# Netra SPARC T3-1BA Blade Server

User's Guide

Part No. E20659-01
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# Contents

# Using This Documentation

This guide provides detailed procedures for the installation, configuration, administration, and servicing of Oracle's Netra SPARC T3-1BA blade server. This document is written for technicians, system administrators, authorized service providers, and users who have advanced experience troubleshooting and replacing hardware.


- "UNIX Commands" on page ix
- "Shell Prompts" on page x
- "Related Documentation" on page x
- "Documentation, Support, and Training" on page xi


## UNIX Commands

This document might not contain information on basic UNIX commands and procedures such as shutting down the system, booting the system, and configuring devices. Refer to the following for this information:

- Software documentation that you received with your system
- The Oracle Solaris Operating System documentation, which is at

  `(http://www.oracle.com/technetwork/indexes/documentation/index.html)`

# Shell Prompts

| Shell | Prompt |
|---|---|
| C shell | *machine-name*% |
| C shell superuser | *machine-name*# |
| Bourne shell and Korn shell | $ |
| Bourne shell and Korn shell superuser | # |

# Related Documentation

The documents listed as online are available at:

(http://www.oracle.com/pls/topic/lookup?ctx=nst31ba&id=homepage)

(http://www.oracle.com/pls/topic/lookup?ctx=ct900&id=homepage)

| Application | Title | Format | Location |
|---|---|---|---|
| Installation | *Netra SPARC T3-1BA Blade Server Start Here* | Printed<br>PDF | Shipping kit<br>Online |
| Updates | *Netra SPARC T3-1BA Blade Server Product Notes* | PDF<br>HTML | Online |
| Safety | *Netra SPARC T3-1BA Blade Server Safety and Compliance Guide* | PDF<br>HTML | Online |
| General safety | *Important Safety Information for Sun Hardware Systems* | Printed | Shipping kit |
| System service | *Sun Netra CT900 Server Service Manual* | PDF<br>HTML | Online |
| System administration and reference | *Sun Netra CT900 Server Administration and Reference Manual* | PDF<br>HTML | Online |
| Programming and sensors | *Sun Netra CT900 Server Software Developer's Guide* | PDF<br>HTML | Online |

# Documentation, Support, and Training

These web sites provide additional resources:

- Documentation (http://www.oracle.com/technetwork/indexes/documentation/index.html)
- Support (https://support.oracle.com)
- Training (https://education.oracle.com)

# Evaluating Product Compatibility

The following topics provide information for evaluating the blade server and your system's compatibility.



## Evaluating the Blade Server

The Netra SPARC T3-1BA blade server from Oracle is a high-performance, single-board computer based on a SPARC T3 CMT multicore processor and designed for high availability in a switched network computing environment. This blade server is compliant with ATCA (AdvancedTCA, ATCA) specifications (PICMG 3.0 and PICMG 3.1).

The ATCA standard comprises the PICMG 3.0, 3.1, 3.2, and 3.3 versions of the standard. The blade server complies with the following specifications:

- PICMG 3.0, the base specification that defines the mechanical, power distribution, system management, data transport, and regulatory guidelines.
- PICMG 3.1, which builds on the PICMG 3.0 base specification and on IEEE 802.3-2003.

Use the following information to evaluate the blade server:

### Related Information



## Features

The Netra SPARC T3-1BA blade server is an ATCA node board based on the SPARC T3 processor. It is hot-swappable to an ATCA midplane and supports dual 10/100/1000BASE-T Ethernet interfaces as Base interfaces and 10-Gb XAUI Ethernet interfaces as Fabric interfaces to support a redundant Dual Star topology.

The blade server's primary features are described in the following table.

| Feature | Description |
|---|---|
| CPU | SPARC T3 processor, 12 cores, 8 threads per core |
| Memory | • DDR3 DIMMs (registered, ECC) at 1067 MHz, in VLP design<br>• 8 DIMM slots (1 per channel or 2 per MCU)<br>• 2-GB or 4-GB FB-DIMMs, up to a maximum of 32 GB, cooling and power permitting<br>• Power targets are 7 to 8 watts per DIMM, with each consuming approximately 10 watts<br>• Higher capacities available in subsequent releases |
| Service processor | AST2200 for CPU reset, boot, partition, and FMA |
| Power | • Low power and high power versions from 225 to 300 watts maximum, with a maximum of 1100 watts per zone<br>• Dual-redundant input 48V to derive on-board power<br>• Built-in over-current and over-voltage protection |
| Cooling | 32 to 35 CFM at 55oC (131 oF) |

| Feature | Description |
|---|---|
| PICMG compliance | • Single-wide ATCA module<br>• ATCA 8U form factor<br>• 6-HP slot width<br>• PICMG 3.0 and newer<br>• RoHS 6/6 compliance |
| Node server | Functions as a CPU node server with Oracle Solaris OS and software packages |
| Operating systems | • Oracle Solaris 10 OS (9/10) and subsequent compatible versions with supported Netra patches |
| Internal I/O (connections to ATCA midplane) | • Dual 10/100/1000BASE-T Ethernet for Base interfaces<br>• 10G XAUI to Fabric interface on midplane or to ARTM<br>• Management support using on-board IPM controller (Renesas H8) that provides dual IPMB. The IPMB bus is monitored by the shelf manager, providing redundant IPMI channels. |
| External I/O | • One 10/100/1000BASE-T Ethernet maintenance port, configurable to front or rear panel<br>• One asynchronous serial port in front or back<br>• Dual USB 2.0 compliant ports on the front panel<br>• Rear access available for Netra CP32x0 ARTMs.<br>With a Netra CP32x0 ARTM installed, both the front panel and ARTM serial ports are active. Either serial port can be used, but only one of the serial ports can be used at a time. |
| IPMI system management | Uses IPMI communications with BMC: performs ASM on local board interface (for example, temperature, FRUID, and control) |
| Hot-swap | Yes |
| Front panel I/O | • One 10/100/1000BASE-T Ethernet port<br>• Dual USB 2.0 compliant ports<br>• One serial port (RJ-45)<br>• ATCA-compliant LEDs |
| Rear panel interfaces | • One 10/100/1000BASE-T Ethernet port<br>• One asynchronous RS-232 serial port (RJ-45)<br>• Common ARTM interface supporting the Sun Netra CP32x0 ARTMs and compliant third-party ARTMs<br>• ARTM support compatible with Oracle's current ARTM architecture with upgrade capability to support PICMG working group ARTM.0 standard (Zone 3 interface) |
| Compact flash | Supports one compact flash card, 32-GB capacity |
| Flash updates | Supported from downloaded files |
| Building compliance | NEBS Level 3 in Oracle's Sun Netra CT900 server system with maximum component configuration |

# Front and Side Panels

The following figures illustrate the layout of components and connectors on the front and side panels of the blade server.

**FIGURE:** Blade Server Front View

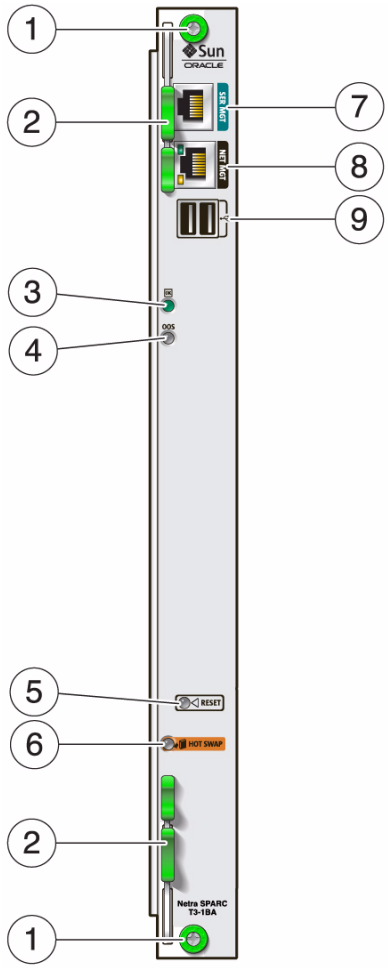



**Figure Legend**

| | | | |
|---|---|---|---|
| **1** | Locking screws | **6** | Hot-swap LED |
| **2** | Latches | **7** | Serial port |
| **3** | OK LED | **8** | 10/100/1000 Ethernet management port |
| **4** | Out-of-service (OOS) LED | **9** | USB ports |
| **5** | Reset button | | |

**FIGURE:** Blade Server Side View

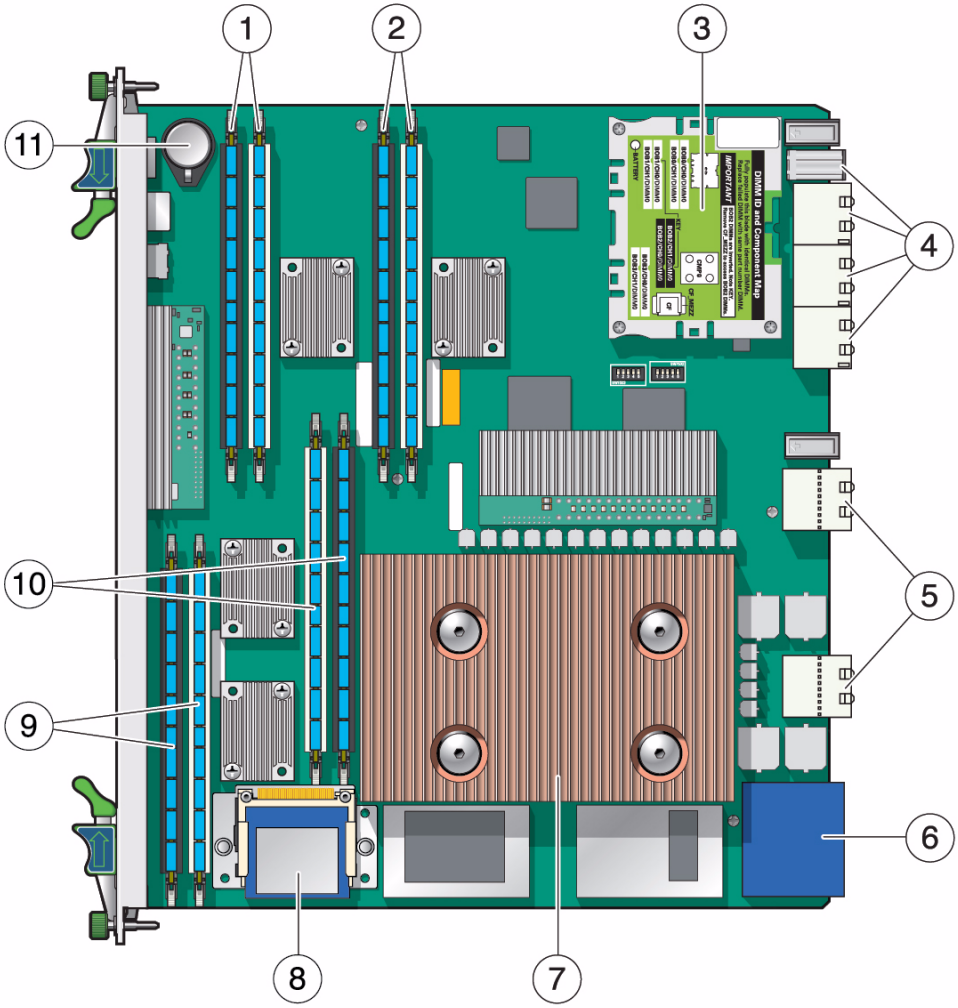


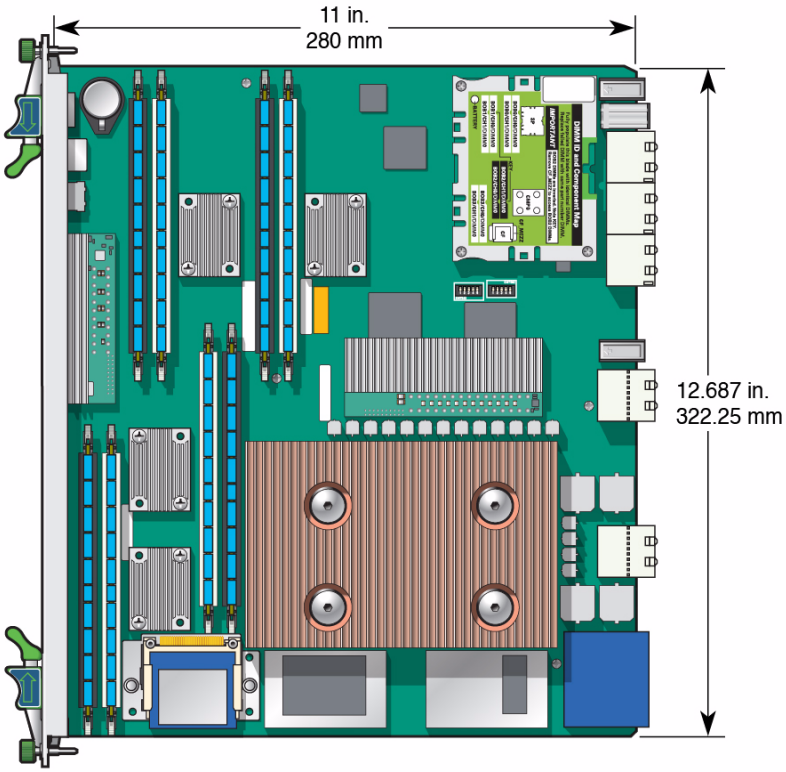

**Figure Legend**

| | | | |
|---|---|---|---|
| **1** | DDR3 DIMM slots | **7** | CPU heat sink |
| **2** | DDR3 DIMM slots | **8** | Compact flash |
| **3** | Service processor | **9** | DDR3 DIMM slots |
| **4** | Zone 3 connectors to ARTM | **10** | DDR3 DIMM slots |
| **5** | Zone 2 connectors to midplane | **11** | Battery |
| **6** | Zone 1 power connector | | |

# Form-Factor Physical Characteristics

The blade server is a standard 8-rack unit factor, single-slot wide board. It complies with the board mechanical dimensions that are required by the PICMG 3.0 specification:

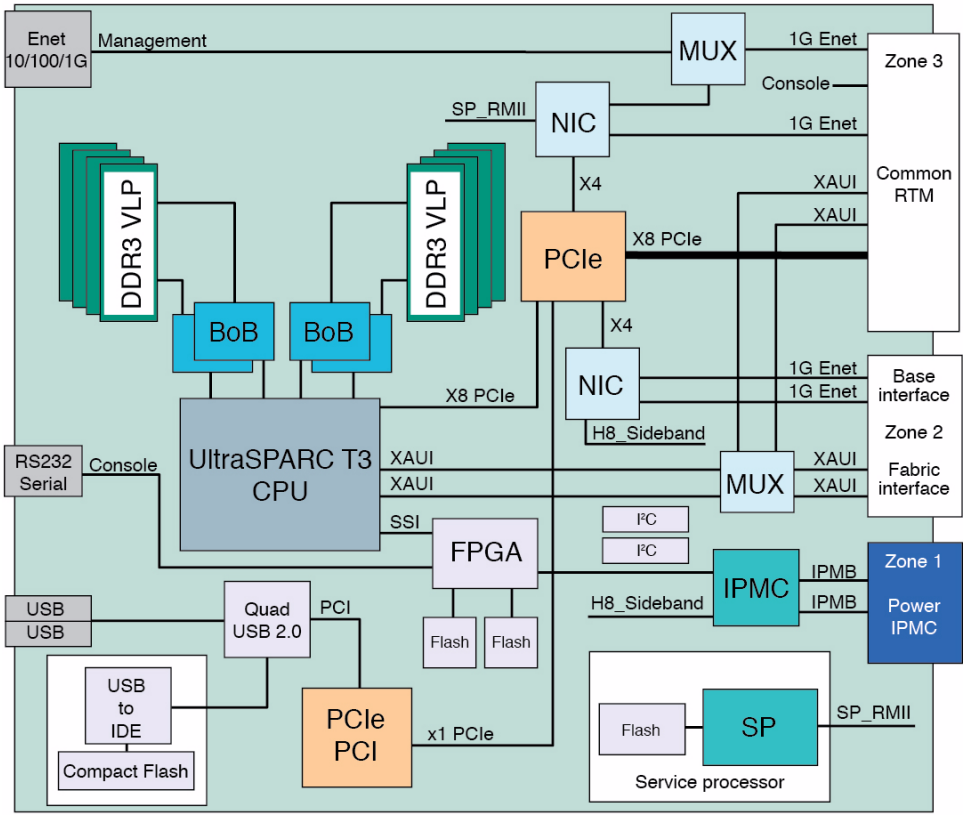
- 322.25 mm x 280 mm (12.687 inches x 11.0 inches)
- 30.48-mm (1.2-inch) front panel



# Block Diagram

The following block diagram illustrates the blade server system architecture, which can be divided into the following.

- SPARC T3 processor (CPU)
- Memory
- Service processor
- Networking and I/O
- IPMC and I²C




# SPARC T3 Processor

The SPARC T3 multicore processor is the basis of the blade server. The SPARC T3 processor is based on CMT technology that is optimized for highly threaded transactional processing. The SPARC T3 processor improves throughput while using

less power and dissipating less heat than conventional processor designs. It is a high-performance, highly integrated processor that implements the 64-bit SPARC V9 architecture. On the blade server, the SPARC T3 processor operates at 1.4 GHz and contains 16 Kbytes of instruction cache per core and 8 Kbytes of data cache per core.

The processor supports 12 SPARC processor cores, and each core is capable of supporting 8 threads for a total of 96 threads.

Each SPARC physical processor core has full hardware support for eight strands, two integer execution pipelines, one floating-point execution pipeline, and one memory pipeline. The 12 SPARC cores are connected through a crossbar to an on-chip unified 4-Mbyte, 16-way associative L2 cache.

There are two on-chip memory controllers that interface directly to FB-DIMM memory and include eight FB-DIMM slots (one per channel, or two per memory controller). In addition, an on-chip PCI-Express I/O interface and two 10-Gb Ethernet ports are available. The SPARC T3 processor is a highly integrated processor.

## Memory Support

The processor has two MCUs, which can support up to four DDR3 memory links. Each link within an MCU connects to two DDR3 DIMMs, providing a total of eight DDR3 slots. The blade server uses four of the channels with two DDR3 DIMM slots per channel, operating at 1066 MHz.

The blade server can support 4-GB DDR3 memory modules for configurations of 16 GB and 32 GB total memory, thermals and power permitting. Each memory channel has two slots: 0 and 1. All channels must be populated.

# Service Processor

The AST2200 service processor provides CPU reset, boot, partition, and FMA. The processor has the following characteristics:

- ASPEED AST2200 CPU running at 266 MHz
- 2 x 10/100 Mbps Ethernet MACs
- 4 x $I^2C$ interfaces
- 2 x UART interfaces

# Networking and I/O

Networking and I/O are provided by the following:


- "PCI Express Interface" on page 9
- "Base and Fabric Interfaces" on page 10
- "Serial Interface and Port" on page 10
- "Compact Flash Support" on page 11
- "IPMC" on page 12
- "Hardware Monitoring" on page 11
- "Temperature Monitoring" on page 11
- "USB Ports" on page 11


## PCI Express Interface

All I/O is provided through the SPARC T3 PCI-express interface.

Dual x8 PCIe 2.0 ports can negotiate 1.0 and 2.0 speeds. The blade server uses the PCIe switch in a configuration of eight PCIe 2.0 port interfaces that are configured as follows:

- x8 PCIe 2.0 upstream port-to-processor
- x4 PCIe 2.0 to Ethernet management (front or rear Zone 3)
- x4 PCIe 2.0 to Base interface
- x1 PCIe 2.0 for PCIe to PCI bridge
- x8 PCIe 2.0 for ARTM (Zone 3)

## Base and Fabric Interfaces

The Base interface extends from the Intel 82576 NIC connected to the PCIe switch through a x4 connection. The PCIe switch then connects to the SP and to the Base interface.

Dual (redundant) 10/100/1000BaseT Ethernet links are connected to the midplane base interface channels.

The x4 PCIe 2.0 lane port is connected from the PCIe switch to a 1GbE Intel 82576EB controller to provide control for Base interface.

Also, the Base connects to the H8 micro-controller through the sideband interfaces for NetConsole requirements.

Two 10-G Ethernet XAUI ports provide the Fabric interface. The XAUI ports are multiplexed between the Zone 2 connector on the midplane and the Zone 3 connector on the midplane (ARTM). Switching between the midplane and ARTM is controlled by the IPMC through the FPGA.

For more information on controllers, refer to Intel's web site (www.Intel.com).

## Serial Interface and Port

An RS-232 serial port is available on the front panel using an RJ-45 connector. This same port is wired through the Zone 3 connectors to provide a copy of this port to the ARTM.

The blade server detects a valid RS-232 connection to either the front or rear port and automatically disconnects the serial port used for NetConsole from the IPMC to the external ports.

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**Note –** The front and rear ports cannot be used at the same time, because they share the same wires.

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## Trusted Platform Module

The blade server uses the Infineon SLB9635, a TPM chip, which enables various security features, including hardware and software authentication. This chip is reserved for future use.

## Compact Flash Support

The blade server supports a single 32-GB capacity compact flash card.

## Hardware Monitoring

The blade server uses an ADM1026 hardware monitor device for monitoring on-board voltages. Other functions of the ADM1026 are not used by the blade server.

The monitored voltages are as follows:

- Primary blade voltages (12V, 5V, and 3.3V)
- Standby voltages (3.3V)
- Five core and chipset voltages
- Four DDR3 voltages
- Battery voltages

Sensors are created for each voltage that is monitored.

For detailed mapping of the sensors, refer to the *Sun Netra CT900 Server Software Developer's Guide*.

## Temperature Monitoring

CPU temperatures are measured using a maximum 6631 device across the ADM1026.

The Intel processor junction temperature is monitored for each CPU. The internal memory temperature is monitored for each installed DIMM.

- Upper Non-Critical 85ºC (185 ºF)
- Upper Critical 95ºC (203 ºF)
- Upper Non-Recoverable 110ºC (230 ºF)

For detailed mapping of the sensors, refer to the *Sun Netra CT900 Server Software Developer's Guide*.

## USB Ports

Two USB 2.0 ports are routed from the NEC USB to the front panel.

# IPMC

The Renesas H8S/2462 IPMC provides the IPM controller function on the blade server. The IPMC provides PICMG 3.0 board management functionality for monitoring, event logging, and recovery control. The IPMC provides management interfaces to the payload through a serial interface.

The IPMC provides the following:

- Dual buffered IPMB interfaces to connect to IPMB-0 (through midplane)
- Blade server power control
- Hot-swap latch input and LED control
- Payload power control
- Payload fabric interface e-keying control
- Payload power and temperature monitoring
- Access to some $I^2C$ devices

# IPMB

The BMR-H8S provides dual buffered IPMB interfaces to the IPMB-0 bus on the PICMG 3.0 midplane. The $I^2C$ channels on the H8S are connected the IPMB-A and IPMB-B through the $I^2C$ buffers. The $I^2C$ buffers allow the blade server $I^2C$ to be isolated from the midplane until the blade server is fully seated and the $I^2C$ bus on the midplane is idle. The $I^2C$ provides functions such as CPU temperature, DIMM temperature, and CPU power.

# FPGA

The FPGA serves as a gateway between the CPU and the service processor and provides functionality for the IPMC. The FPGA has the following characteristics:

- 32-KB integrated SRAM for use as mailbox, data channel, and POST scratch pad
- H8 interface providing IPMC support
- SP interface
- XBUS interface and arbiter
- JBus clock control
- Power sequence control
- Interrupts
- Data channel and fast mailbox control

# ARTM Support

The blade server supports installing an optional ARTM into the rear of the ATCA shelf, opposite the blade server.

- An x8 PCIe channel is routed from the PCIe switch to the ARTM slot.
- The XAUI interface from the CPU can be multiplexed to the ARTM.

Power for the ARTMs is provided through the Zone 3 power connector.

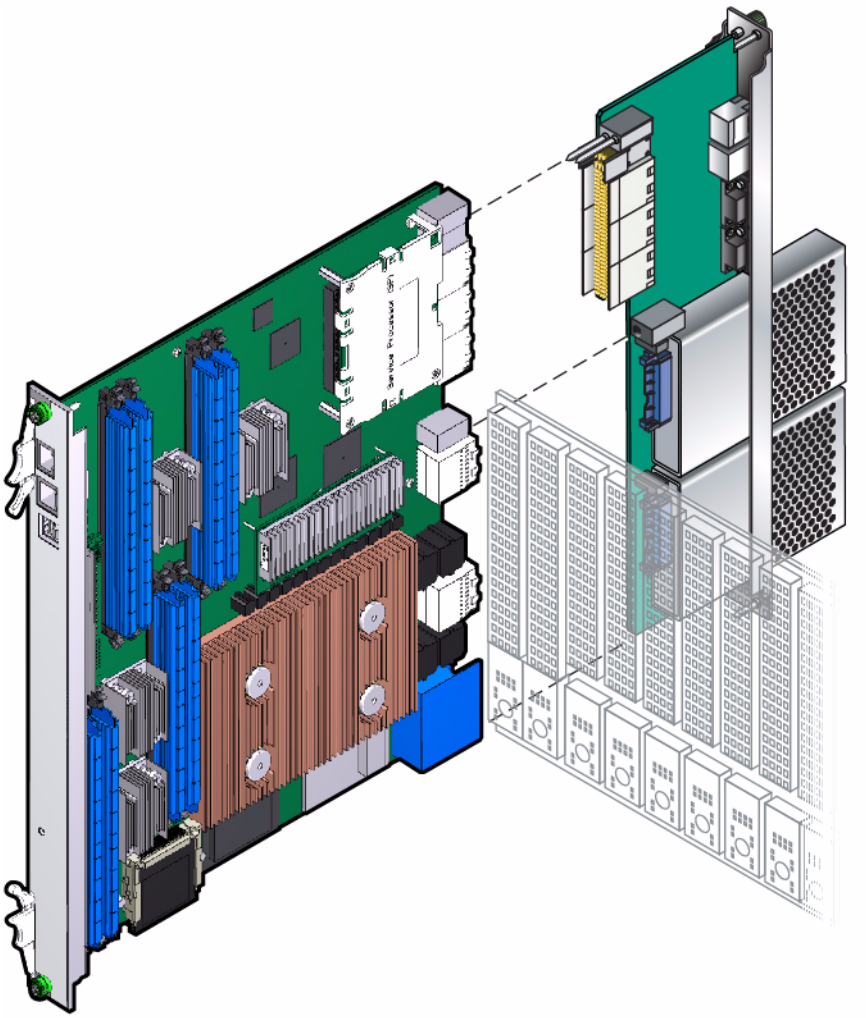
There is no support for drives mounted directly to the blade server, and the blade server itself does not contain any native support for SAS or SATA drives.

You can install one of the optional Sun Netra CP32x0 ARTMs, or any other compatible ARTM, into the rear of the ATCA shelf, opposite the blade server.

An ARTM enables rear system I/O access to the network, to a boot device, or to a console terminal. The Netra CP32x0 ARTMs provide a variety of I/O and storage solutions and hot-swap capability. If present, the Sun Netra CP32x0 ARTM drives Port-2 signals. These support speeds up to 3 Gb per second. The Netra CP32x0 ARTMs are optional and must be ordered separately. Contact your Oracle representative for information on the Netra CP32x0 ARTMs and compatibility with the Netra boards and blade servers.

You can install a Sun Netra CP32x0 ARTM, a compatible third-party ARTM, or build a compatible custom module. You must set up a minimal set of I/O for a boot path for the host blade server. Also, provide a path for console I/O to deliver commands and to read blade server and system status.

The following figure shows the physical relationship between the blade server, the ARTM, and the midplane in a typical ATCA system.



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**Note –** When using the ARTM with the blade server, use cables of less than 10 meters in length for serial I/O ports.

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# Hot-Swap Support

Hot-swap support for inserting and extracting blade servers is provided in accordance with the ATCA PICMG 3.0 and 3.1 standards. "Front and Side Panels" on page 4 shows LEDs for hot-swap status.

Hot-swap of the blade server and ARTM are supported in the Sun Netra CT900 server.

# Ports and Connectors

For detailed descriptions of the ports and connectors, including pin assignments, see "Configuring Ports and Pins" on page 61.

# System Watchdog Timers

Two SWTs are available. The SP provides a built in SWT option that prevents system lockup when software gets trapped in loops without a controlled exit. The SWT requires a special sequence of writes to occur to service it. If the SWT is not serviced, then the SP generates a HRESET (internal hard reset) to the SP.

The SP provides an internal reset status register that provides the cause of the reset.

- When set to a value of 1, bit 3 in the reset status register identifies that a software watchdog reset event occurred.
- When cleared to a value of 0, the bit identifies that no watchdog event occurred.
- Upon a watchdog reset, the SP does not reset the CPU.

The second SWT is in the IPMC and provides a watchdog timer to prevent lockups much the same as the SP watchdog.

- The watchdog timer must be serviced within the time-out period to prevent the timer from overflowing.
- If the timer overflows, the watchdog generates a reset.
- A system control register identifies if an IPMC reset was caused by an external reset or by an internal watchdog overflow.

## Warranty and Technical Support

This hardware carries a one-year replacement warranty. The replacement is provided on a second-business day delivery schedule.

If you have technical questions that are not addressed in the blade server documentation or on the technical support web site, contact your local Oracle Services representative.

For customers in the U.S. or Canada, call 1-800-872-4786.

For customers in the rest of the world, please find the World Wide Solution Center nearest you at the following web site:

(http://www.sun.com/contact/services_solutions.jsp)

### Related Information

- "Part Number, Serial Number, and MAC Address Label Locations" on page 103

# Qualifying Your System

Use the following information to evaluate the blade server and your system for compatibility.

- "System Configurations" on page 17
- "System Requirements and Options" on page 18

### Related Information

- "Evaluating the Blade Server" on page 1

# System Configurations

Blade servers can be installed into an ATCA shelf (chassis), as shown in the following figure. The blade servers can be deployed in various electrical configurations to suit user requirements. For example, the blade server can be configured to boot from a network as a diskless client with either a front panel or an ARTM network connection.

**FIGURE:** Blade Server and Components in Shelf Enclosure

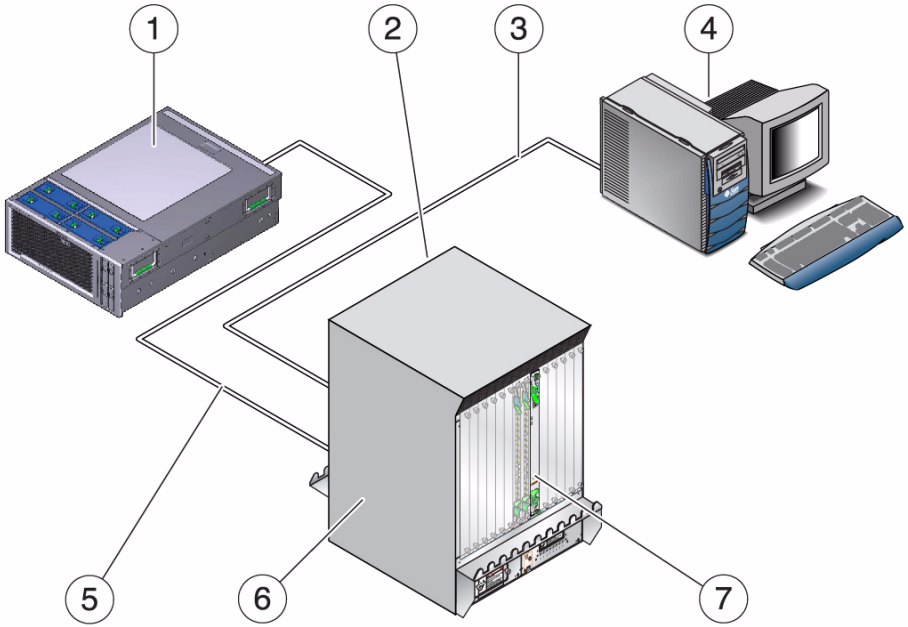


**Figure Legend**

| | | | |
|---|---|---|---|
| **1** | Remote server | **5** | Ethernet connection |
| **2** | ARTM (installed from rear) | **6** | ATCA shelf |
| **3** | Serial connector 10 meters or less | **7** | Blade server |
| **4** | Terminal console | | |

Possible boot and console configurations are described in the following table. The ARTM provides one 10/100/1000BASE-T per second Ethernet RJ-45 port from the host to the rear of the system. Optionally, this port can be used to accomplish a network boot as a diskless client. The other configurations require IHV hardware.

**TABLE:** I/O Configurations

| I/O | Hardware Required | Description |
|---|---|---|
| Ethernet | Sun Netra CP32x0 ARTM, as an option for rear access | The default boot path uses an Ethernet port; the blade server runs in a diskless client configuration. |
| Zone 3 | ARTM | Available with the optional Sun Netra CP32x0 ARTM. |
| Serial data | Netra SPARC T3-1BA blade server | Serial port A on the front panel provides the path of the default console I/O. |
| Serial data | Sun Netra CP32x0 ARTM | When an optional Sun Netra CP32x0 ARTM is installed, the blades's serial port A in rear can be used as the console I/O. The front and rear serial ports cannot be used simultaneously. |
| Compact flash | Compact flash in a mezzanine card | The blade server supports one optional 32-Gbyte compact flash type II socket installed in a mezzanine card on the blade server. |
| USB flash | USB flash device | |

You can configure your blade server with the following optional components:


- "ARTM Support" on page 13
- "Memory Support" on page 8
- "Compact Flash Support" on page 11


# System Requirements and Options

The following topics list the system-level hardware and software components, required and optional, for the Netra SPARC T3-1BA blade server.


- "Hardware Requirements" on page 19
- "Optional Hardware" on page 19
- "Software Requirements" on page 20
- "Optional Oracle VTS Software" on page 20

## Hardware Requirements

The blade server cannot be used as a stand-alone server. It is designed to be used in an ATCA chassis for 8U boards.

The minimum hardware requirements needed to use the blade server are as follows:

- ATCA system enclosure for 8U boards (includes shelf, midplane, hub and switch board, shelf manager, and power supply)
- Console output device or serial terminal
- Boot device (such as hard drive, network, or CF card)
- Peripheral device for network access
- IPMC (built in)
- Cables for terminal and network connections
- High-speed fans for cooling

  If you are installing the blade server in a Netra CT900 server that has lower-speed fan trays, you must upgrade the Netra CT900 server fan trays to support the additional cooling needs of the blade server. For more information on the Netra CT900 server fan tray upgrade kit, see the *Netra CT900 Server Upgrade Guide*.

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**Caution –** You can damage the blade server components if you install the blade server in a chassis that does not provide sufficient cooling.

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**Note –** Use only serial cables that are less than 10 meters in length.

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## Optional Hardware

The following optional hardware components can be used with the blade server:

- CF card
- Sun Netra CP3240 switches
- Sun Netra CP32x0 ARTMs and other compatible ARTMs

The optional ARTM enables rear system I/O access to the following:

- Network
- Boot device
- Console terminal

## Software Requirements

The blade server supports Oracle Solaris 10 9/10 Operating System and subsequent compatible versions.

Refer to the *Netra SPARC T3-1BA Blade Server Product Notes* for more information, including a list of required Netra software patches. You can view and download the latest version of the product notes at the following web site:

(http://www.oracle.com/pls/topic/lookup?ctx=nst31ba&id=homepage)

## Optional Oracle VTS Software

The Oracle VTS (formerly SunVTS) software is a comprehensive software suite that tests and validates the blade server by verifying the configuration and function of most hardware controllers and devices on the blade server.

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**Note –** The Oracle VTS software runs only on the Oracle Solaris OS. Similar test suites are available for Linux operating systems.

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Oracle VTS software is used to validate a system during development, production, inspection, troubleshooting, periodic maintenance, and system or subsystem stressing. Oracle VTS software can be tailored to run on various types of machines, ranging from desktops to servers, with modifiable test instances and processor affinity features.

You can perform high-level system testing by using the appropriate version of Oracle VTS software. For detailed information on Oracle VTS software support, downloads, and documentation, refer to the following web sites:

(https://support.oracle.com)

(http://www.sun.com/oem/products/vts/)

(http://docs.sun.com/app/docs/prod/test.validate)

You will be prompted for your Online Account name and password.

Ensure that the Oracle VTS software version is compatible with the Oracle Solaris OS being used. VTS7.0PS8.x is bundled with Oracle Solaris 10 OS (10/09) and newer.

You can find information about the Oracle VTS software version installed on your system by using the following command:

```
# cat /usr/sunvts/bin/.version
# pkginfo -l SUNWvts
```

To start Oracle VTS:

```
# /usr/sunvts/bin/startsunvts
```

---

**Note –** For security reasons, only a superuser is permitted to run Oracle VTS software. Installation and starting instructions are included with the software when it is downloaded.

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# Installing Optional Components

The following topics provide information and instructions for installing optional components onto the blade server. If you're installing a new blade server, many of the optional components are best installed before you install the blade server.


- "Install an ARTM" on page 23
- "Install Compact Flash" on page 27
- "Install Onboard Memory" on page 29


### Related Information


- "Qualifying Your System" on page 16
- "Removing Optional Components" on page 94


## ▼ Install an ARTM

A compatible ARTM can be used with the blade server for rear I/O access. The ARTM enables access to the network, a boot device, and a console terminal. You can use one of the Sun Netra CP32x0 ARTMs, a compatible third-party ARTM, or you can design your own compatible ARTM.

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**Note –** The following procedure provides a general set of instructions for pairing an ARTM with a blade server. Refer to the ARTM documentation for specific instructions on installing and configuring these components.

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1. **Take antistatic precautions.**

   See "Safety Requirements" on page 37.

2. **From the rear of the system, choose the corresponding slot for the ARTM.**

   The ARTM must be installed, inline, behind a compatible blade server.

   For example, if the blade server will be installed in slot 3, the corresponding ARTM must be installed at the back of the system in slot 3. If you do not install the ARTM and the blade server in corresponding slots, the system will recognize the blade server and not the ARTM.

   When facing the front of the ATCA chassis, slots are numbered left to right, but when facing the rear of the chassis, slots are numbered from right to left.

**FIGURE:** Installing an ARTM

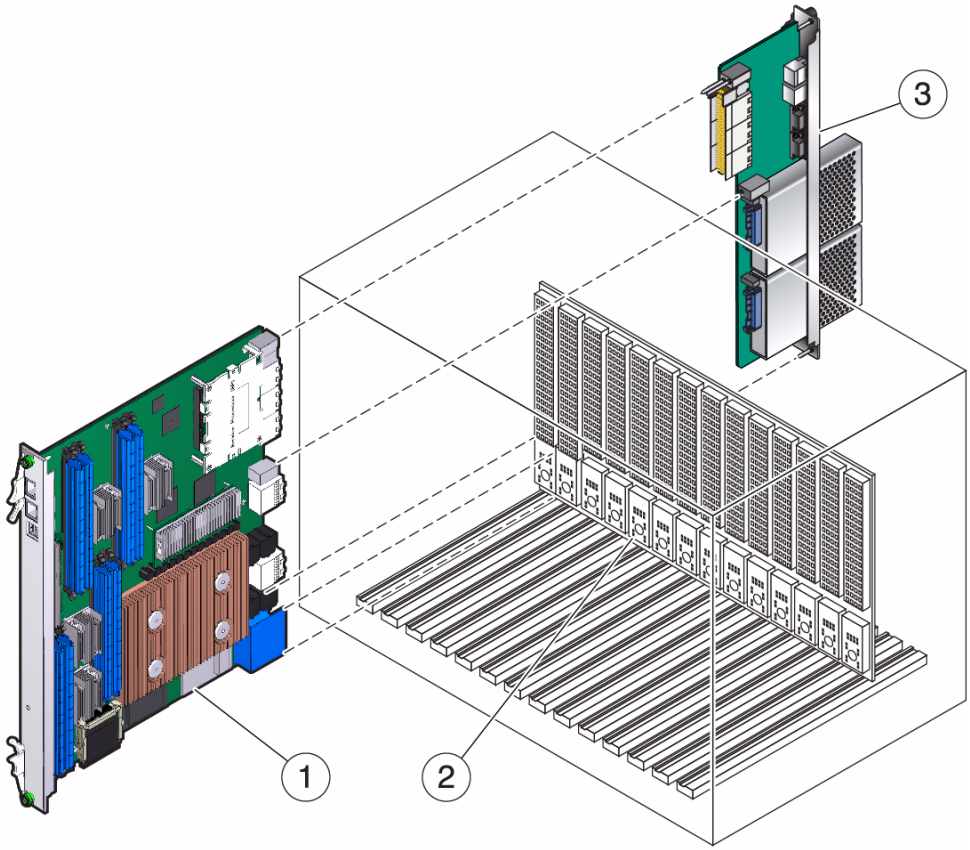



**Figure Legend**

| | |
|---|---|
| **1** | Blade server (installed from the front) |
| **2** | ATCA midplane |
| **3** | Netra CP32x0 ARTM (installed from rear in corresponding slot to blade server's front slot) |

3. **Remove the slot filler panel from the selected slot, if necessary.**

4. **Retrieve the ARTM from the ship kit.**

5. **Configure the ARTM connectors for the blade server.**

   See "Configuring Ports and Pins" on page 61.

   If you are using one of the Sun Netra 32x0 ARTMs, refer to the documentation for detailed information.

6. **Prepare the ARTM by opening the injector/ejector latch at the top of the module.**

**FIGURE:** Injector/Ejector Latch and Locking Screw on the ARTM

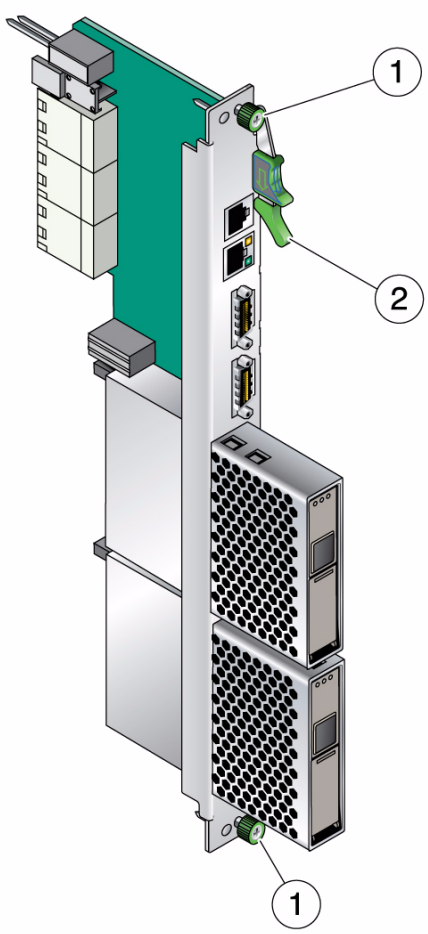



**Figure Legend**

| | |
|---|---|
| **1** | Locking screws |
| **2** | Injector/ejector latch |

7. **Carefully align the edges of the ARTM with the card guides in the appropriate slot.**

   Look into the enclosure to verify correct alignment of the rails in the guides.

8. **Keep the ARTM aligned in the guides, and slide the module in until the injector/ejector latches engage the card cage.**

9. **Push the ARTM into the midplane connectors, and close the latch.**
10. **Tighten the locking screws to ensure that the module is secured into the ATCA shelf.**

### Related Information

- "Installing the Blade Server" on page 33
- "Power Off and Remove an ARTM" on page 95
- "Advanced Rear Transition Module Connectors (Zone 3)" on page 70

## ▼ Install Compact Flash

A CF and mezzanine card (holds the CF) can be installed on the blade server for user flash. Due to the location of the CF slot, the blade server must be outside of the chassis for you to install a CF and mezzanine card. The CF is not hot-swappable. The maximum capacity is 32-GB.

1. **Take antistatic precautions.**

   See "Safety Requirements" on page 37.

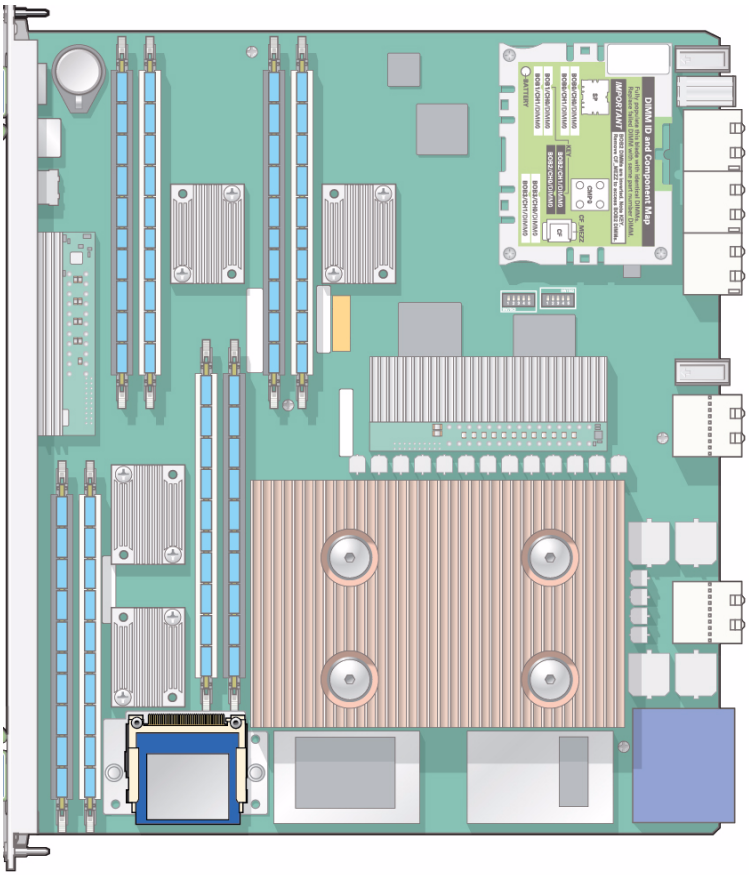
2. **Access the blade server by performing one of the following procedures:**
   - If the blade server is installed in an ATCA shelf, remove the blade server.

     See "Power Off and Remove the Blade Server" on page 93.
   - If the blade server is new and not installed, unpack the blade server.

     See "Unpack the Blade Server" on page 39.

**Caution –** Do not place the blade server on top of an antistatic envelope unless the outside of the envelope also has antistatic properties. For detailed handling instructions and safety precautions, see "Unpack the Blade Server" on page 39.

3. **Install the CF onto the mezzanine card.**
4. **Locate the CF connector on the blade server.**




5. **Install the paired CF and mezzanine card by using the arrow on the card as a guide to insert it into the CF connector.**

   The connector on the mezzanine card must align with the connector on the blade server. Do not use force, or damage may occur to the connectors.

---

**Note –** CF cards have a life span of 2,000,000 write/erase cycles. Users are responsible for ensuring that the OS and applications do not exceed this maximum.

---

### Related Information

- "Installing the Blade Server" on page 33
- "Remove a Compact Flash Card" on page 96

- "Compact Flash Connector" on page 66

# ▼ Install Onboard Memory

This procedure provides a general guide for installing DIMMs as onboard memory. However, for specific directions on installing DIMMs, refer to the documentation that shipped with the DIMMs.

The blade server accommodates DDR3 (registered, ECC) @ 1066 MHz DIMMs. For more information, see "Memory Support" on page 8.

1. **Take antistatic precautions.**

---

**Caution –** Always wear a grounded antistatic wrist strap when handling DIMMs.

---

2. **Access the blade server by performing one of the following procedures:**
   - If the blade sever is new and not installed, unpack the blade server.

     See "Unpack the Blade Server" on page 39.
   - If the blade server is installed in an ATCA shelf, remove the blade server from the shelf.

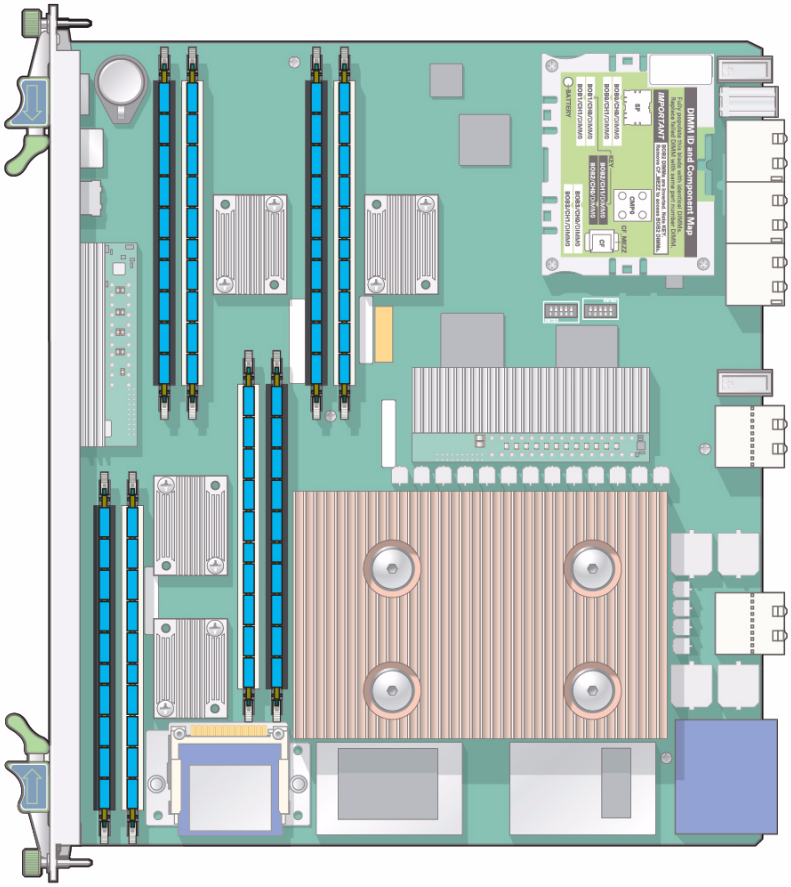
     See "Power Off and Remove the Blade Server" on page 93.

---

**Caution –** Do not remove the DIMM from its antistatic container until you are ready to install the DIMM on the blade server. Handle the DIMM only by its edges. Do not touch DIMM components or metal parts. Always wear a grounded antistatic wrist strap when handling a DIMM.

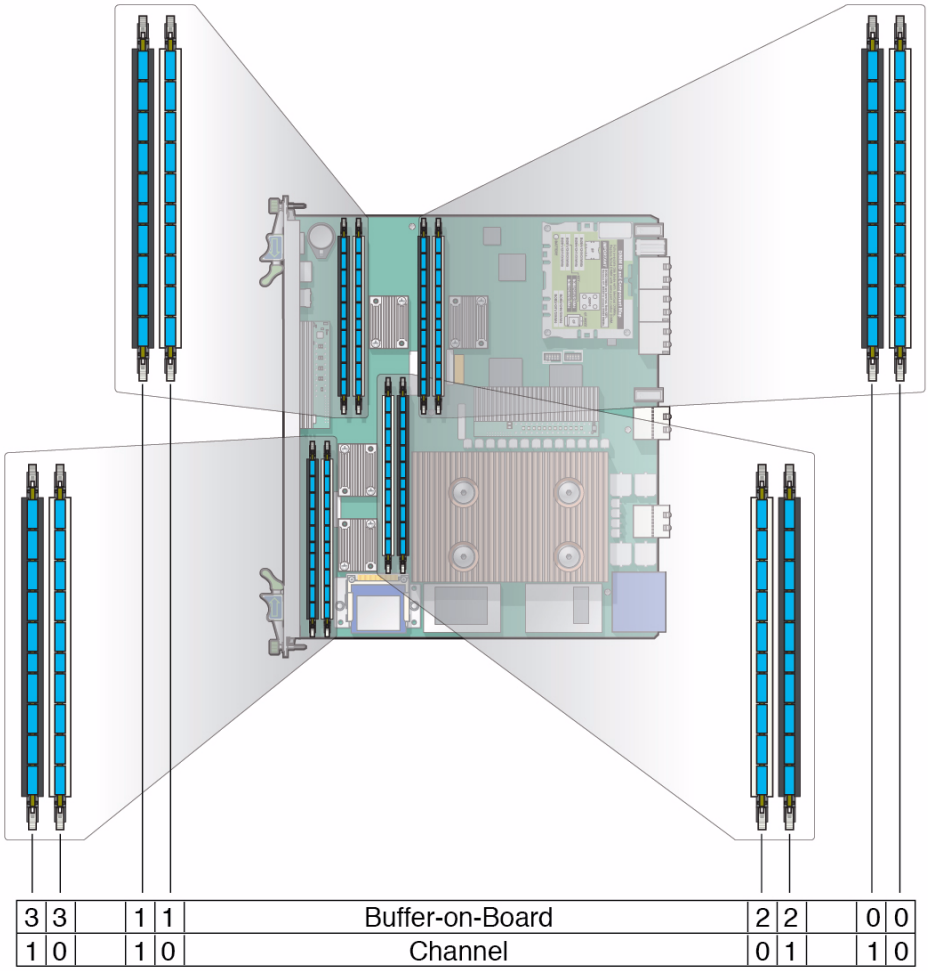
---

3. **Locate the DIMM channels and connectors on the blade server, as shown in the following figure.**



4. **Select the channels and slots where you will install the DIMMs.**

   All channels must be populated.




5. **If installing DIMMs in lower right slots and a CF and mezzanine card (the daughter card that holds the CF) is installed, remove the CF and mezzanine card.**

   See "Remove a Compact Flash Card" on page 96.

6. **Remove the DIMM from its protective packaging, holding the module only by the edges.**

---

**Note –** Before installing a replacement DIMM, verify that the new DIMM is the same capacity as its paired DIMM.

---

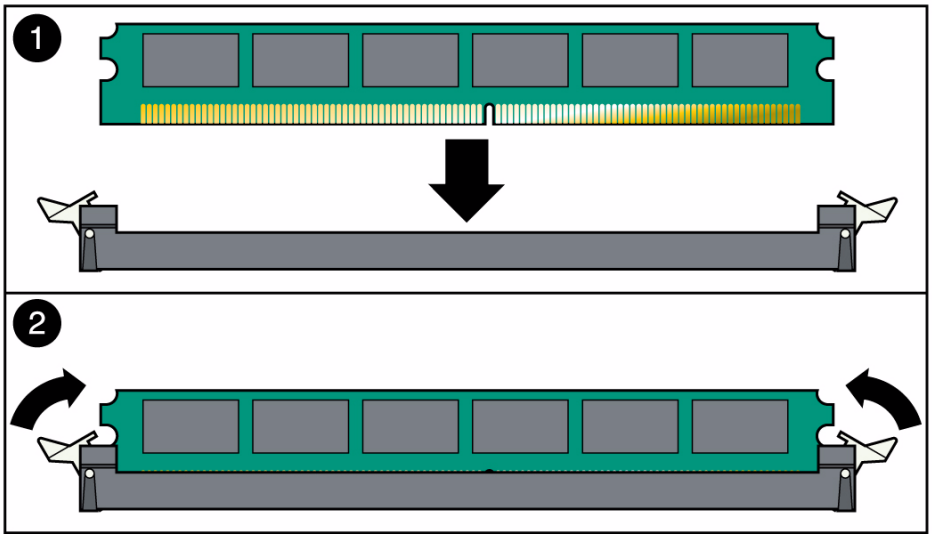
7. **Holding the DIMM upright to the blade server, insert the bottom edge of the DIMM into the bottom of the slot's hinge-style connector, as shown in the following figure.**

---

**Caution –** Evenly engage the DIMM in its hinge-style slot. Uneven contact can cause shorts that will damage the blade server. Do not rock the DIMM into place. Ensure that all contacts engage at the same time. You will feel or hear a click when the DIMM properly seats in the connector.

---

The socket and module are both keyed, which means that the DIMM can be installed only one way. With even pressure, push simultaneously on both upper corners of the DIMM until its bottom edge (the edge with the gold fingers) is firmly seated in the connector.




8. **Press the top edge of the DIMM toward the blade server until the retainer clips click into place in the notches on the DIMM sides.**

   The small metal retainer clips on each side of the DIMM slot are spring-loaded and should click into place in the notches on the sides of the DIMM.

9. **Reinstall the CF and mezzanine card, if removed.**

   See "Install Compact Flash" on page 27.

### Related Information


- "Installing the Blade Server" on page 33
- "Remove Onboard Memory" on page 98
- "DDR3 DIMM Connector" on page 66

# Installing the Blade Server

The following topics provide information and instructions for installing the blade server.



### Related Information


- "Evaluating the Blade Server" on page 1
- "Qualifying Your System" on page 16
- "Installing Optional Components" on page 23


# Preparing to Install the Blade Server

Before installing the blade server, ensure that your system meets the minimum environmental and power requirements, you have the required tools and IP addresses, and your system has the required fan trays.

**Caution –** Installing the blade server without completing the preparation tasks might result in damage to the blade server or your system.

- "Local Network IP Addresses and Host Names" on page 36
- "Safety Requirements" on page 37
- "Upgrade the Fan Trays" on page 38

# Environmental Requirements

The blade server fits into a standard ATCA shelf. If your installation requirements are different, contact your field applications engineer.

Verify that your environment meets the following requirements:

- Your enclosure specifications can support the sum of the specified maximum blade server power loads. See "Power and Thermal Distribution" on page 34.
- Facility power loading specifications can support the rack or enclosure requirements.
- Your enclosure specifications can support the cooling airflow requirements.

# Power and Thermal Distribution

Typical heat dissipation and power consumption metrics for a blade server are as follows:

- 225W to 300W maximum power for blade
- Power input: -40.5 VDC to -72 VDC (-48VDC to -60 VDC nominal)
- Normal operating temperatures range is 0ºC to 40ºC (32 ºF to 104 ºF)
- Short-term operating temperature range is 5ºC to 55ºC (41 ºF to 131 ºF) to support ETSI cold start and NEBS short-term high temperatures
- Long-term operating temperature range is 5ºC to 45ºC (41 ºF to 113 ºF)

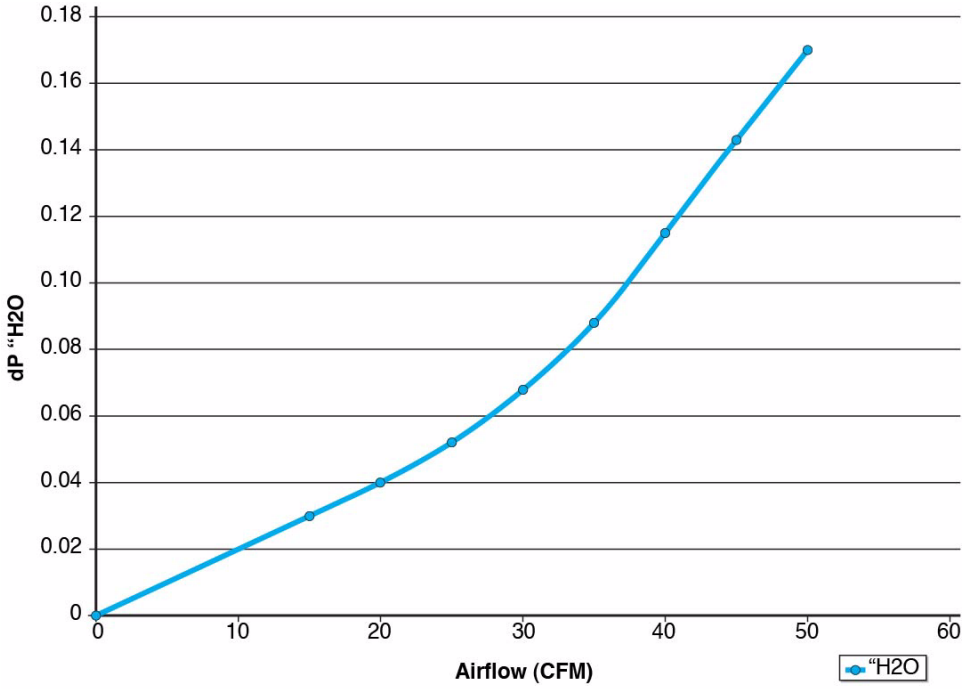
Power is allocated on a cumulative basis per zone, with a maximum of 1100 watts per zone. This design allows you flexibility to install blades and their optional components (such as ARTMs) of varying power requirements. However, if you install a blade in a zone where there is not enough power available to allocate to the new blade, it will not power on. In this case, install the blade in a zone that has enough capacity.

For information about sensors, refer to the *Sun Netra CT900 Server Software Developer's Guide*.

# Required Cooling and Blade Impedance Curve

The blade server requires the following cooling and impedance curves.

| Watts | $m^3$ per Min | | | | CFM | | | |
|---|---|---|---|---|---|---|---|---|
| Power Level | 25ºC 77ºF | 28ºC 82.4ºF | 40ºC 104ºF | 55ºC 131ºF | 25ºC 77ºF | 28ºC 82.4ºF | 40ºC 104ºF | 55ºC 131ºF |
| 140 | 0.45 | 0.45 | 0.91 | 0.91 | 16 | 16 | 32 | 32 |
| 205 | 0.45 | 0.45 | 0.91 | 0.91 | 16 | 16 | 32 | 32 |
| 210 | 0.45 | 0.45 | 0.91 | 0.91 | 16 | 16 | 32 | 32 |



# Tools and Materials Needed

The tools needed for installation and service are as follows:

- Phillips screwdrivers: No. 1 (required), No. 2 (optional)
- Flat head screwdriver, if installing optional compact flash
- Antistatic wrist strap
- Terminal console
- Serial cable of less than 10 meters to connect blade server to system console

# Local Network IP Addresses and Host Names

Collect the information listed in the following table to connect hosts to the LAN. Ask your network administrator for help, if necessary. This information is unnecessary for an installation that is not networked.

**TABLE:** Local Area Network Information

| Information Needed | Your Information |
|---|---|
| IP address* and host name for each blade server client | |
| Domain name | |
| Type of name service and corresponding name server names and IP addresses—for example DNS and NIS (or NIS+) | |
| Subnet mask | |
| Gateway router IP address | |
| NFS server names and IP addresses | |
| Web server URL | |

* Local IP addresses are not needed if they are assigned by a network DHCP server.

You might need the base MAC (Ethernet) addresses of the local hosts to make name server database entries.

You can see the base MAC address in the console output while booting the blade server. Also, you can find it on the barcode label on the blade server (see "Locate Base MAC Address on Blade Server" on page 77).

# Safety Requirements

Refer to the following documents for safety information:

- *Important Safety Information for Sun Hardware Systems* for general safety information.
- *Netra SPARC T3-1BA Blade Server Safety and Compliance Guide* for blade server safety information.

Carefully read the following safety statements that are specific to the blade server before you install or remove any part of the system.

---

**Caution –** Depending on the particular chassis design, operations with open equipment enclosures can expose the installer to hazardous voltages with a consequent danger of electric shock. Ensure that line power to the equipment is disconnected during operations that make high-voltage conductors accessible.

---

The installer must be familiar with commonly accepted procedures for integrating electronic systems and the general practice of Oracle systems integration and administration. Although parts of these systems are designed for hot-swap operation, other components must not be subjected to such stresses. Work with power connected to a shelf only when necessary, and follow these installation guidelines to avoid equipment damage.

This equipment is sensitive to damage from electrostatic discharge from clothing and other materials. Use the following antistatic measures during an installation:

- If possible, disconnect line power from the shelf when servicing a system or installing a hardware upgrade. If the shelf cannot be placed on a grounded antistatic mat, connect a grounding strap between the facility electrical input ground (usually connected to the shelf) and facility electrical service ground.
- Use an antistatic wrist strap when performing the following tasks:
  - Removing a blade server from its packaging
  - Connecting or disconnecting blade servers or peripherals

  The other end of the antistatic wrist strap lead should be connected to one of the following:

  - A ground mat
  - The chassis metal as a ground

  The grounded mat or the chassis must be connected to a facility ground to prevent a floating ground.

- Remove a blade server from its packaging only when wearing a properly connected ground strap.
- Place blade servers on an antistatic mat if one is available, and the mat is grounded to a facility electrical service ground. Do not place blade servers on top of packaging.

## ▼ Upgrade the Fan Trays

The following applies only to the Oracle Netra CT900 chassis. Refer to the *Netra CT900 Server Upgrade Guide* for detailed information.

The Netra CT900 server fan tray upgrade kit must be installed in the chassis before the blade server is installed. This fan tray upgrade is required to provide adequate cooling and prevent the system from overheating or shutting down due to an over temperature condition that can occur with older or mismatched fan trays.

---

**Note –** This component is hot-swappable and customer-replaceable.

---

1. **Log in to the Shelf Manager.**
2. **Issue the following command for fan trays 1, 2, and 3:**

```
# clia fruinfo fan_tray 1 | grep "Product Part"
```

3. **If the "Product Part/Model Number" is 380-1559-*xx* or newer, an upgraded fan tray is already installed.**
4. **If the "Product Part/Model Number" is 380-1214-02 or older, the fan trays must be replaced with high-speed fan trays.**

   Refer to the *Netra CT900 Server Upgrade Guide* for detailed information.

   (http://www.oracle.com/pls/topic/lookup?ctx=ct900&id=homepage)

---

**Note –** Be careful not to disconnect adjacent fans.

---

**Caution –** If you are hot-swapping this component, do not keep the fan tray access cover open for more than *60 seconds* at a time on a running system, otherwise the system might overheat. Remove and replace only *one fan module at a time*.

---

# Installing the Blade Server



### Related Information



## ▼ Unpack the Blade Server

To avoid damage to the component, follow the safety requirements when unpacking the blade server. See "Safety Requirements" on page 37.

1. **Place an antistatic wrist strap on your wrist, and connect the other end of the wrist strap to either a ground mat or the chassis metal, which is connected to a facility ground.**
2. **Remove the blade server from its antistatic bag.**
3. **Install any optional components before installing the blade server.**

   See "Install Optional Components" on page 39.

## ▼ Install Optional Components

Before installing the blade server into a chassis, install any optional components first.

1. **To install an ARTM, go to** "Install an ARTM" on page 23**.**
2. **To install compact flash, go to** "Install Compact Flash" on page 27**.**
3. **To install memory, go to** "Install Onboard Memory" on page 29**.**

## ▼ Connect the External I/O Cables

Front panel ports are typically used for maintenance and troubleshooting purposes in installed and running systems. External I/O cables are connected to the blade server, or to an ARTM, when one is used.

1. **Using a Category 5e or better cable, connect one end of the Ethernet cable to a suitable 10/100/1000 BASE-T Ethernet switch and the other end to one of the Ethernet ports on the blade server or the ARTM.**

**FIGURE:** Ports on the Blade Server


**Figure Legend**

| | |
|---|---|
| **1** | Serial port |
| **2** | Ethernet port |
| **3** | USB ports |

2. **Connect asynchronous serial I/O cables from serial communication devices to the RJ-45 serial ports on the blade server or ARTM.**

3. **If you need to map netinstall boot devices, go to** "Network Device Aliases" on page 87**.**

4. **Connect cables based upon which OS is running on your system:**

a. **For Oracle Solaris OS, go to** "Connect Cables to a System Console Running the Oracle Solaris OS" on page 42.

b. **For another OS, go to** "Connect Cables to a System Console Not Running Oracle Solaris OS" on page 43.

## ▼ Connect Cables to a System Console Running the Oracle Solaris OS

1. **Connect a RJ-45 style serial cable to the serial console port on the front panel of the blade server or the ARTM.**

   See "Connect the External I/O Cables" on page 40.

   Serial access (both front and rear) is through the same serial interface controller. If both ports are connected at the same time, console input and output can be performed through both, however, this configuration is not ideal. If both access interfaces are not connected at the same time, console input and output can be performed through NetConsole session through the ShMM.

2. **Connect the other end of the serial cable to the serial port of the system serving as the serial console.**

3. **Use one of the following utilities to establish a full-duplex serial terminal connection with the blade server:**

   - The `tip` utility
   - The `minicom` utility
   - A `telnet` utility (connect to the proper port on a network terminal server to which the blade server is connected)
   - Another suitable serial communications program on the system console

     For example, if you are using a UNIX system as the system console, at the UNIX prompt in a command tool or shell tool, or serial port A, type:

```
# tip -9600 /dev/ttya
```

## ▼ Connect Cables to a System Console Not Running Oracle Solaris OS

1. **Connect a serial cable to the serial console port on the front panel of the blade server or the ARTM.**

   See "Connect the External I/O Cables" on page 40.

2. **Connect the other end of the serial cable to the serial port of the system serving as the system console.**

3. **Set the serial communications settings to the following:**
   - 9600 baud
   - 8 bit
   - 1 stop bit
   - no parity
   - no handshake

## ▼ Insert and Latch the Blade Server

If you will use the blade server with optional components such as CF, ARTM, or onboard memory, install the optional components first. (See "Installing Optional Components" on page 23.)

---

**Note –** In a Sun Netra CT900 server chassis, slots 1 through 6 and slots 9 through 14 are available for blade servers. Slots 7 and 8 are reserved for the switch cards.

---

1. **If you have installed an ARTM, go to the front of the system and locate the corresponding slot number of the ARTM.**

2. **Remove the filler panel from the slot, if necessary.**

   The filler panel is secured to the card cage using two screws, one at the top of the filler panel, the other at the bottom. Store the filler panel and screws in a safe place; you might need to use them again if you remove a blade server for an extended time.

3. **Prepare the blade server by opening the injector/ejector latches.**

4. **Carefully align the edges of the blade server with the guides in the appropriate slot.**

   Look into the enclosure to verify correct alignment of the rails in the guides.

5. **Keep the blade server aligned in the guides, and slide the blade server in until the injector/ejector latches engage the card cage and come in contact with the midplane or ARTM Zone 3 connectors.**

6. **To overcome the connector resistance, use the injector/ejector latches to lever the blade server into position.**

   By rotating the injectors/ejectors from the horizontal to vertical position, you can fully seat the blade server.

7. **Close the latches to seat the blade server in the connectors.**

   Slide the top and bottom injector/ejector latches so that both plastic parts touch. When the upper and lower levers are engaged properly, the blue Hot-Swap LED blinks while the blade server is initializing. The blue LED turns off and the green OK LED lights when the blade server is ready for use.

   Blade servers are powered on automatically through the H8 BMC when you install the blade server into a slot in the ATCA shelf. Once installed, the blade server sequences through power-on states until it is fully powered on.

---

**Note –** If the hot-swap LED does not light, lightly push the latch so that it engages the hot-swap switch.

---

8. **Tighten the locking screws and the top and the bottom of the blade server to ensure that it is secured to the ATCA shelf.**

   The blade server is now completely installed and will power on automatically.

9. **If the blade server does not power on, check the following:**

   a. **Ensure that the blade server is fully seated in the slot.**

      You might need to loosen the locking screws and pull the blade server out slightly before pushing it in to seat it properly.

   b. **Determine if the maximum slot power is less than 300 watts or the total zone maximum has been reached.**

      Maximum power per slot is 300 watts. Maximum power per zone is approximately 1100 watts.

      In a Sun Netra CT900 chassis, the ShMM manages the power to all slots and zones. If there is available power to allocate, the ShMM will allow up to the maximum per slot and zone. When the maximum is reached, any additional blade servers installed will not power on.

      In a third-party chassis, if the maximum slot power is less than 300 watts or the total zone maximum has been reached, the blade server will not power on.

10. **Install and upgrade the software and firmware.**

    See "Software and Firmware Upgrades" on page 46.

# Operating System and Patches

The blade server uses the Oracle Solaris 10 (9/10) OS and subsequent compatible versions, with associated patches. Refer to the *Netra SPARC T3-1BA Blade Server Product Notes* for the Oracle Solaris OS version and the patches and patch installation procedures.

The blade documentation is available online at:

(http://www.oracle.com/pls/topic/lookup?ctx=nst31ba&id=homepage)

The Oracle Solaris OS software and patches can be downloaded from Oracle at:

(https://support.oracle.com)

The Oracle Solaris documentation is available online at:

(http://www.oracle.com/technetwork/server-storage/solaris/downloads)

---

**Note –** For information on versions of the Oracle Solaris OS, including installation, see the appropriate Oracle Solaris Documentation Collection at the Oracle Documentation web site.

---

Depending on the blade server's hardware configuration, the blade server can be used as a diskless client with the Oracle Solaris OS installed on a boot server (see "Create a Boot Server for Diskless Clients" on page 50). The OS can be downloaded to a boot device like a Sun Netra CP32x0 ARTM or CF.

# Software and Firmware Upgrades

After installing the blade server and any optional components, you are ready to install and upgrade the software and firmware. The newest release contains the most up-to-date features, enhancements, and bug fixes. Using an earlier release could limit your use of features and enhancements, and could affect your systems with known issues.

To download packages and install and upgrade software and firmware, refer to the following documentation:

- *Netra SPARC T3-1BA Blade Server Product Notes*
- *Sun Netra CT900 Server Product Notes*

Additionally, other products such as ARTMs might need upgrading to the most current software and firmware releases.

# Administering the System

In addition to the administration topics in this user's guide, additional administration, reference, and configuration information for the blade server and all Sun Netra blade servers are available in the following documents:

- *Netra CT900 Server Administration and Reference Manual*
- *Netra CT900 Server Software Developer's Guide*
- *Netra CT900 Server Service Manual*

(http://www.oracle.com/pls/topic/lookup?ctx=ct900&id=homepage)

Even if you are using the blade server in a third-party shelf, the information in these other documents will be useful.

The following topics provide information and instructions for administering the blade server, network, and user accounts.

# Software and Firmware Upgrades

The newest software and firmware release package contains the most up-to-date features, enhancements, and bug fixes. Using an earlier release could limit your use of features and enhancements, and could affect your systems with known issues.

Software updates and support information for the blade server, optional components, and the Netra CT900 system can be found at:

(https://support.oracle.com)

For detailed instructions, refer to the following documentation:

- *Netra SPARC T3-1BA Blade Server Product Notes*
- *Sun Netra CT900 Server Product Notes*

For information on your specific configuration, contact your local Oracle Services representative.

# Firmware and Blade Server Management

For documentation on firmware and blade server management, refer to the Oracle Solaris OS and Oracle Solaris system administration documentation. Two of the Oracle Solaris programs commonly used for firmware and blade server management are described in the following sections.

## OpenBoot Firmware

The Oracle Solaris OS installed operates at different run levels. For a full description of run levels, refer to the Oracle Solaris system administration documentation.

Most of the time, the OS operates at run level 2 or run level 3, which are multiuser states with access to full system and network resources. Occasionally, you might operate the system at run level 1, which is a single-user administrative state. However, the lowest operational state is run level 0.

When the OS is at run level 0, the `ok` prompt appears. This prompt indicates that the OpenBoot firmware is in control of the system.

There are a number of scenarios under which OpenBoot firmware control can occur.

By default, before the operating system is installed, the system comes up under OpenBoot firmware control.

- When the `auto-boot?` OpenBoot configuration variable is set to false, the system boots to the ok prompt.
- When the operating system is halted, the system transitions to run level 0 in an orderly way.
- When the operating system crashes, the system reverts to OpenBoot firmware control.
- During the boot process, when there is a serious hardware problem that prevents the operating system from running, the system reverts to OpenBoot firmware control.
- When a serious hardware problem develops while the system is running, the operating system transitions smoothly to run level 0.
- When the OS is deliberately placed under the OpenBoot firmware control in order to execute firmware-based commands.

---

**Note –** For this blade server, a user modifiable net speed/mode from the OpenBoot `ok` prompt is not allowed. The Base interface link parameters cannot be modified, and only the default link parameters with auto-negotiation are supported.

---

For information about getting to the ok prompt, auto-boot options, and OpenBoot commands, refer to the Oracle Solaris system administration documentation.

# Power-On-Self-Test Diagnostics

POST is a firmware program that helps determine whether a portion of the system has failed. POST verifies the core functionality of the system, including the CPU modules, motherboard, memory, and some on-board I/O devices. The software then generates messages that can be useful in determining the nature of a hardware failure. POST can run even if the system is unable to boot.

If POST detects a faulty component, it is disabled automatically, preventing faulty hardware from potentially harming any software. If the system is capable of running without the disabled component, the system boots when POST is complete. For example, if one of the processor cores is deemed faulty by POST, the core is disabled, and the system boots and runs using the remaining cores.

POST diagnostic and error message reports are displayed on a console.

# Creating a Boot Disk Server and Adding Clients

These topics describe how to create a boot server for diskless clients and how to add new diskless clients to the boot server. For additional instructions on installing diskless clients, refer to the appropriate Oracle documentation collection web site at:

(http://www.oracle.com/technetwork/indexes/documentation/index.html)

You must have a superuser password on your diskless server to perform the tasks in the following sections.


- "Create a Boot Server for Diskless Clients" on page 50
- "Add Diskless Clients" on page 52
- "Connect Hosts to LAN" on page 54


## ▼ Create a Boot Server for Diskless Clients

This procedure sets up a boot server by starting the operating environment services required for diskless clients. After you set up the boot server, update it with any patches, then add diskless clients to the boot server.

1. **Verify that the IP addresses for all other network interfaces on the boot server have corresponding host names in the hosts database.**

2. **Log in to the network server as superuser and change to the** `/usr/sadm/bin` **directory.**

```
# cd /usr/sadm/bin
```

3. **Use the** `smosservice` **command to add boot services to the installation server.**

**Note –** The \ (backslash) in the following code boxes is a line-continuation character indicating that the command is continued on the next line.

```
# ./smosservice add -u root -p root_password -- -x mediapath=image_directory \
-x platform=sparc.sun4v.Solaris_n -x cluster=SUNWCXall -x locale=locale
```

where

| Variable | Description |
|---|---|
| *root_password* | The root password for the installation server |
| *image_directory* | Path to the directory where the Oracle Solaris OS install image is stored |
| *n* | Oracle Solaris OS version you are using |
| *locale* | Client's locale |
| \ | The \ (backslash) is a line-continuation character indicating that the command is continued on the next line |

Refer to the `smosservice(1M)` man page for more information and options.

For example:

```
# ./smosservice add -u root -p root password -- -x mediapath=/export/install\ -x
platform=sparc.sun4v.Solaris_10 -x cluster=SUNWCXall -x locale=en_US
```

4. **Download and install additional patches.**

   Refer to the *Netra SPARC T3-1BA Blade Server Product Notes* for the latest information on the patches available for the blade server and instructions for applying patches to a diskless client boot server.

   (http://www.oracle.com/pls/topic/lookup?ctx=nst31ba&id=homepage)

5. **After the patches are installed, add a diskless client (**"Add Diskless Clients" on page 52**.)**

## ▼ Add Diskless Clients

Create a boot server and apply the latest patches, as detailed in "Create a Boot Server for Diskless Clients" on page 50, before adding diskless clients.

1. **Log in as `root` to the boot server.**
2. **Collect the following information for each diskless client you are adding:**
   - IP address
   - Ethernet address
   - Host name
3. **Change directories to the `/usr/sadm/bin` directory.**

```
# cd /usr/sadm/bin
```

4. **For each diskless client, type the following command as** `superuser`**:**

```
# ./smdiskless add -- -i ip_address -e Ethernet_address -n host_name \-x swapsize=
name_server
swap_size -x tz=time_zone -x locale=locale -x ns=name_service \-x nameserver=-x os=
sparc.sun4v.Solaris_n -x root=/export/root/host_name \-x swap=/export/swap/
-x os=sparc.sun4v.Solaris_n -x root=/export/root/host_name \-x swap=
/export/swap/
```

Where

| Variable | Description |
|---|---|
| *ip_address* | Client's IP address |
| *Ethernet_address* | Client's Ethernet address |
| *host_name* | Client's host name |
| *n* | Oracle Solaris OS version you are using |
| *swap_size* | Size of the swap space that you will be using. The default is 24, however your swap space should be the same amount as your memory |
| *time_zone* | Client's time zone |
| *locale* | Client's locale |
| *name_service* | Client's name service |
| *name_server* | Nameserver's host name |
| \ | The \ (backslash) is a line-continuation character indicating that the command is continued on the next line |

(Refer to the `smdiskless(1M)` man page for more information and options.)

For example:

```
# -x os=sparc.sun4v.Solaris_10 -x root=/export/root/client_host \
-x swap=/export/swap/client_host -x swapsize=999 -x tz=US/Pacific \


./smdiskless add -- -i 129.144.214.99 -e 8:0:20:22:b3:aa -n client_host \
-x locale=en_US -x ns=NIS -x nameserver=nameserver_host
```

---

**Note –** You must type your superuser password again after typing the command.

---

**Caution –** The installation process takes about 5 minutes per client and about 15-30 minutes for the operating environment service to install; however, no progress is displayed on screen while the process is running. Do not cancel or kill the process. Wait until the process has successfully completed.

Messages similar to the following are displayed after the process is completed, confirming that the command was successful after typing your superuser password the second time:

```
Login to client_host as user root was successful.
Download of com.sun.admin.osservermgr.cli.OsServerMgrCli from client_host was
successful.
```

5. **Boot the diskless client.**

## ▼ Connect Hosts to LAN

1. **Collect the following information to connect hosts to the LAN:**

   Ask your network administrator for help, if necessary. This information is not needed for a stand-alone installation (one that is not networked).

   - IP address and host name for each blade server client
   - Domain name
   - Type of name service and corresponding name server names and IP addresses—for example, DNS and NIS (or NIS+)
   - Subnet mask
   - Gateway router IP address
   - NFS server names and IP addresses
   - Web server URL
   - MAC (Ethernet) addresses of the local hosts

**Note –** Local IP addresses are not needed if they are assigned by a network DHCP server.

2. **If you want to make nameserver database entries, obtain the Base MAC (Ethernet) addresses of the local hosts.**

   The base MAC address can be seen in the console output while booting to the ok prompt. Also, it can be derived from the host ID seen on the barcode label. (See "Electronic Blade Server ID" on page 57.)

3. **Using the information collected, configure the hosts to connect to the LAN.**

# Compact Flash Formatting for the Oracle Solaris OS

The compact flash card is an optional USB removable media device on the blade server. The Oracle Solaris OS `rmformat` utility must be used to format the device. The Oracle Solaris OS provides a removable media framework for use with this type of device.

Refer to the `rmformat(1)` man page for information.

# Automatic Power-Off Events

A power-off sequence is initiated either by a request from the shelf manager or a fault condition. The blade server shuts down to standby power mode when the following upper-critical threshold conditions are experienced:

- Detection of DC input (both -48V A and -48V B) drop for more than 5ms
- Processor thermal trip drops to standby mode

Thermal trip of DC brick turns off all local power (standby included).

# Performing a Server Recovery

If a system or blade server experiences a fault or service interruption, perform a recovery.


- "Automatic Power-Off Events" on page 55
- "Reset the Blade Server" on page 91


# Administering Configurations


- "ShMM CLI and Commands" on page 56
- "View Blade ID" on page 58
- "Change the OOS LED Color" on page 58


### Related Information


- "Software and Firmware Upgrades" on page 48
- "Performing a Server Recovery" on page 56
- "Configuring Ports and Pins" on page 61
- "Administering the Network" on page 77
- "Configuring and Using Serial Over LAN" on page 79


## ShMM CLI and Commands

The CLI can be used to communicate with the intelligent management controllers of the shelf, with blade servers, and with the ShMM itself, through text commands.

The CLI is an IPMI-based set of commands that can be accessed directly or through a higher-level management application or script. Administrators can access the CLI through a Telnet connection or the shelf management card serial port.

Using the CLI, operators can access information about the current state of the shelf including current FRU population, current sensor values, threshold settings, recent events, and overall shelf health.

For detailed instructions on using the CLI, including a list of commands and their parameters, refer to the *Sun Netra CT900 Server Administration and Reference Manual*, which is available at the following web site:

(http://www.oracle.com/pls/topic/lookup?ctx=ct900&id=homepage)

# Electronic Blade Server ID

The blade server can be electronically identified through its IPMI FRU ID PROM, which is accessible through standard `fru` utilities.

The IPMI FRU ID PROM format follows the Intel Specification *IPMI Platform Management FRU Information Storage Definition, v1.0 Document, Revision 1.1*, September 27, 1999.

The IPMI FRU ID manufacturing records match Oracle part number and serial number labels on the product. For more information about part number and serial number labels, see "Part Number, Serial Number, and MAC Address Label Locations" on page 103.

The IPMI FRU ID contains six FRU ID areas, which are defined in the following table.

| FRU Area | Description |
|---|---|
| COMMON HEADER | Contains header and pointers to other FRUID sections and is used by `fruutility` software |
| INTERNAL USE AREA | Not present |
| CHASSIS INFO AREA | Not present |
| BOARD INFO AREA | Contains the manufacturing record without memory (FRU part number) for the FRU level assembly of the blade server. This assembly level is equivalent to the FRU replacement that is received from Oracle Service.<br>• Mfg Date/Time = (date/time of blade server assembly)<br>• Manufacturer = (manufacturer name)<br>• Product Name = SPARC T3-1BA<br>• Serial Number = *XXXXXXX-XXXXXXXXXX* (Oracle 18-digit format)<br>• Part Number = *000000000PPPPPPPDDRR* (Oracle part number) where 0 = Leading zeroes, P= part number, D= dash, R=rev |

| FRU Area | Description |
|---|---|
| PRODUCT INFO AREA | Contains manufacturing record for configured blade server with memory. This assembly level includes the base blade server (FRU) plus memory.<br>• Manufacturer = (manufacturer name)<br>• Product Name = SPARC T3-1BA<br>• Part/Model Number = *000000000PPPPPPPDDRR* (Oracle part number) where 0 = leading zeroes, P= part number, D= dash, R= rev<br>• Product Version = XXXX (dash/rev)<br>• Serial Number = *XXXXXXX-XXXXXXXXXX* (Oracle 18-digit format) |
| MULTIRECORD INFO AREA | Oracle Internal Use Only |

## ▼ View Blade ID

- **To view blade FRU information, type the following command:**

```
# clia fruinfo board <slot-n>
```

where *slot-n* is the slot number for which blade you want to display data.

## ▼ View Midplane FRU Information

- **To view midplane FRU information, type the following command:**

```
# clia fruinfo 20 n
```

where *n* is the FRU number (1 or 2) for which you want to display data.

## ▼ Change the OOS LED Color

The color of the OOS LED can be set to red or amber by moving DIP switch SW7503 to the appropriate position. Amber is the default color for the OOS LED.

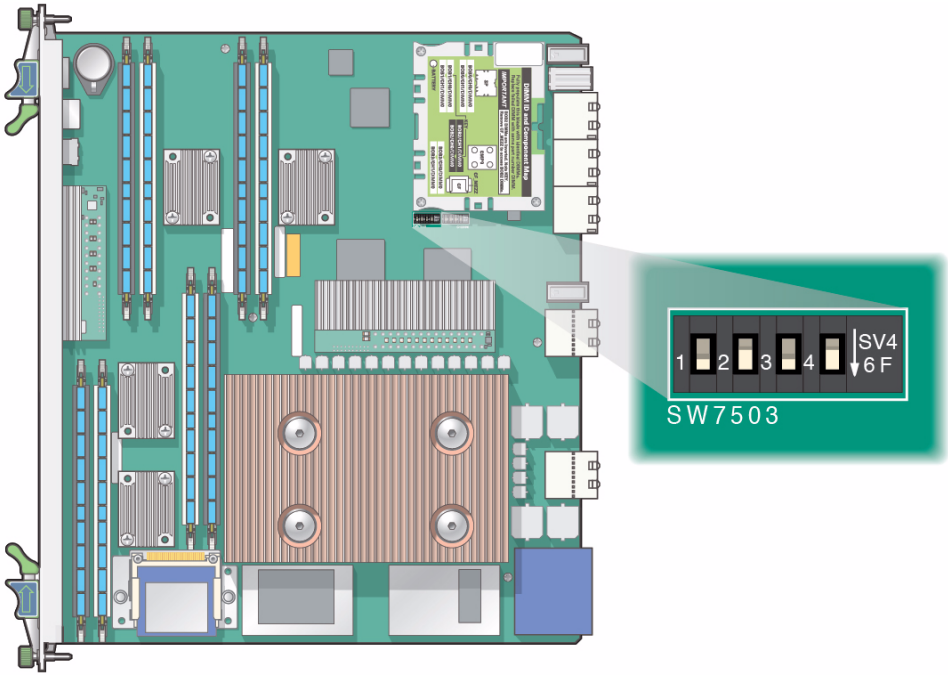
1. **Remove the blade server.**

   See "Power Off and Remove the Blade Server" on page 93.

2. **Move DIP switch to desired position.**

   Amber = Closed (in direction of arrow)

   Red = Open (opposite direction of arrow)




3. **Reinstall the blade server.**

   See "Installing the Blade Server" on page 39.

### Related Information

- "View Blade ID" on page 58
- "View Midplane FRU Information" on page 58
- "Locate Base MAC Address on Blade Server" on page 77
- "Replacing a Blade Server" on page 92
- "Removing Optional Components" on page 94

# Multiplex Configuration of Zones 2 and 3

A MUX controller and ShMM configuration is available for use on the Netra SPARC T3-1BA blade server to multiplex 10GbE NIU ports to Zone 2 (midplane) and/or to Zone 3 (ARTM).

- MUX control configurations take effect during the blade activation following the configuration change.
- Both NIU ports are independently configurable.
- MUX configuration is persistent across reboots, resets, and hotswaps.
- MUX configuration remains persistent for the slot, so that if a blade is replaced with another Netra SPARC T3-1BA blade server, the new blade assumes the previous configuration.

---

**Note –** The host must be configured to match the MUX configuration.

---

If you are using blade servers in a Sun Netra CT900 ATCA chassis, a complete end-to-end solution is provided. The MUX feature is implemented through the ShMM firmware and IPMI commands on the IPMC. These commands extend MUX configuration access to the management software so that during blade server hot-swaps, the MUX configuration is persistent across blade server activations and deactivations.

If you are using the Netra SPARC T3-1BA blade server in a third-party chassis (which does not have the Sun Netra CT900 ATCA chassis ShMM management software implemented), you can save MUX configurations in a configuration file or in persistent storage managed by system management software. When the system management software detects blade server activation, it sends the command to set MUX to the programmed state. Because management software sends the command during every blade server activation, the configuration is persistent across blade server deactivation and activation.

Be aware of the following possibilities when multiplexing zones:

- MUX and payload driver configuration could go out of sync, requiring a system administrator to make sure they are set to the same configuration.
- Midplane FRUID record could be corrupted when updating with the MUX configuration.
- Third-party shelf management software might block updates to the midplane FRUID.

To multiplex blade servers, refer to the following documentation:

- For ShMM commands, refer to the *Sun Netra CT900 Server Administration and Reference Manual*.
- For IPMI commands, refer to the *Sun Netra CT900 Server Software Developer's Guide*.

# Management Port Routing

You can view and configure management port routing to either the rear or front (default) panel by using an OEM command. Like NIU XAUI MUX control, the configuration set by the OEM command takes effect at blade server activation, remains persistent across reboots, and retains slot assignments.

To view current configuration and route management port to rear or front, refer to the following documentation:

- *Sun Netra CT900 Server Administration and Reference Manual*.
- *Sun Netra CT900 Server Software Developer's Guide*.

# Configuring Ports and Pins

The following topics provide information about how to customize your configuration of connectors (ports and pins).

For descriptions of supported components, see "Evaluating Product Compatibility" on page 1.


- "Front Connectors" on page 62
- "On-Board Connectors" on page 65
- "Midplane Connectors" on page 67


### Related Information


- "Networking and I/O" on page 9
- "Advanced Rear Transition Module Connectors (Zone 3)" on page 70

# Front Connectors

The front panel has the following connectors, as shown in the following figure:

- One 10/100/1000BASE-T Ethernet port (RJ-45), described in "Ethernet Port" on page 64
- Two USB ports, described in "USB Ports" on page 64
- One serial port (RJ-45) described in "Serial Port" on page 65

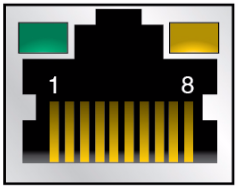
**FIGURE:** Ports on the Blade Server


**Figure Legend**

| | |
|---|---|
| **1** | Serial port |
| **2** | Ethernet port |
| **3** | USB ports |

# Ethernet Port

The Ethernet connector is an RJ-45 connector. The controller autonegotiates to either 10 BASE-T, 100 BASE-T, or 1000 BASE-T.

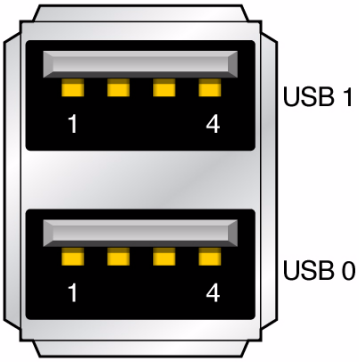



See the following table for the Ethernet port pin assignments.

| Pin | Signal Name | Pin | Signal Name |
|---|---|---|---|
| 1 | BI_DA+ | 5 | BI_DC- |
| 2 | BI_DA- | 6 | BI_DB- |
| 3 | BI_DB+ | 7 | BI_DD+ |
| 4 | BI_DC- | 8 | BI_DD- |

## USB Ports

The following figure shows the connectors for the front panel USB ports.



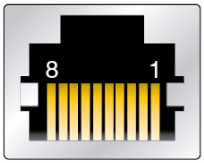

The following table lists the pin assignments.

| Pin | Signal Name | Pin | Signal Name |
|---|---|---|---|
| A1 | +5 V | B1 | +5 V |
| A2 | USB2- | B2 | USB3- |
| A3 | USB2+ | B3 | USB3+ |
| A4 | Ground | B4 | Ground |

## Serial Port

The following figure shows the connectors for the front panel serial port.

**FIGURE:** Serial Port Connector




The following table lists the pin assignments.

| Pin | Signal Name | Pin | Signal Name |
|---|---|---|---|
| 1 | RTS | 5 | GND |
| 2 | DTR | 6 | RXD |
| 3 | TXD | 7 | DSR |
| 4 | GND | 8 | CTS |

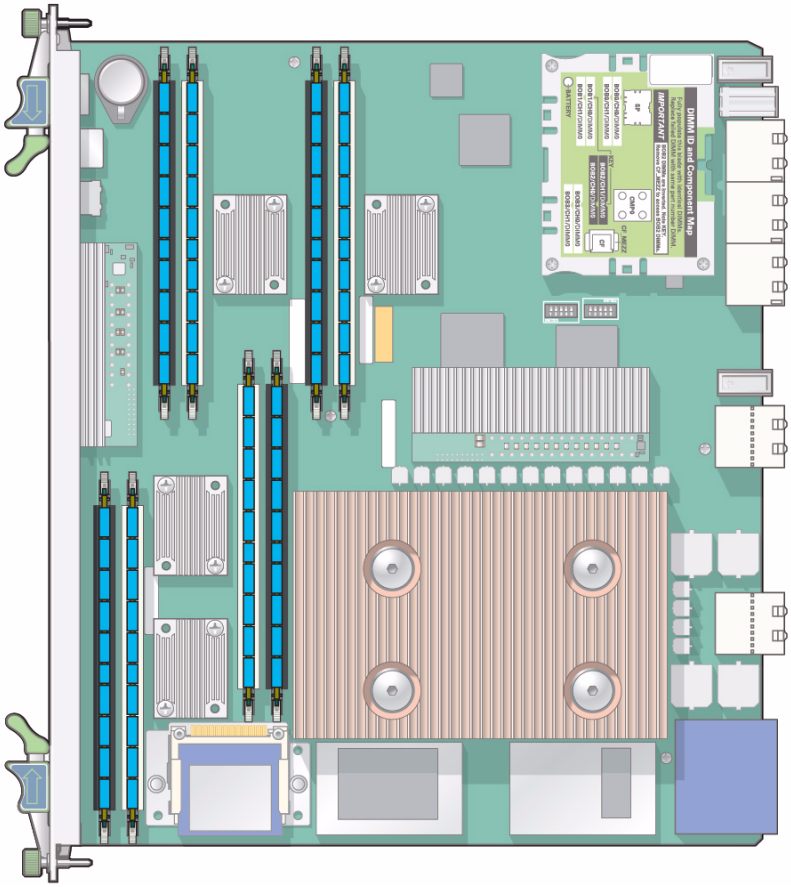
# On-Board Connectors

The following on-board connectors are available:

- "DDR3 DIMM Connector" on page 66
- "Compact Flash Connector" on page 66

## DDR3 DIMM Connector

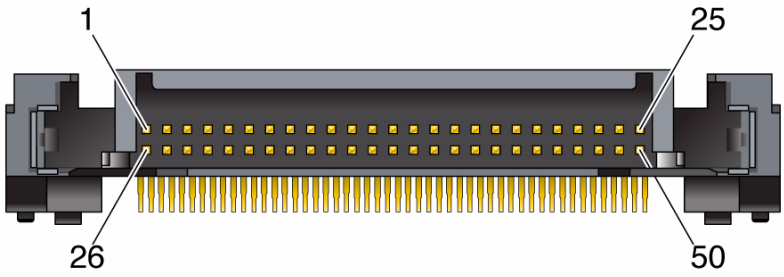
The DIMM connector is located on the blade server, as shown in the following figure.




For a description of on-board memory support, see "Memory Support" on page 8.

## Compact Flash Connector

One Compact Flash Type II connector supports 32 GB of user flash. Socket is accessible only when blade is removed from the chassis. A CF card is installed onto the mezzanine card (daughter card), which connects to the blade server. The following figure shows the connectors.




### Related Information

- "Zone 3 I/O (J31) Connector Pin Assignments" on page 72
- "Zone 3 Signal Descriptions" on page 74

## Midplane Connectors

The midplane has the following connectors, as shown in the following figure.

- "Power Distribution Connector (Zone 1)" on page 68.
- "Data Transport Connectors (Zone 2)" on page 68.
- "Advanced Rear Transition Module Connectors (Zone 3)" on page 70.

**FIGURE:** Midplane Connectors

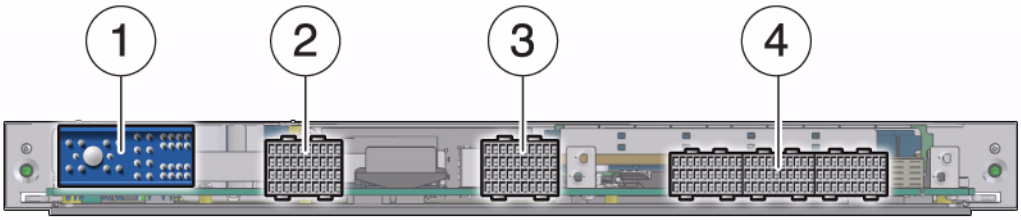



**Figure Legend**

| | |
|---|---|
| **1** | Power connectors (Zone 1) |
| **2** | Data transport connectors (Zone 2) |
| **3** | Data transport connectors (Zone 2) |
| **4** | ARTM connectors (Zone 3) |

## Power Distribution Connector (Zone 1)

The blade server uses a 34-pin Positronic connector as the Zone 1 power distribution connector, as shown in the following figure.

Zone 1 provides the support for the following signals:

- 2 -48 VDC power feeds (four signals each; eight signals total)
- 2 IPMB ports (two signals each; four signals total)
- Geographic address (eight signals)
- 2 ground pins
- 12 unpopulated pins

The analog test and ring voltage pins are left unconnected.

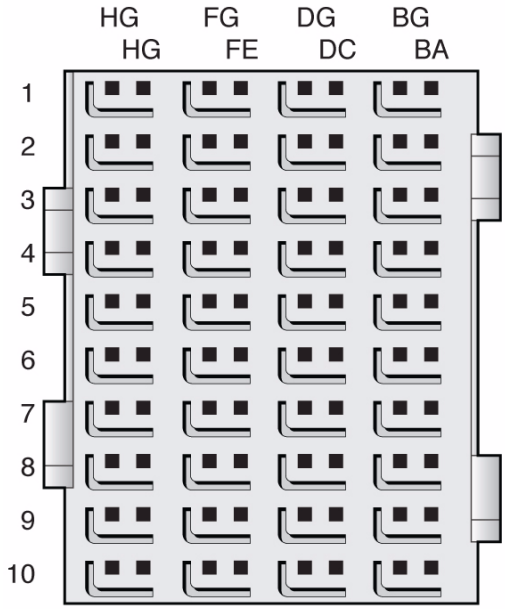
For pin assignments, refer to the PICMG 3.0 and PICMG 3.1 specifications.

## Data Transport Connectors (Zone 2)

The data transport connectors support 40 signal pairs, providing 200 differential pairs for a PICMG 3.0 blade server to establish connectivity with up to 15 other blade servers through a common midplane. The J carrier is on the motherboard and the mating P carrier is on the midplane.

Front connectors are labeled J20 to J24, and midplane connectors are labeled P20 to P24, with both J20 and P20 being at the top of Zone 2. The front connector is a right angle connector and contains female contacts. The midplane contains male contacts.

On the blade server, Zone 2 consists of two 120-pin HM-Zd connectors, labeled J20 and J23, with 40 differential pairs each, as shown in the following figure.




The Zone 2 connectors provide the following signals:

- A Synchronization Clock Interface comprised of three separate and redundant clock buses.

  Blade servers can act as clock sources (master mode) or can receive the Synchronization Clocks (slave mode) in J20.

- An Update Channel Interface connecting the blade server to the midplane (4 differential signal pairs each; 16 signals total).

  Connections are governed by the system Electronic Keying (e-Keying).

- Two 10/100/1000BASE-T/TX Ethernet base fabric channels (four differential signal pairs each; 16 signals total)
- Two 10-Gbit XAUI ports on the extended fabric (eight differential signal pairs each; 16 signals total)

Board and midplane slots might be equipped with a complete set or a subset of the five possible ZD connectors. For example, hub boards/slots might require all five connectors, and node slots might require only P23 and P20 connectors. Node boards might require only the J23 connector.

The BG, DG, FG, and HG (G for Ground) columns contain the ground shields for the four columns of differential pairs. All pins in the BG, DG, FG, and HG columns are connected to Logic Ground.

For pin assignments, refer to the PICMG 3.0 and PICMG 3.1 specifications.

### Related Information

- "Multiplex Configuration of Zones 2 and 3" on page 60

## Advanced Rear Transition Module Connectors (Zone 3)

The blade server provides all the I/O connections for rear access through the Zone 3 ARTM connectors, which support the following:

- GbE management port
- Serial port
- x8 PCIe slot

Zone 3 connector pins are presented from the point of view of the ATCA blade. The TX means the ATCA blade is the signal source, and the ARTM is the signal receiver. Similarly, RX means the ATCA blade is the signal receiver and the ARTM is the signal source.

The "reserved" pins indicate connector pins that are currently reserved for compatibility to all ARTMs. Do not connect signals to reserved pins. The "no connect" indicates pins that should not be connected by the blade server.

The ARTM Zone 3 connectors are shown in the following figure.

**FIGURE:** ARTM Connectors (Zone 3)

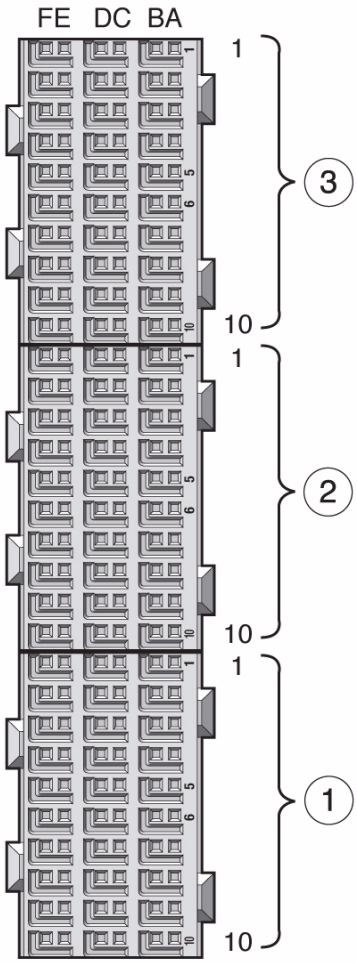



**Figure Legend**

| | |
|---|---|
| **1** | Zone 3 J33 |
| **2** | Zone 3 J32 |
| **3** | Zone 3 J31 |

For pin assignments of ARTM Zone 3, see the following:

- "Zone 3 Power Connector Pin Assignments" on page 72
- "Zone 3 I/O (J31) Connector Pin Assignments" on page 72

- "Zone 3 Infrastructure (J32) Connector Pin Assignments" on page 73
- "Zone 3 PCIe (J33) Connector Pin Assignments" on page 74

For descriptions of the signals, see "Zone 3 Signal Descriptions" on page 74.

## Zone 3 Power Connector Pin Assignments

The connector pin assignments are used for power signals.

| Row | Pins 1-3 | Pins 4-6 | Pin Length | Mating Sequence |
|---|---|---|---|---|
| E | RTM_PS1_L | N/C | Short | Last |
| D | +12V_RTM | +12V_RTM | Long | First |
| C | $I^2C$_RTMCONN_SCL | $I^2C$_RTMCONN_SDA | Medium | Second |
| B | Logic_GND | +3.3V_STBY_RTM | Long | First |
| A | Logic_GND | Shelf_GND | Long | First |

## Zone 3 I/O (J31) Connector Pin Assignments

The J31 connector pin assignments are used for I/O RTM signals.

**Note –** N/U means not used.

| Row | A | B | C | D | E | F |
|---|---|---|---|---|---|---|
| 1 | Z3_F1_TX1+ | Z3_F1_TX1- | Z3_F1_RX0+ | Z3_F1_RX0- | Z3_F1_TX0+ | Z3_F1_TX0- |
| 2 | Z3_F1_RX2+ | Z3_F1_RX2- | Z3_F1_TX2+ | Z3_F1_TX2- | Z3_F1_RX1+ | Z3_F1_RX1- |
| 3 | Z3_F2_TX0+ | Z3_F2_TX0- | Z3_F1_RX3+ | Z3_F1_RX3- | Z3_F1_TX3+ | Z3_F1_TX3- |
| 4 | Z3_F2_RX1+ | Z3_F2_RX1- | Z3_F2_TX1+ | Z3_F2_TX1- | Z3_F2_RX0+ | Z3_F2_RX0- |
| 5 | Z3_F2_TX3+ | Z3_F2_TX3- | Z3_F2_RX2+ | Z3_F2_RX2- | Z3_F2_TX2+ | Z3_F2_X2- |
| 6 | N/U | N/U | N/U | N/U | Z3_F2_RX3+ | Z3_F2_RX3- |

| Row | A | B | C | D | E | F |
|---|---|---|---|---|---|---|
| 7 | N/U | N/U | N/U | N/U | N/U | N/U |
| 8 | N/U | N/U | N/U | N/U | N/U | N/U |
| 9 | N/U | N/U | N/U | N/U | N/U | N/U |
| 10 | N/U | N/U | N/U | N/U | N/U | N/U |

## Zone 3 Infrastructure (J32) Connector Pin Assignments

The J32 connector pin assignments are used for infrastructure signals.

**Note –** N/U means not used, and N/C means not connected.

| Row | A | B | C | D | E | F |
|---|---|---|---|---|---|---|
| 1 | XAUI_MDIO | XAUI_MDC | N/U | N/U | N/U | N/U |
| 2 | N/U | N/U | N/U | N/U | SER_RJ45_RTS | SER_RJ45_DTR |
| 3 | N/U | N/U | N/U | N/U | SER_RJ45_TXD | SER_RJ45_RXD |
| 4 | N/U | N/U | N/U | N/U | SER_RJ45_DSR | SER_RJ45_CTS |
| 5 | N/U | N/U | N/U | N/U | N/C | N/C |
| 6 | RTM_LAN0_A+ | RTM_LAN0_A- | RTM_TXFRMR_VOLTAGE | RTM_TXFRMR_VOLTAGE | RTM_LAN0_B+ | RTM_LAN0_B- |
| 7 | RTM_LAN0_C+ | RTM_LAN0_C- | RTM_ACT_LED_N | RTM_LINK_LED_N | RTM_LAN0_D+ | RTM_LAN0_D- |
| 8 | N/C | N/C | N/C | N/C | N/C | N/C |
| 9 | N/C | N/C | N/C | N/C | N/U | N/U |
| 10 | N/U | N/U | N/U | N/U | N/U | N/U |

## Zone 3 PCIe (J33) Connector Pin Assignments

The J33 connector pin assignments are used for PCIe signals.

---

**Note –** N/U means not used, and N/C means not connected.

---

| Row | A | B | C | D | E | F |
|---|---|---|---|---|---|---|
| 1 | RTM_TX0+ | RTM_TX0- | RTM_RX0+ | RTM_RX0- | RTM_CON_ REF CLK+ | RTM CON_REF CLK- |
| 2 | RTM_TX1+ | RTM_TX1- | RTM_RX1+ | RTM_RX1- | TCLKA+ | TCLKA- |
| 3 | RTM_TX2+ | RTM_TX2- | RTM_RX2+ | RTM_RX2- | TCLKB+ | TCLKB- |
| 4 | RTM_TX3+ | RTM_TX3- | RTM_RX3+ | RTM_RX3- | TCLKC+ | TCLKC- |
| 5 | RTM_TX4+ | RTM_TX4- | RTM_RX4+ | RTM_RX4- | TCLKD+ | TCLKD- |
| 6 | RTM_TX5+ | RTM_TX5- | RTM_RX5+ | RTM_RX5- | N/U | N/U |
| 7 | RTM_TX6+ | RTM_TX6- | RTM_RX6+ | RTM_RX6- | N/U | N/U |
| 8 | RTM_TX7+ | RTM_TX7- | RTM_RX7+ | RTM_RX7- | N/U | FPGA_PRE SET_RTM- |
| 9 | N/C | N/C | N/C | N/C | RTM_MMC _L | PCI_CFG |
| 10 | N/U | N/U | N/U | N/U | GND | RTM_CON_ EN_L |

## Zone 3 Signal Descriptions

This topic provides descriptions of the signals listed in the following Zone 3 pin topics:

- "Zone 3 Power Connector Pin Assignments" on page 72
- "Zone 3 I/O (J31) Connector Pin Assignments" on page 72

- "Zone 3 Infrastructure (J32) Connector Pin Assignments" on page 73
- "Zone 3 PCIe (J33) Connector Pin Assignments" on page 74

**TABLE:** Zone 3 Signal Descriptions

| Signal Name | Description |
|---|---|
| IPMI_SCL_L | IPMI bus clock signal, as defined in AMC.0 specification. ARTM has a pull-up resistor for this signal as indicated in AMC.0 specification. |
| IPMI_SDA_L | IPMI bus data signal, as defined in AMC.0 specification. ARTM has a pull-up resistor for this signal as indicated in AMC.0 specification. |
| PS0#, PS1# | Active low ARTM present signal. The PS0# is linked to logic GND on the ATCA blade, PS1# is pulled up to 3.3V Management Power on the ATCA blade, PS0# and PS1# is connected through diode on ARTM, exactly as defined in AMC.0 specification. PS1# is last mate on Power connector and PS0# is on the opposite end of the set of connectors. Logic low on PS1# indicates that ARTM is present and fully inserted. |
| Enable# | When low, indicates to ARTM that it is fully inserted and that MMC can start execution. Logic high keeps MMC in reset state. This signal has a pull-up resistor as indicated in AMC.0 specification. |
| Shelf_GND | Frame/Chassis Safety Ground. |
| Logic_GND | (Logic 0vdc). Logic Ground-Common return for Management Power Payload Power, reference potential for single-ended logic signaling, and shielding for differential pair signals in the AMC connector. |
| 12VPP | 12V Payload Power, enabled after successful E-keying, following AMC.0 specification. ARTM meets requirements posted for payload power in AMC specification. |
| 3.3V_MP | 3.3V Management Power. ARTM meets requirements posted for management power in AMC.0 specification. |
| RX | AMC Extended Options receive differential pair signals. Note that this specification takes ATCA blade perspective, which means that RX signals are driven by ARTM and received by ATCA blade. |
| TX | AMC Extended Options transmit differential pair signals. Note that this specification takes ATCA blade perspective, which means that TX signals are driven by ATCA blade and received by ARTM. |
| SA_TX | SAS or SATA transmit differential pair signals. |
| SA_RX | SAS or SATA receive differential pair signals. |
| Serial 0 | RS-232 Serial Signals, Transmit, Receive, Clear to Send, Request to Send, Data Terminal Ready, and Data Set Ready. |
| LAN0 | 10/100/1000BASE-T signals. |

**TABLE:** Zone 3 Signal Descriptions *(Continued)*

| Signal Name | Description |
|---|---|
| LAN0_CTV | 10/100/1000BASE-T transformer Center Tap signal, which could be used to terminate center tap of transformers placed on the ARTM. This signal is applicable if Ethernet PHY is located on ATCA blade, while transformers are located on ARTM. |
| ACT_LED# | LAN 0 (Management) activity indicator signal for LED (active low). |
| LINK_LED# | LAN 0 (Management) LINK indicator signal for LED (active low). |
| PCI_CFG | PCI Express bus configuration signal. It must be grounded on ARTMs that use a single x8 PCI Express bus and pulled up on the ATCA with 10Kohm resistor to management power. On ARTMs that expect two x4 PCI-Express buses, this pin will float (not be connected). Two x4 PCI-Express buses are intended for ARTM implementations that desire to avoid PCI-Express switch in order to reduce latency. |
| ARTM# | ARTM# signal must be grounded on ARTMs that implement MMC controller as defined by AMC.0 specification. This signal is pulled up with 10Kohm resistor to management power on the ATCA node blade server. |
| SLAN_TX | GBEthernet SerDes transmit differential pair signals. |
| SLAN_RX | GBEthernet SerDes receive differential pair signals. |
| PETx | PCI-Express transmit differential pair signals. |
| PERx | PCI-Express receive differential pair signals. |
| PCI_RST# | PCI-Express reset signal. Logic low resets downstream PCI-Express devices on ARTM. |
| TCLKA | PCI-Telecom clock A 19.44 MHz, differential pair into ARTM (ATCA CLK2) as defined in AMC.0 specification. |
| TCLKB | PCI-Telecom clock B 19.44 MHz, differential pair out from ARTM (ATCA CLK3) as defined in AMC.0 specification. |
| TCLKC | PCI-Telecom clock C 8 kHz, differential pair into ARTM (ATCA CLK1) as defined in AMC.0 specification. |
| TCLKD | PCI-Telecom clock D 8 kHz, differential pair out from ARTM as defined in AMC.0 specification. |
| FCLKA | Fabric clock, as defined in AMC.0 specification. Intended to be used for PCI-Express 100 MHz spread spectrum clock. |
| TCK, TMS, TRST#, TDO, TDI | JTAG signals. Signal direction follows AMC.0 specification. |

# Administering the Network

The following topics contain information about administering the network.


- "Locate Base MAC Address on Blade Server" on page 77
- "Configuring and Using Serial Over LAN" on page 79


### Related Information


- "Administering Configurations" on page 56


## ▼ Locate Base MAC Address on Blade Server

1. **If the blade server is installed, remove the blade server.**

   See "Power Off and Remove the Blade Server" on page 93.

2. **Locate the MAC label on the blade server.**

**FIGURE:** Location of Part Number, Serial Number, and MAC Address Labels

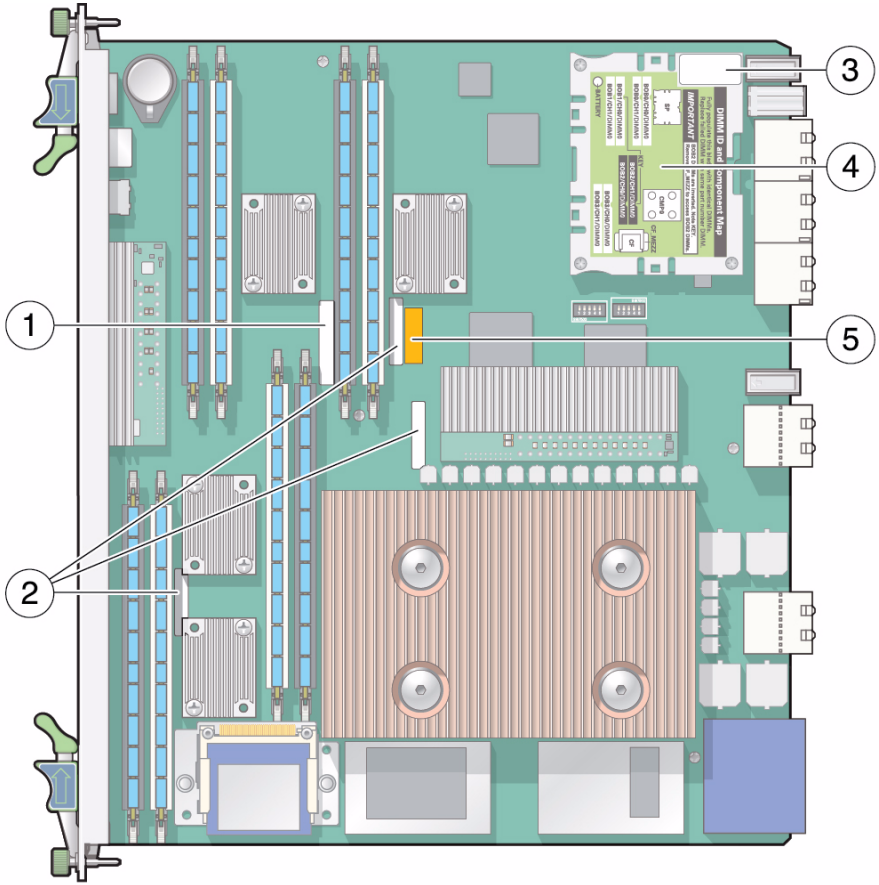



**Figure Legend**

| | |
|---|---|
| **1** | Serial number label |
| **2** | Part number labels |
| **3** | Service processor barcode label |
| **4** | DIMM ID and configuration map |
| **5** | MAC address |

The MAC address label contains the base MAC address for the blade server in printed and barcode form. It is an orange label located on the Zone 1 connector. For a description of all the labels and their meaning, see "Part Number, Serial Number, and MAC Address Label Locations" on page 103.

3. **Install the blade server.**

   See "Insert and Latch the Blade Server" on page 43.

4. **If you have not done so, connect the cables to the blade server.**

   See "Connect the External I/O Cables" on page 40.

# Configuring and Using Serial Over LAN

To redirect the input and output of the serial port of the blade server over IP, use SOL. Typically, the serial ports on a blade server are not connected to a serial port socket. By redirecting the I/O of the serial port to the network, you can allow users to access applications on the blade server through the serial port. For example, users accessing the blade server through the serial port can Telnet to a network address and log in. On the blade server, the login is routed through the serial port.

- If you are using a Sun Netra CT900 server, all network configurations including IP, MAC, gateway, subnet, and so on are automatically configured. To use SOL, set up a user account.
- If you are using a third-party chassis, enable and configure serial over LAN as described in the following topics.

The following configurations and examples of setting IP, Netmask, and Gateway addresses use the generic IPMI command ipmitool. The command `clia sendcmd` is a Sun Netra CT900 ShMM wrapper interface to send generic IPMI commands.

---

**Note –** When the blade is powered off to M1 state, the blade's serial port might output extraneous characters on the console. There is no functional impact to the blade, and the characters can be ignored. The output occurs because of some models of serial concentrator.

---

To configure and use serial over LAN, perform the following tasks:

- "Download and Install Software" on page 80
- "Configure IP Address" on page 80
- "Set Up `subnet` Mask" on page 81
- "Set Up Default Gateway IP Address" on page 81
- "Ping the Sideband Interface" on page 83
- "Open SOL Session" on page 83
- "Create or Modify SOL User Name and Password" on page 85
- "Set SOL Timeout" on page 86
- "Log In to Oracle ILOM" on page 87

## ▼ Download and Install Software

- **If it is not already installed, download and install ipmitool 1.8.9 or newer.**
  (http://ipmitool.sourceforge.net/)

### Related Information

- "Configure IP Address" on page 80

## ▼ Configure IP Address

Make sure the IP address is within the subnet of the chassis where the blade server is installed.

1. **Read the IP address to see if it is already set.**

```
# clia sendcmd board IPMB addr 0x0C 0x02 0x05 0x03 0x00 0x00
```

where *board IPMB addr* is the blade server's IPMB address, as in the following example.

```
# clia sendcmd 0x9a 0x0C 0x02 0x05 0x03 0x00 0x00
```

2. **If IP address is already set, skip to** "Set Up subnet Mask" on page 81**.**
3. **Enter the in-progress command as follows:**

```
# clia sendcmd board IPMB addr 0x0C 0x01 0x05 0x00 0x01
```

4. **Set the IP address as follows:**

```
# clia sendcmd board IPMB addr 0x0C 0x01 0x05 0x03 IPAddress_byte1, byte2,
byte3, byte 4
```

where *IPAddress_byte1, byte2, byte3, byte 4* is the hardcoded address such as in the following example:

```
# clia sendcmd 0x9a 0x0C 0x01 0x05 0x00 0x01 0x0A 0x07 0x64 0xB4
```

### Related Information

- "Set Up subnet Mask" on page 81

## ▼ Set Up subnet Mask

1. **Read the** subnet **mask to see if it is already set.**

```
# clia sendcmd board IPMB addr 0x0C 0x02 0x05 0x06 0x00 0x00
```

where *board IPMB* is the blade server's IPMB address, as in the following example.

```
# clia sendcmd 0x9a 0x0C 0x02 0x05 0x06 0x00 0x00
```

2. **If** subnet **mask is already set, skip to** "Set Up Default Gateway IP Address" on page 81**.**

3. **Enter the in progress command as follows:**

```
# clia sendcmd board IPMB addr 0x0C 0x01 0x05 0x00 0x01
```

4. **Set the** subnet **mask as follows:**

```
# clia sendcmd board IPMB addr 0x0C 0x01 0x05 0x06 four subnet mask bytes
```

as in the following example:

```
# clia sendcmd 0x9a 0x0C 0x01 0x05 0x06 0xFF 0xFF 0xFF 0x00
```

### Related Information

- "Set Up Default Gateway IP Address" on page 81

## ▼ Set Up Default Gateway IP Address

Before performing the following steps, you will need to know your Gateway IP address.

1. **Read the Gateway IP address to see if it is already set.**

```
# clia sendcmd board IPMB addr 0x0C 0x02 0x05 0x0C 0x00 0x00
```

where *board IPMB addr* is the blade server's IPMB address, as in the following example.

```
# clia sendcmd 0x9a 0x0C 0x02 0x05 0x0C 0x00 0x00
```

2. **If Gateway IP address is already set, you are finished with the configuration and can skip to** "Commit the Configurations" on page 82**.**

3. **Enter the in-progress command as follows:**

```
# clia sendcmd board IPMB addr 0x0C 0x01 0x05 0x00 0x01
```

4. **Set the default Gateway IP address as follows:**

```
# clia sendcmd board IPMB addr 0x0C 0x01 0x05 0x0C Gateway IPAddress_byte1,
byte2, byte3, byte 4
```

where *Gateway IPAddress_byte1, byte2, byte3, byte 4* is the hardcoded address such as in the following example:

```
# clia sendcmd 0x9a 0x0C 0x01 0x05 0x0C 0x0A 0x07 0x64 0xFE
```

### Related Information

- "Commit the Configurations" on page 82

## ▼ Commit the Configurations

After performing the tasks in preceding sections for configuring IP address, `subnet` mask, and default Gateway IP address, commit the settings.

1. **Enter the commit write command as follows:**

```
# clia sendcmd board IPMB addr 0x0C 0x01 0x05 0x00 0x02
```

2. **Read the IP address, subnet mask, and Gateway IP address to ensure they are set correctly.**

3. **Connect to the console to test your configuration, as described in** "Ping the Sideband Interface" on page 83**.**

### Related Information

- "Ping the Sideband Interface" on page 83

## ▼ Ping the Sideband Interface

After you configure the Sideband Interface and SOL, run `ipmitool` to connect the console.

1. **Ping the Sideband Interface:**

```
# ping 10.7.100.180 PING 10.7.100.180 (10.7.100.180) 56(84) bytes
of data
64 bytes from 10.7.100.180: icmp_seq=0 ttl=54 time=78.0 ms
64 bytes from 10.7.100.180: icmp_seq=5 ttl=54 time=77.1 ms
```

If the Sideband Interface is set correctly, a response similar to that shown in the previous example will be displayed. If a response is not displayed, then either the Sideband Interface is improperly configured or something is not working on the NIC.

2. **Confirm the configuration:**
   - If the Sideband Interface configuration is incorrect, go back to previous tasks and reset the configuration as described.
   - If the Sideband Interface configuration is correct, yet the ping results in no response, check the status of the NIC.

```
# clia sendcmd board IPMB addr 2E 8D 00 00 2A 00 00
# clia sendcmd 9a 2E 8D 00 00 2A 00 00
Pigeon Point Shelf Manager Command Line Interpreter
Completion code: 0x0 (0)
Response data: 00 00 2A B2 00
```

In the example above, B2 means NIC is working. However, if the response byte's lower number = 0, it means the NIC is resetting.

### Related Information

- "Open SOL Session" on page 83

## ▼ Open SOL Session

You will need ipmitool version 1.8.9 or newer to open a SOL session. Older versions might work, however, they are not supported.

For detailed information about SOL, refer to *Intelligent Platform Management Interface Specification v2.0*.

1. **If using the blade server in a Sun Netra CT900 server, enter the following command:**

```
# clia console blade slot n
```

   where *blade slot n* is the blade server slot number.

   Refer to *Sun Netra CT900 Server Administration and Reference Manual* for more information about the `clia` command and starting SOL on a NetConsole.

2. **If using the blade server in a third-party chassis, enter the following command:**

```
# ipmitool -C n -I lanplus -H 10.7.100.180 -U soluser -k gkey sol
activate
```

   where *n* is the cipher suite number (1 to 3) in which you want to open the SOL session, and *soluser* is the user name.

   Cipher suite 0 is not supported.

   For information about cipher suites, refer to the SOL specification, version 0.6 or newer.

3. **Enter your password.**

   Wait for the link to become active. It might take 30 seconds or longer. Depending on the spanning-tree configuration in the system, the corresponding host port on the switch could be blocked until the topology change is complete.

   During this time, NetConsole output is interrupted, and the user of an active connection might experience loss of connection or output.

   On the Netra CP3240 switch, spanning tree is enabled by default and takes less than 30 seconds for link activation. Using either the `spanning-tree edgeport` or `no spanning-tree port mode` command enables the port to initiate the forwarding state as soon as the link comes up.

   Using these commands can help minimize the possibility of lost console output due to spanning-tree configurations. Determine the best solution based on the configuration of the network and the desired behavior during link activation.

   For more information about the commands, refer to the *Sun Netra CP3240 Switch Software Reference Manual*.

### Related Information


- "Users Supported in SOL Implementation" on page 85
- "Create or Modify SOL User Name and Password" on page 85
- "Configure IP Address" on page 80
- "Set Up `subnet` Mask" on page 81
- "Set Up Default Gateway IP Address" on page 81

- "Commit the Configurations" on page 82
- "Ping the Sideband Interface" on page 83
- "Set SOL Timeout" on page 86


## Users Supported in SOL Implementation

Use the ShMM CLI to create or modify a user account and password for SOL sessions. Access to the commands are disabled from `ipmitool`. For detailed information about using the ShMM CLI and commands, refer to the *Netra CT900 Server Administration and Reference Manual*.

SOL implementation supports two users.

- A mandatory null user with user ID 1 and a second user with user ID 2.
- Default user name and password for user ID 2 is soluser and solpasswd.
- The user name and password string should be null terminated.
- The command expects 16 bytes.
- Pad unused bytes with zeros.
- The default user name and password can be used, or you can change the user name and password.

### Related Information


- "Create or Modify SOL User Name and Password" on page 85


## ▼ Create or Modify SOL User Name and Password

---

**Note –** If using the blade server in a Sun Netra CT900 chassis, retain the default user name and password, which is secured through VLAN tagging.

---

1. **To change the user name from the default `soluser`, enter the following command at the ShMM CLI:**

```
# clia sendcmd 9a 06 45 02 72 61 6a 65 65 76 0 0 0 0 0 0 0 0 0 0
Pigeon Point Shelf Manager Command Line Interpreter
Completion code: 0x0 (0)
```

where *72 61 6a 65 65 76* are the ASCII characters for the new user name being set.

2. **To change the password from the default `solpasswd`, enter the following command at the ShMM CLI:**

```
# clia sendcmd 9a 06 47 2 2 61 62 63 64 65 66 0 0 0 0 0 0 0 0 0 0
Pigeon Point Shelf Manager Command Line Interpreter
Completion code: 0x0 (0)
```

where *61 62 63 64 65 66* are the ASCII equivalents of the alpha characters being used for the password. In this example, the password would be "abcdef."

3. **To verify that the user name and password changes are accepted, read the settings by entering the following command:**

```
# ipmitool -I lan -H 10.7.100.180 -P "" channel getaccess 0xe 2
Maximum User IDs: 2
Enabled User IDs: 2
User ID: 2
User Name: name
Fixed Name: No
Access Available: call-in/callback
Link Authentication: enabled
IPMI Messaging: enabled
Privilege Level: USER
```

where in place of *name*, the user's name is displayed.

## ▼ Set SOL Timeout

The OEM command `Set SOL Fail over Link change timeouts` enables you to set the time-out period for when IPMC switches over to the secondary link because the primary fails. This setting also specifies how long to wait before switching back to the primary when it becomes available.

- **Use the Set SOL Fail over Link change timeouts command to set a custom value for the SOL timeout period.**

---

**Note –** Default settings are recommended over user-customized settings.

---

For information about how to set SOL failover link change timeouts, refer to the *Sun Netra CT900 Server Administration and Reference Manual*.

For detailed information about SOL, refer to *Intelligent Platform Management Interface Specification v2.0*.

## Network Device Aliases

A device alias is a shorthand representation of a device path. The Oracle Solaris OS provides some predefined device aliases for the network devices so that you do not need to type the full device path name. The following table lists the network device aliases, the default Oracle Solaris OS device names, and associated ports for the blade server. You can use the `devalias` command to display the device aliases.

| Device Alias | Default Oracle Solaris 10 OS Device Name | Port Description |
|---|---|---|
| net, net0 | e1000g0 | Base Interface Ethernet 0 |
| net1 | e1000g1 | Base Interface Ethernet 1 |
| net2 | e1000g4 | Management Ethernet (Ethernet port on front panel) |
| net3 | e1000g5 | Management Ethernet Rear Access (Ethernet port on ARTM) |
| net4 | e1000g2 | Rear Access (ARTM) Ethernet 0 |
| net5 | e1000g3 | Rear Access (ARTM) Ethernet 1 |

# ▼ Log In to Oracle ILOM

A default user with limited permissions is programmed at the factory on the Netra SPARC T3-1BA blade server. This default user access allows an administrator to perform operations with console, read-only, and host reset and control privileges. New users cannot be added.

---

**Note –** The blade server's SP does not have network connectivity to external networks. This limitation prevents administrators from using generic Oracle ILOM features such as flashupdate from the Oracle ILOM UI, web based GUI, SNMP over network, and so on. Also, no environmental monitoring devices exist for the blade server, so that functionality is not applicable.

---

1. **Log in to Oracle ILOM as the default user** `netra` **and password** `changeme`**.**

   For security reasons, you might want to change the default password.

2. **View or change configurations as needed.**

   You can perform operations such as fault management, changing parallel boot to serial boot processing, and viewing the console history. Refer to the Oracle ILOM documentation for instructions.

   (http://www.oracle.com/technetwork/documentation/sys-mgmt-networking-190072.html#hic)

   Oracle ILOM is the next generation of Lights Out Manager for all of Oracle's enterprise and telco server products based on x64/SPARC.

3. **Log out.**

---

**Note –** If necessary, the default user and password can be restored by an authorized service technician.

---

# Servicing the Blade Server

In addition to the service topics in this user's guide, additional procedures, reference, and configuration information for the blade server and all Sun Netra blade servers are available in the following documents:

- *Netra CT900 Server Service Manual*
- *Netra CT900 Server Administration and Reference Manual*

(http://www.oracle.com/pls/topic/lookup?ctx=ct900&id=homepage)

Even if you are using the blade server in a third-party shelf, the information in these other documents is useful.

The following topics provide information and instructions for servicing the blade server.



### Related Information

# LEDs and Status Indicators

| LED | Color | Description |
|---|---|---|
| Hot-Swap | Blue | Steady on indicates that board is safe for removal (hot-swap activity)<br>Blinking when hot-swap in progress |
| OK | Green | Healthy status |
| OOS | Red or Amber | Fault condition |

If an error or malfunction occurs on the blade server or its installed optional components, the OOS LED lights (see "Front and Side Panels" on page 4). The OOS LED can be set to red or amber.

Comprehensive coverage of service actions, fault origins, logs, and configurations are covered in the *Netra CT900 Server Service Manual*, which is available online at:

(http://www.oracle.com/pls/topic/lookup?ctx=ct900&id=homepage)

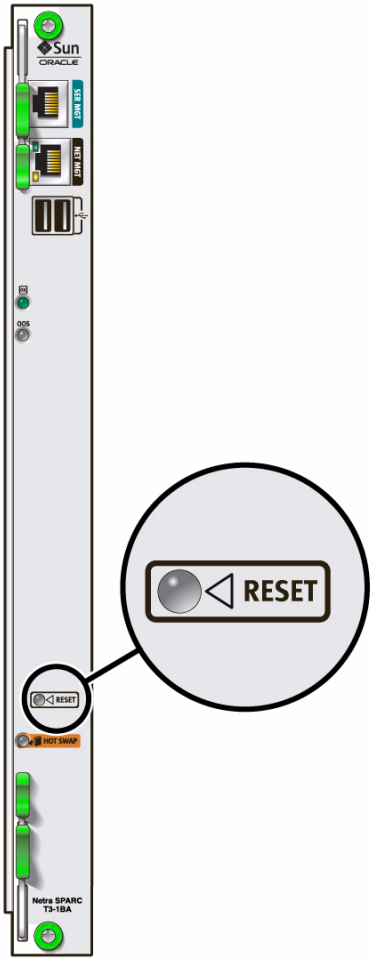
### Related Information


- "Change the OOS LED Color" on page 58
- "Configuring Ports and Pins" on page 61
- "Reset the Blade Server" on page 91
- "Performing a Server Recovery" on page 56
- "Administering Configurations" on page 56

# ▼ Reset the Blade Server

**Caution –** Do not operate the ATCA shelf without all fans, component heatsinks, air baffles, filler panels, and covers installed. Severe damage to components can occur if the ATCA shelf is operated without adequate cooling mechanisms.

1. **Use a spudger tool or other stylus to press and release the recessed Reset button on the front of the blade server.**




2. **Confirm the progress of the reset by monitoring the POST messages.**

### Related Information

- "Power-On-Self-Test Diagnostics" on page 49
- "Performing a Server Recovery" on page 56
- "Automatic Power-Off Events" on page 55

# Replacing a Blade Server

You can remove (hot-swap) the blade server without powering off the entire chassis by performing the following steps.

- "Shut Down OS and Deactivate the Blade Server" on page 92
- "Power Off and Remove the Blade Server" on page 93
- "Installing the Blade Server" on page 39

### Related Information

- "Reset the Blade Server" on page 91
- "LEDs and Status Indicators" on page 90
- "Safety Requirements" on page 37

## ▼ Shut Down OS and Deactivate the Blade Server

1. **Shut down the operating system.**

   Log in and shut down any OS operating on the blade server and its companion ARTM (if applicable).

2. **Log in to the shelf manager and deactivate the blade server in the target slot.**

   See "ShMM CLI and Commands" on page 56.

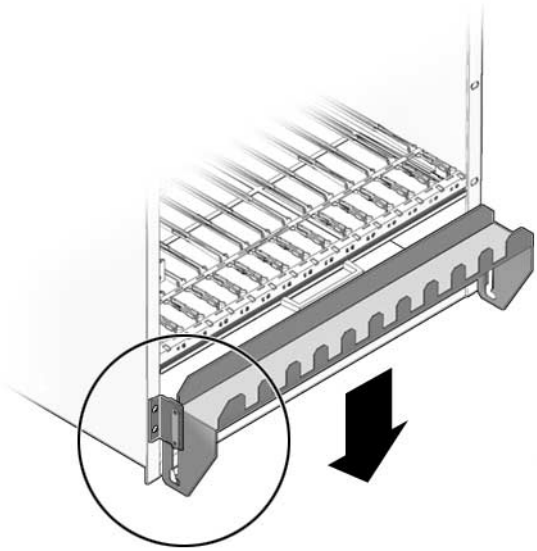
   For example, to shut down the blade server in slot 3, log in to the shelf manager and type:

```
# clia deactivate board 3
```

## ▼ Power Off and Remove the Blade Server

**Caution –** Do not place blade servers on top of an antistatic bag unless the outside of the bag has antistatic protective properties.

1. **Power off the blade server.**
2. **Move the front cable management bracket to the lower position.**



3. **Remove all cables from the blade server.**
4. **Loosen the locking screws to release the blade server from the ATCA shelf.**
5. **When the blue Hot-Swap LED lights steadily, release the upper latch and the lower latch at the same time to unseat the blade server from the connectors.**
6. **Remove the blade server from the ATCA shelf and place the blade server on an antistatic mat.**

7. **Remove any optional components installed on the blade.**

   See "Removing Optional Components" on page 94.

8. **Install a replacement blade server or a filler panel.**

   See "Installing the Blade Server" on page 39.

---

**Note –** If transferring the same optional components from the old blade server to the new one, install optional components before installing the replacement blade server.

---

---

**Caution –** Failure to cover all open slots with filler panels can negatively impact the cooling of the system.

---

### Related Information

- "Removing Optional Components" on page 94
- "Return a Blade Server" on page 102
- "Preparing to Install the Blade Server" on page 33
- "Installing the Blade Server" on page 39
- "Safety Requirements" on page 37

# Removing Optional Components

The following topics provide instructions for removing optional components from blade servers.

- "Power Off and Remove an ARTM" on page 95
- "Remove a Compact Flash Card" on page 96
- "Remove Onboard Memory" on page 98
- "Replace a TOD Clock Battery" on page 100

### Related Information

- "Replacing a Blade Server" on page 92
- "Return a Blade Server" on page 102
- "LEDs and Status Indicators" on page 90

# ▼ Power Off and Remove an ARTM

This topic provides general instructions for removing an ARTM. For specific information and instructions, refer to the ARTM product documentation for your ARTM.

The Sun Netra CP32x0 ARTM is hot-swappable and can be removed from the chassis without powering off its associated host blade server.

---

**Caution –** Before you remove the module, read all cautions, warnings, and instructions presented in "Safety Requirements" on page 37.

---

1. **Take antistatic precautions: attach and electrically ground the wrist strap.**

---

**Caution –** Always wear a grounded antistatic wrist strap when handling components.

---

2. **Power down the corresponding blade server.**
3. **When the blade server Blue LED is steady, unseat the module by pulling on the module handles.**

   The blade server doesn't need to be removed; pull it out far enough that the Zone 3 connector is disengaged from the ARTM.
4. **If the chassis is not hot-swap compliant, remove power to the slot or system before removing the ARTM.**
5. **Loosen the locking screws on the module.**
6. **Rotate the top ejector handle to the half-way (HW) position.**

---

**Caution –** Do not remove the module yet. Powering down or removing a module before the operating system or other software running on the board has been properly shut down might cause corruption of data or file systems.

---

7. **If you need to manually shut down applications, execute the following command from the shelf manager:**

```
# clia deactivate board x 1
```

   where *x* is the slot number.

   When the module has been deactivated, the Blue LED will illuminate steady.

8. **When the Blue LED is steady, extract the ARTM by pulling on the module handles.**
9. **Carefully remove the ARTM from the chassis slot.**
10. **If the ARTM is being replaced, install the new ARTM, and reseat the blade server.**

    See "Install an ARTM" on page 23.

11. **If the slot is to remain empty, install a filler panel in the slot.**

### Related Information


- "Shut Down OS and Deactivate the Blade Server" on page 92
- "Power Off and Remove the Blade Server" on page 93
- "Remove a Compact Flash Card" on page 96
- "Remove Onboard Memory" on page 98
- "Replace a TOD Clock Battery" on page 100


## ▼ Remove a Compact Flash Card

1. **Take antistatic precautions: attach and electrically ground the wrist strap.**
2. **Shut down the OS and deactivate the blade server.**

   See "Shut Down OS and Deactivate the Blade Server" on page 92.

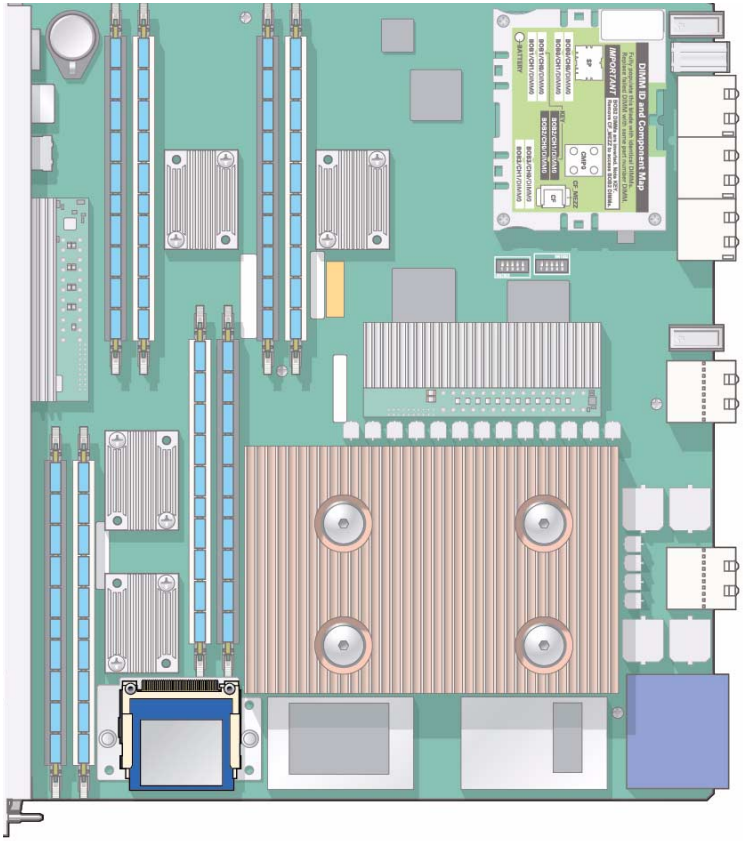
3. **Shut down the blade server.**

   See "Shut Down OS and Deactivate the Blade Server" on page 92.

4. **Remove the blade server.**

   See "Power Off and Remove the Blade Server" on page 93.

5. **Locate the CF connector.**




6. **If DIMMs are installed at the BOB3 location, carefully remove them.**

   See "Remove Onboard Memory" on page 98.

   Access to the thumb screws on the CF mezzanine card is easier if you remove these DIMMs.

7. **Loosen the CF mezzanine card thumb screws, then remove the mezzanine card with the CF attached.**

8. **Remove the CF card from the CF mezzanine card.**

9. **If you removed any DIMMS, reinstall them.**

   See "Install Onboard Memory" on page 29.

# ▼ Remove Onboard Memory

If you are returning the blade server for service, or if you are replacing a DIMM with another DIMM, this topic describes how to remove DIMMs from the blade server.

---

**Note –** Safely store the original factory-shipped DIMM and related DIMM packaging. Store any removed DIMM in the DIMM packaging.

---

1. **Take antistatic precautions: attach and electrically ground the wrist strap.**

---

**Caution –** Always wear a grounded antistatic wrist strap when handling DIMMs.

---

2. **Remove the blade server from the shelf as explained in** "Power Off and Remove the Blade Server" on page 93**.**

---

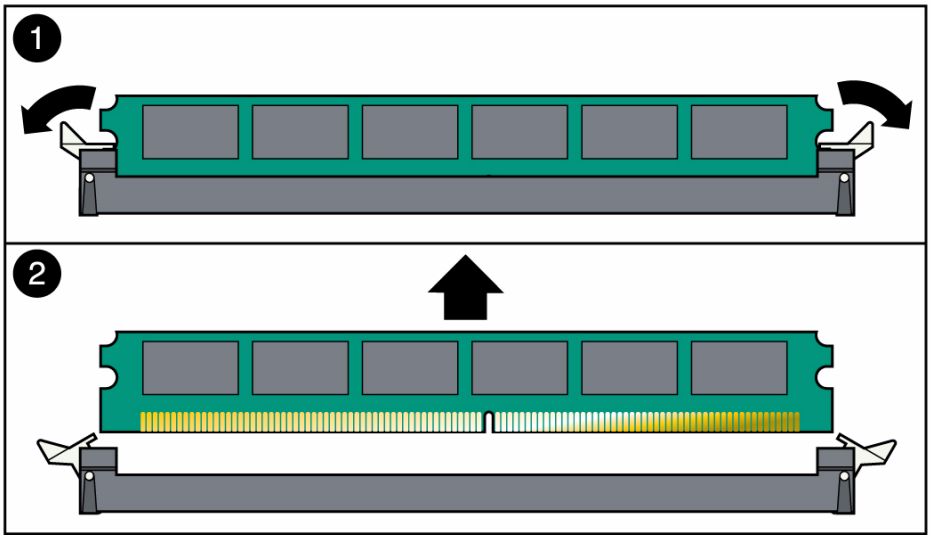
**Caution –** Do not place blade servers on top of an antistatic bag unless the outside of the bag has antistatic protective properties.

---

3. **Locate the DIMM you want to remove from the blade server.**
4. **If the DIMM is in one of the lower right slots and a CF card is installed, remove the CF card.**

   See "Remove a Compact Flash Card" on page 96.

5. **Simultaneously pull both spring retainer clips outward from the slot for the DIMM you want to remove.**
6. **Grasp the DIMM by the edges, and carefully pull it out of its connector without rocking the DIMM.**




7. **Place the DIMM in an antistatic bag.**
8. **If you are replacing the DIMM you removed with a new DIMM, install it.**
   See "Install Onboard Memory" on page 29.
9. **Perform one of the following actions:**
   - If the blade server is to be reinstalled or replaced, install it.
     See "Installing the Blade Server" on page 39.
   - If the slot is to remain empty, install a filler panel in the slot.

### Related Information


- "Install Onboard Memory" on page 29
- "Power Off and Remove an ARTM" on page 95
- "Remove a Compact Flash Card" on page 96
- "Replace a TOD Clock Battery" on page 100
- "Return a Blade Server" on page 102

# ▼ Replace a TOD Clock Battery

The blade server ships with a battery installed.

The battery must be type CR1632, with a minimum of 4ma abnormal charging current rating. The following lithium disk batteries (3V, 125MA) are approved for blade servers:

- Ray-O-Vac CR1632
- Renata CR1632
- Panasonic CR1632

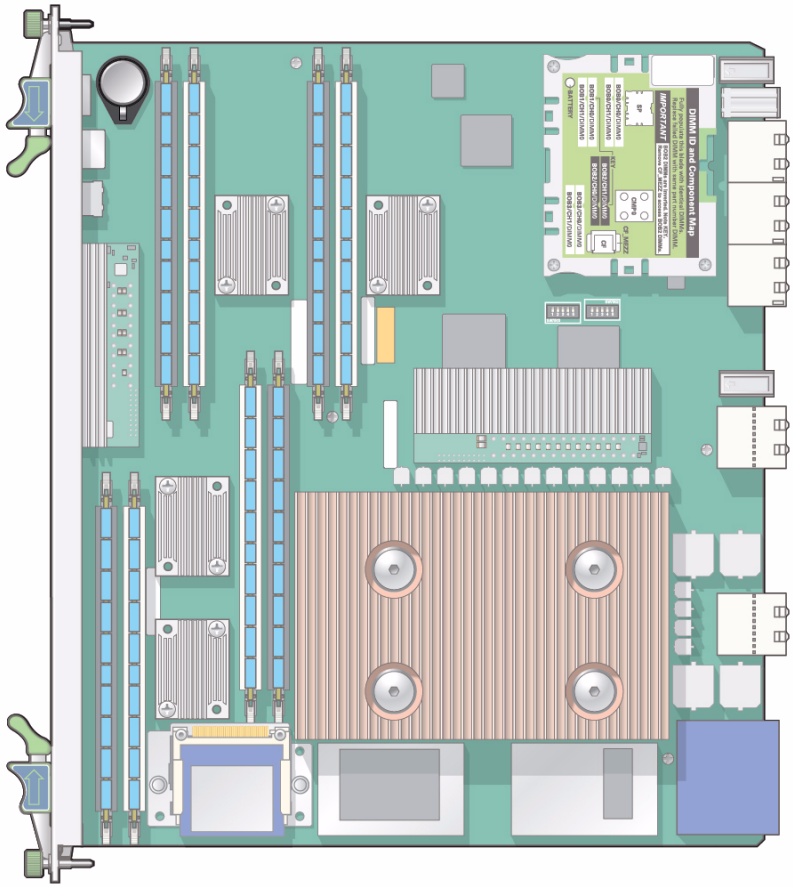
---

**Caution –** Risk of explosion if the battery is replaced by an incorrect type. Dispose of used batteries properly in accordance with manufacturer's instructions and local regulations.

---

1. **Remove the blade server.**
2. **If necessary, remove the DIMM closest to the front panel.**

   See "Remove Onboard Memory" on page 98.
3. **Locate and remove the battery from the blade server.**




4. **Slide the new battery into the holder with the side labeled "+" facing up.**

5. **If applicable, reinstall the DIMM.**

   See "Install Onboard Memory" on page 29.

6. **Install the blade server.**

   See "Installing the Blade Server" on page 33.

## Related Information

- "Power Off and Remove the Blade Server" on page 93
- "Installing the Blade Server" on page 39
- "Installing Optional Components" on page 23
- "Removing Optional Components" on page 94

# ▼ Return a Blade Server

If a blade server is defective and under warranty, return it as follows.

1. **Review warranty information to determine if your product is under warranty.**

   See "Warranty and Technical Support" on page 16.

2. **Remove the blade server from the chassis.**

   See "Power Off and Remove the Blade Server" on page 93.

3. **Remove any optional components.**

   See "Removing Optional Components" on page 94.

4. **Locate the serial and part numbers on the blade server.**

   See "Part Number, Serial Number, and MAC Address Label Locations" on page 103.

5. **Contact Oracle Services or the World Wide Solution Center to obtain Return Material Authorization numbers.**

   You must get RMA numbers for each blade you intend to return.

6. **Package the blade server in proper packaging to protect it from damage.**

   Oracle will examine the blade server and perform testing to determine cause of malfunction.

7. **Follow the return instructions provided by Oracle Service or the World Wide Solution Center.**

   Oracle Services will give you specific details on the return procedure for your geographic area.

### Related Information

- "Installing the Blade Server" on page 33

# Part Number, Serial Number, and MAC Address Label Locations

The blade server part number, serial number, revision number, and MAC address are printed on label stickers located on the blade server.

- Oracle barcode label provides blade server serial number (for example, 1005LCB-07296R0912).
- Part number labels provide the blade server part number, dash, revision, and date codes.
- Service processor label provides the SP barcode.
- DIMM label provides ID and mapping information for onboard storage configurations.
- MAC address label contains the base MAC address for the blade server in printed and barcode form. It is an orange label.

**FIGURE:** Location of Part Number, Serial Number, and MAC Address Labels

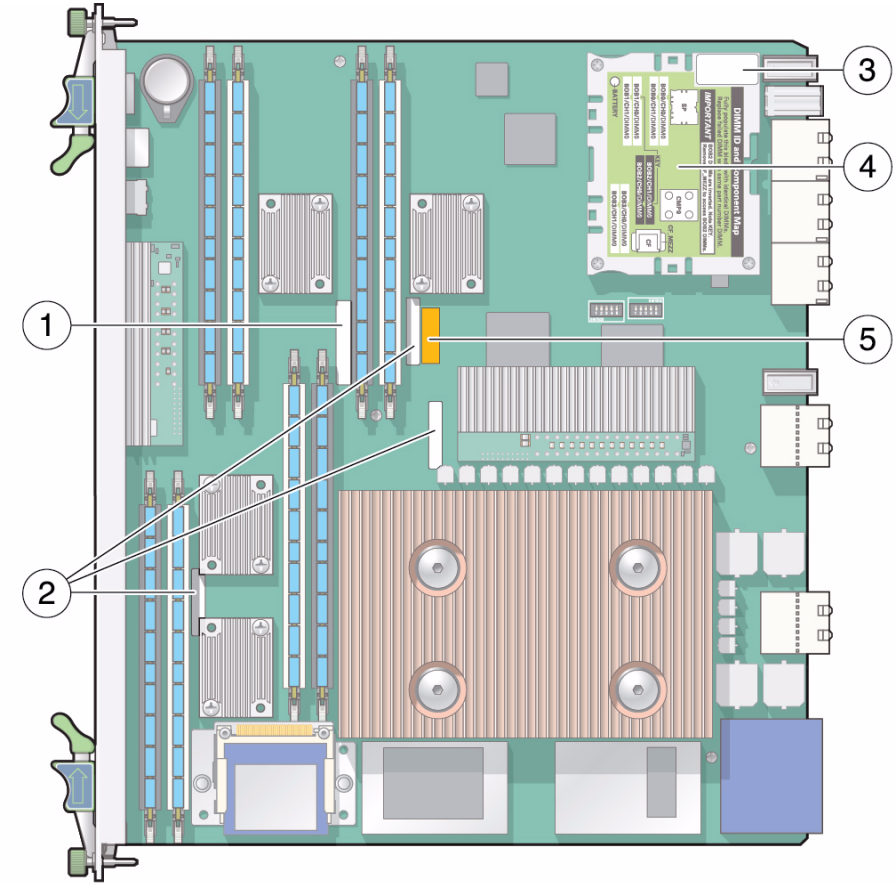



**Figure Legend**

| | |
|---|---|
| **1** | Serial number label |
| **2** | Part number labels |
| **3** | Service processor barcode label |
| **4** | DIMM ID and configuration map |
| **5** | MAC address |

## Related Information

- "View Blade ID" on page 58
- "View Midplane FRU Information" on page 58

# Programming the Blade Server

In addition to the programming topics in this user's guide, additional procedures, reference, and information for Oracle's Netra SPARC T3-1BA blade server and all other Netra blade servers are available in the following documents:

- *Netra CT900 Server Administration and Reference Manual*
- *Netra CT900 Server Software Developer's Guide*
- *Netra CT900 Server Service Manual*

(http://www.oracle.com/pls/topic/lookup?ctx=ct900&id=homepage)

Even if you are using the blade server in a third-party shelf, the information in these other documents will be useful.

The following topics provide information and instructions for programming the blade server.


- "Programmable Devices" on page 106
- "Sensors" on page 106
- "OEM and IPMI Commands" on page 106


### Related Information


- "Administering Configurations" on page 56
- "Configuring Ports and Pins" on page 61
- "Administering the Network" on page 77
- "ShMM CLI and Commands" on page 56

# Programmable Devices

The following devices on the blade server are programmable:

- SP flash (256 Mbit)
- CPU (host) Boot flash
- CF flash
- SUN FRUID EEPROM (typically AT24C64)
- IPMI FRUID
- FPGA flash
- H8 flash

# Sensors

Sensor tables for the Netra SPARC T3-1BA blade server and compatible optional components are provided in the *Netra CT900 Software Developer's Guide*, which is available online at:

(http://www.oracle.com/pls/topic/lookup?ctx=ct900&id=homepage)

# OEM and IPMI Commands

All of the OEM commands and IPMI commands that are available for use on the blade server are documented in the following:

- *Sun Netra CT900 Server Administration and Reference Manual*
- *Sun Netra CT900 Server Software Developer's Guide*

# Glossary

## A

**ARTM** Advanced Rear Transition Module

**ASM** advanced system monitoring

**ASP** authorized service provider

**ATCA** Advanced Telecommunications Computing Architecture; also used as AdvancedTCA when referring to specifications

## B

**BMC** baseboard management controller

**Boot ROM** BOOT read-only memory chip

## C

**CFM** cubic feet per minute

**CLI** command-line interface

**CMT** chip multithreading

## D

**DHCP** Dynamic Host Configuration Protocol

**DIMM** dual in-line memory module

## E

**ESD** electrostatic discharge

**8U** eight rack unit

## F

**FRUID** field-replaceable unit identification device

**FMA** fault management architecture

**FPGA** Field Programmable Gate Array

## G

**GbE** Gigabit Ethernet

## I

**IEEE** Institute of Electrical and Electronics Engineers, Inc.

**IHV** Independent Hardware Vendor

**ILOM** Integrated Lights Out Manager

**IPMB** Intelligent Platform Management Bus

**IPMC** Intelligent Platform Management Controller, a management subsystem that provides monitoring, event logging, and recovery control.

**IPMI** Intelligent Platform Management Interface

**$I^2C$** Inter Integrated Circuit bus

# M

**MAC** media access control

**MCU** Memory Controller Unit

**MUX** Multiplexer

# N

**NEBS** Network Equipment Building System

**NFS** Network File System

**NIU** Network Interface Unit

**NTB** non-transparent bridge

# O

**Oracle VTS** Oracle Validation Test Suite

# P

**PCIe** PCI Express interface

**PCH** platform controller hub

**PECI** Peripheral Environmental Control Interface

**PHY** Physical

**PICMG** PCI Industrial Computer Manufacturer Group

**PICMG 3.0, 3.1** PICMG 3.0 is the base specification that defines the mechanical, power distribution, system management, data transport, and regulatory guidelines. PICMG 3.1 builds on the PICMG 3.0 base specification and on IEEE 802.3-2003.

**PIO** Programmable Input Output

**PMEM** Persistent memory

**POST** Power-on self-test

# R

**RMA** return material authorization

# S

**SATA** Serial ATA is a computer bus interface for connecting host bus adapters to mass storage devices such as hard disk drives and optical drives.

**SERDES** Serializer and Deserializer

**ShMM** Shelf Manager

**SOL** serial over LAN

**SP** Service Processor

**SWT** Software Watchdog Timer

# T

**TCC** Thermal Control Circuit

**TPM** Trusted Platform Module chip

## V

**VLP** very low profile

## X

**XAUI** Attachment Unit Interface for 10GbE

READ AND DELETE

1. To display the "Beta Draft" footer , show the BetaDraft conditional setting.

2. After Beta, hide the BetaDraft conditional setting.

# Index

## P



## Q



## R



## S

## T



## U



## W



## X



## Z