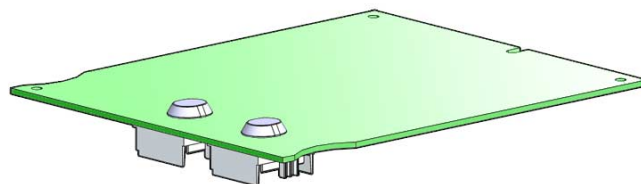


# Sun Blade™ T6320 XAUI Pass-Through Fabric Expansion Module User's Guide

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Sun Microsystems, Inc.  
[www.sun.com](http://www.sun.com)

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July 2008, Revision A

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# Preface

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This guide describes the features, installation, and test of the Sun Blade T6320 XAUI Pass-Through Fabric Expansion Module (FEM).

These instructions are designed for enterprise system administrators with experience installing network hardware and software.

For supported systems, see the [“Hardware and Software Requirements”](#) on page 3.

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## How This Document Is Organized

[Chapter 1](#) provides an overview of the Sun Blade T6320 XAUI Pass-Through Fabric Expansion Module features.

[Chapter 2](#) describes how to install the Sun Blade T6320 XAUI Pass-Through Fabric Expansion Module in your system and to verify that it has been installed correctly.

[Chapter 3](#) describes how to find more information on configuring the FEM.

[Appendix A](#) lists the specifications for the Sun Blade T6320 XAUI Pass-Through Fabric Expansion Module.

[Appendix B](#) provides an overview of the SunVTS™ diagnostic application and instructions for updating the SunVTS software to recognize the FEM.

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# Using UNIX Commands

This document might not contain information about 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
- Solaris Operating System documentation, which is at:

<http://docs.sun.com>

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## Shell Prompts

Shell	Prompt
C shell	<i>machine-name%</i>
C shell superuser	<i>machine-name#</i>
Bourne shell and Korn shell	\$
Bourne shell and Korn shell superuser	#

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# Typographic Conventions

Typeface*	Meaning	Examples
AaBbCc123	The names of commands, files, and directories; on-screen computer output	Edit your <code>.login</code> file. Use <code>ls -a</code> to list all files. % You have mail.
<b>AaBbCc123</b>	What you type, when contrasted with on-screen computer output	% <b>su</b> Password:
<i>AaBbCc123</i>	Book titles, new words or terms, words to be emphasized. Replace command-line variables with real names or values.	Read Chapter 6 in the <i>User's Guide</i> . These are called <i>class</i> options. You <i>must</i> be superuser to do this. To delete a file, type <code>rm filename</code> .

\* The settings on your browser might differ from these settings.

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## Related Documentation

The documents are available at:

<http://docs.sun.com/app/docs/prod/blade.t6320>

Application	Title
New information, patches, and changes to the FEM	<i>Sun Blade T6320 XAUI Pass-Through Fabric Expansion Module Product Notes, 820-5383</i>
Server Module Service, Troubleshooting and ILOM information.	<i>Sun Blade T6320 Server Module Service Manual, 820-2386</i> <i>Sun Integrated Lights Out Manager 2.0 Supplement for Sun Blade T6320 Server Modules</i>
Sun Blade 6000 Modular System information	All Sun Blade 6000 Modular System chassis documents are available at: <a href="http://docs.sun.com/app/docs/prod/blade.6000mod">http://docs.sun.com/app/docs/prod/blade.6000mod</a>

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## Support, and Training

Sun Function	URL
Support	<a href="http://www.sun.com/support/index.jsp">http://www.sun.com/support/index.jsp</a>
Training	<a href="http://www.sun.com/training/">http://www.sun.com/training/</a>

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*Sun Blade T6320 XAUI Pass-Through Fabric Expansion Module User's Guide*, part number 820-4777-11.



# Product Overview

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This chapter provides an overview of the Sun Blade T6320 XAUI Pass-Through Fabric Expansion Module (FEM), including:

- [“Product Description” on page 1](#)
- [“Hardware and Software Requirements” on page 3](#)
- [“Features” on page 4](#)

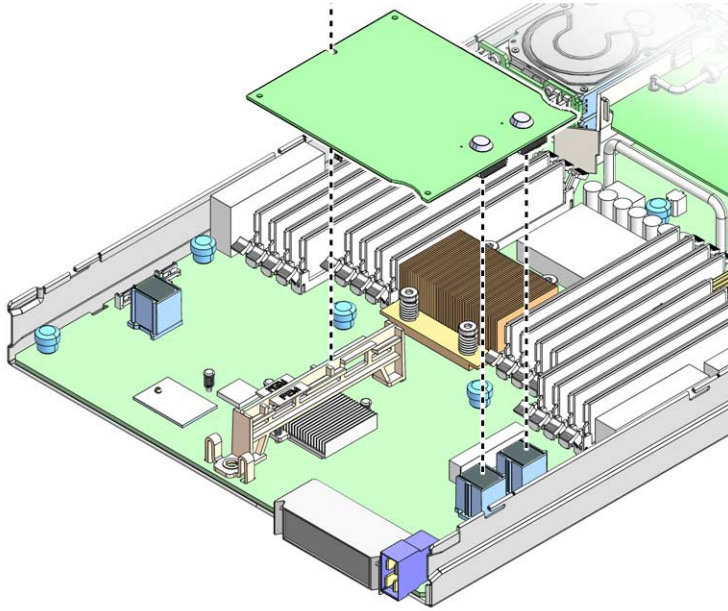
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## Product Description

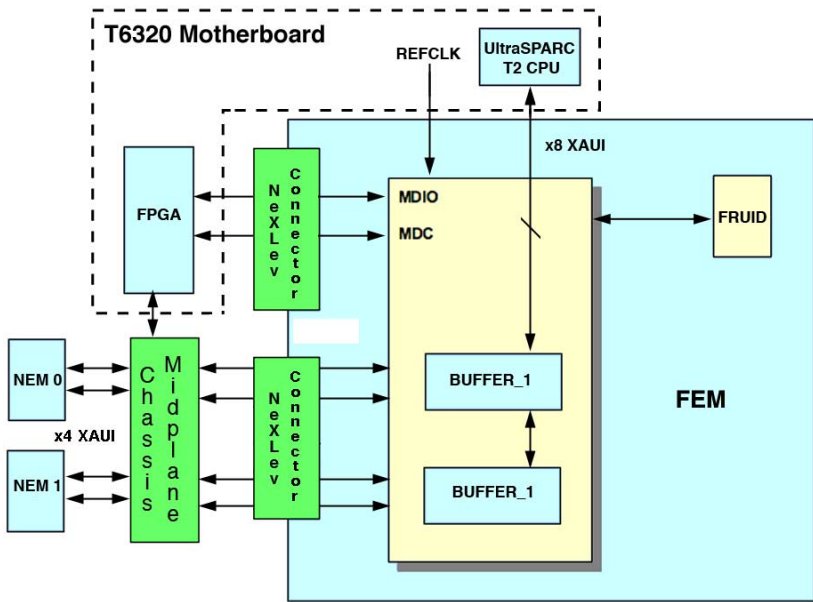
The Sun Blade T6320 XAUI Pass-Through Fabric Expansion Module (FEM) connects to the Sun Blade T6320 server module motherboard by two square NexLev connectors ([FIGURE 1-1](#)).

The FEM transmits two sets of x4 XAUI 10-Gigabit Ethernet lanes from the Sun Blade™ T6320 server module to the Sun Blade 6000 10GbE Multi-Fabric Network Express Module ([FIGURE 1-2](#)).

**FIGURE 1-1** FEM Module for the Sun Blade T6320 Server Module



**FIGURE 1-2** Signal Diagram of the Sun Blade T6320 XAUI Pass-Through Fabric Expansion Module



# Hardware and Software Requirements

Before installing the FEM, ensure that your system meets the minimum hardware and software requirements in [TABLE 1-1](#).

**TABLE 1-1** Minimum Hardware, Software and Firmware Versions

System or OS	Software or Firmware Version
Sun Blade T6320 server module	System Firmware 7.0.9.c with patch 127581-01 or later.
Sun Blade 6000 Modular System Chassis	Sun Blade 6000 Modular System Chassis
Operating System	Solaris 10 8/07 OS with patch 127127-11 and 136933-02 or later

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# Features

The Sun Blade T6320 XAUI Pass-Through Fabric Expansion Module provides the following features:

- Supports two full-duplex 10-Gigabit Ethernet interfaces with the Sun Blade 6000 10GbE Multi-fabric Network Express Module.
- IEEE 802.3ae 2002-compliant
- Hardware-based flow classification for extending parallelism and virtualization to networking
- Supports up to eight receive DMA channels and up to 12 transmit DMA channels, multiple receive and transmit descriptor rings, and dedicated networking hardware resources (DMA, interrupts, buffer, and more) for each thread or strand.
- CPU/thread affinity and CPU load balancing at L1, L2, L3, and L4
- Jumbo Frames support (up to 9KBytes)
- IPv4, IPv6, and IPMP support
- TCP and UDP checksum and CRC32C support
- IEEE 802.1Q VLAN support

## Installing the Fabric Expansion Module

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This chapter describes how to install the Sun Blade T6320 XAUI Pass-Through Fabric Expansion Module in your system and verify that it has been installed correctly.

This chapter contains the following sections:

- [“Installing the FEM” on page 5](#)
- [“Verifying the Hardware Installation” on page 6](#)

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**Note** – If you are installing the Sun Blade T6320 XAUI Pass-Through Fabric Expansion Module into a server module running Solaris 10 software, you must install the Solaris OS and patches *before* you install the hardware.

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## Installing the FEM

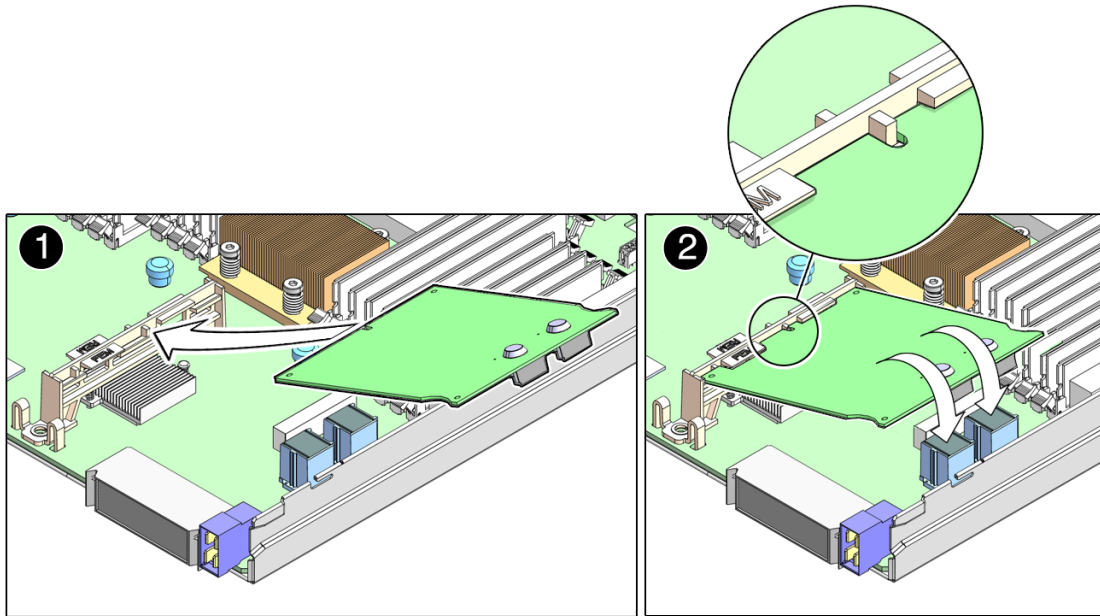
The following instructions describe the basic tasks required to install the FEM inside a blade server module.

### ▼ To Install the FEM With the Power Off

1. Halt and power off your system.
2. Attach the adhesive copper strip of the antistatic wrist strap to the server module chassis. Wrap the other end twice around your wrist, with the adhesive side against your skin.
3. Perform an orderly shutdown of the server module

4. Remove the server module from the system chassis.
5. Remove the main cover of your system.
6. Slide the FEM card at an angle into the support bracket, then press it carefully into the connector.

**FIGURE 2-1** Installing the FEM



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## Verifying the Hardware Installation

After you install the Sun Blade T6320 XAUI Pass-Through Fabric Expansion Module, perform the following tasks to verify the installation.

### ▼ To Verify the Hardware Installation

1. Power on the system.

## 2. List the network devices on your system.

```
ok show-nets  
a) /pci@0/pci@0/pci@c/network@0,1  
b) /pci@0/pci@0/pci@c/network@0  
c) /niu@80/network@1  
d) /niu@80/network@0  
q) NO SELECTION  
Enter Selection, q to quit
```

You should see the network devices in c) and d) above. If you do not see the network devices, verify that the FEM is properly seated.

## ▼ To Reboot the System

- After verifying the FEM installation, perform a reconfiguration boot on your system. Type the following:

```
ok boot -r
```





## Configuration Information

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If you require more information about the following topics, refer to the *Sun Dual 10GbE XFP PCIe ExpressModule User's Guide*, 820-1606.

- Configuring the Network
- Configuring the nxge Device Driver Parameters
- Configuring the Jumbo Frames Feature
- Configuring Link Aggregation
- Configuring VLANs

The *Sun Dual 10GbE XFP PCIe ExpressModule User's Guide*, 820-1606, is available at this URL:

<http://docs.sun.com/app/docs/prod/10gbe.xfp.pcie~10gbe-xfp-pem#hic>



# Specifications

This appendix lists the specifications for the Sun Blade T6320 XAUI Pass-Through Fabric Expansion Module. This appendix contains the following sections:

- [“Performance Specifications” on page 11](#)
- [“Physical Characteristics” on page 12](#)
- [“Power Requirements” on page 12](#)

## Performance Specifications

**TABLE A-1** Performance Specifications

Feature	Specification
Bus type	Two x4 lanes XAUI
Bus speed (x8, encoded rate)	20Gbit/sec unidirectional; 40Gbit/sec bidirectional (theoretical)
Maximum Ethernet transfer rate	10Gbps (full-duplex)
Optics	10GBASE-SR, IEEE 802.3ae 2002 compliant

---

## Physical Characteristics

**TABLE A-2** Physical Characteristics of the Express Module

Dimension	Measurement
Length	139.7 mm ( 5.5 inches)
Width	114.3 mm ( 4.5 inches)
Height	112 mm (4.4 inches)

---

## Power Requirements

**TABLE A-3** Environmental Requirements

Specification	Measurement
Power consumption	3.5 W RMS nominal
	5.0 W maximum

## Diagnostic Software

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This appendix provides an overview of the SunVTS diagnostic application and instructions for updating the SunVTS software to recognize the Sun Blade T6320 XAUI Pass-Through Fabric Expansion Module. This appendix contains the following sections:

- [“SunVTS Diagnostic Software” on page 13](#)
- [“Find the SunVTS documentation at:” on page 14](#)

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## SunVTS Diagnostic Software

The SunVTS software executes multiple diagnostic hardware tests from a single user interface. SunVTS is used to verify the configuration and functionality of most hardware controllers and devices. The SunVTS software operates primarily from a graphical user interface, enabling test parameters to be set quickly and easily while a diagnostic test operation is being performed.

The SunVTS `nettest` diagnostic can be used to test all of the networking interfaces on the system, including the interfaces on the FEM.

To use the `nettest` diagnostic, you must have the SunVTS software installed on your system. Use SunVTS 6.4 Patch Set 3 or later. You will need to update the SunVTS configuration to recognize the FEM. Refer to the SunVTS documentation in [TABLE B-1](#).

**TABLE B-1** SunVTS Documentation

Title	Description
<i>SunVTS 6.4 Test Reference Manual for SPARC Platforms</i>	Describes each SunVTS test (including <code>xnetlbttest</code> ). Describes test options and command-line arguments
<i>SunVTS Quick Reference Card</i>	Provides an overview of the user interface
<i>SunVTS 6.4 Patch Set 3 Release Notes</i>	Updates to the other SunVTS documents.
<i>SunVTS 6.4 Patch Set 3 Documentation Supplement for SPARC Platforms</i>	Updates to the other SunVTS documents specific to this patch set.

Find the SunVTS documentation at:

<http://docs.sun.com/app/docs/prod/vts64#hic>

## Using the SunVTS `xnetlbttest`

The `xnetlbttest` provides functional test coverage of the network products based on Neptune Ethernet chip/core. Refer to the *SunVTS 6.4 Test Reference Manual for SPARC Platforms*, for complete `xnetlbttest` information.

### `xnetlbttest` Test Requirements

The NEM has an internal loopback path built in. You do not need an loopback connector. You must have the Ethernet card (the FEM) and the device driver installed. Intervention mode is enabled before running `xnetlbttest`. `xnetlbttest` cannot run and does not appear in the GUI if the network interface is connected to a live network. `xnetlbttest` also requires that the Ethernet device be configured offline before running the test. Use the `ifconfig(1M)` command to bring the Ethernet device down before running `xnetlbttest`. Enter the following commands to bring the interface down:

```
# ifconfig nxge0 down
# ifconfig nxge0 unplumb
```

Where *nxge0* is the 10GbE port on your server module.