec.com/SAP-Cc/Intranet/sizing/sizingliste.html`

Test Process and Results

The following information describes the test results:

- The SAP R/3 benchmark reported no errors.

- The response times met the SAP criteria for acceptable performance.

- A further test went for eight hours with 70 % average CPU load. An online backup has been performed during the highload phase.

5
Problems and Solutions

This chapter describes problems encountered during the testing. Where appropriate, a solution for each problem is given which provides a fix or workaround. An impact statement is also provided.

The following problems were identified:

Foundation Hardware

No problems were encountered.

Foundation Software

Operating System

Problem	Error when booting Quick Launch.
Impact	Quick Launch is not bootable.
Solution	You have to install step by step without Quick Launch.

AppSet Software

No problems were encountered.

Testphase

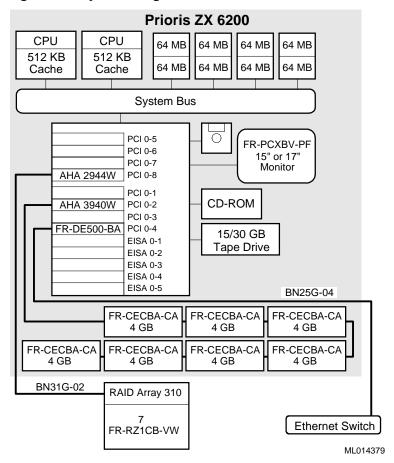|	
Problem	Since R/3 3.1H and the equivalent benchmark software 3.1H the command language Perl is used to run the benchmark software either on UNIX or on NT.
	Perl is not available on standard UNIX and NT systems.
Impact	You cannot start standard SAP benchmark.
Solution	Get Perl from the NT resource kit.

6
Detailed Hardware Configuration

This chapter provides a system diagram of the HiTest Suite and also describes the minimum and maximum hardware configuration for the following:

- System Diagram
- HiTest System Slot Configuration

System Diagram

Figure 6-1 shows a diagram of the HiTest Suite and Table 6-1 lists the major cables.
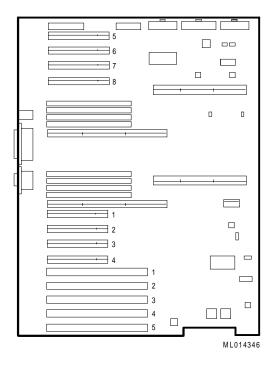
Figure 6-1: System Diagram


```
                        Prioris ZX 6200
  ┌────────┬────────┐  ┌─────┐┌─────┐┌─────┐┌─────┐
  │  CPU   │  CPU   │  │64 MB││64 MB││64 MB││64 MB│
  │ 512 KB │ 512 KB │  ├─────┤├─────┤├─────┤├─────┤
  │ Cache  │ Cache  │  │64 MB││64 MB││64 MB││64 MB│
  └────────┴────────┘  └─────┘└─────┘└─────┘└─────┘

         ┌──────────── System Bus ────────────┐
```

PCI 0-5
PCI 0-6
PCI 0-7
AHA 2944W   PCI 0-8

FR-PCXBV-PF
15" or 17"
Monitor

PCI 0-1
AHA 3940W   PCI 0-2
PCI 0-3
FR-DE500-BA PCI 0-4
EISA 0-1
EISA 0-2
EISA 0-3
EISA 0-4
EISA 0-5

CD-ROM

15/30 GB
Tape Drive

BN25G-04

| FR-CECBA-CA 4 GB | FR-CECBA-CA 4 GB | FR-CECBA-CA 4 GB |
| FR-CECBA-CA 4 GB | FR-CECBA-CA 4 GB | FR-CECBA-CA 4 GB | FR-CECBA-CA 4 GB |

BN31G-02

RAID Array 310

7
FR-RZ1CB-VW

Ethernet Switch

ML014379

Table 6-1: Configuration Cabling

Part Number	Qty	Description	From	To
BN25G-04	1	10 Base T 10/100 mbit Ethernet cable	FR-DE500-BA	Ethernet
BN31G-02	1	SCSI cable	AHA2944W	RAID Array 310

HiTest System Slot Configuration

Figure 6-2 shows the HiTest System Slot Usage and Table 6-2 describes the minimum and maximum hardware configurations used in the HiTest Template.

Figure 6-2: HiTest System Slot Usage

ML014346

Table 6-2: System Slot Usage (Minimum and Maximum Configurations)

Slot	Minimum Configuration	Maximum Configuration	Description
PCI slot 5	open	open	
PCI slot 6	open	open	
PCI slot 7	open	open	
PCI slot 8	AHA 2944	AHA 2944	Adaptec controller
PCI slot 1	open	open	
PCI slot 2	AHA 3940	AHA 3940	Adaptec controller
PCI slot 3	open	open	
PCI slot 4	FR-DE500-BA	FR-DE500-BA	10/100 Fast Ethernet adapter
EISA slot 1	open	open	
EISA slot 2	open	open	
EISA slot 3	open	open	
EISA slot 4	open	open	
EISA slot 5	open	open	