Sun™ Quad GbE UTP x8 PCIe ExpressModule Release Notes

Sun Microsystems, Inc.
www.sun.com

Part No. 820-4014-11
March 2008, Revision A

Submit comments about this document at: http://www.sun.com/hwdocs/feedback

Copyright 2008 Sun Microsystems, Inc., 4150 Network Circle, Santa Clara, California 95054, U.S.A. All rights reserved.

Sun Microsystems, Inc. has intellectual property rights relating to technology embodied in the product that is described in this document. In particular, and without limitation, these intellectual property rights may include one or more of the U.S. patents listed at http://www.sun.com/patents and one or more additional patents or pending patent applications in the U.S. and in other countries..

Sun, Sun Microsystems, the Sun logo, Solaris and SunVTS are trademarks or registered trademarks of Sun Microsystems, Inc. in the U.S. and other countries.

UNIX is a registered trademark in the U.S. and other countries, exclusively licensed through X/Open Company, Ltd.

UNIX®. PCI-Express ®. The Adobe. logo and the PostScript logo are trademarks or registered trademarks of Adobe Systems, Incorporated.

Products covered by and information contained in this service manual are controlled by U.S. Export Control laws and may be subject to the export or import laws in other countries. Nuclear, missile, chemical biological weapons or nuclear maritime end uses or end users, whether direct or indirect, are strictly prohibited. Export or reexport to countries subject to U.S. embargo or to entities identified on U.S. export exclusion lists, including, but not limited to, the denied persons and specially designated nationals lists is strictly prohibited.

Use of any spare or replacement CPUs is limited to repair or one-for-one replacement of CPUs in products exported in compliance with U.S. export laws. Use of CPUs as product upgrades unless authorized by the U.S. Government is strictly prohibited.

DOCUMENTATION IS PROVIDED "AS IS" AND ALL EXPRESS OR IMPLIED CONDITIONS, REPRESENTATIONS AND WARRANTIES, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR NON-INFRINGEMENT, ARE DISCLAIMED, EXCEPT TO THE EXTENT THAT SUCH DISCLAIMERS ARE HELD TO BE LEGALLY INVALID.

Copyright 2008 Sun Microsystems, Inc., 4150 Network Circle, Santa Clara, Californie 95054, Etats-Unis. Tous droits réservés.

Sun Microsystems, Inc. détient les droits de propriété intellectuels relatifs à la technologie incorporée dans le produit qui est décrit dans ce document. En particulier, et ce sans limitation, ces droits de propriété intellectuelle peuvent inclure un ou plus des brevets américains listés à l'adresse http://www.sun.com/patents et un ou les brevets supplémentaires ou les applications de brevet en attente aux Etats - Unis et dans les autres pays.

Sun, Sun Microsystems, le logo Sun, Solaris, et SunVTS sont des marques de fabrique ou des marques déposées de Sun Microsystems, Inc. aux Etats-Unis et dans d'autres pays.

Toutes les marques SPARC sont utilisées sous licence et sont des marques de fabrique ou des marques déposées de SPARC International, Inc. aux Etats-Unis et dans d'autres pays. Les produits portant les marques SPARC sont basés sur une architecture développée par Sun Microsystems, Inc.

UNIX est une marque déposée aux Etats-Unis et dans d'autres pays et licenciée exlusivement par X/Open Company, Ltd.

UNIX®. PCI-Express ®. Le logo Adobe. et le logo PostScript sont des marques de fabrique ou des marques déposées de Adobe Systems, Incorporated.

Ce produit est soumis à la législation américaine en matière de contrôle des exportations et peut être soumis à la règlementation en vigueur dans d'autres pays dans le domaine des exportations et importations. Les utilisations , ou utilisateurs finaux, pour des armes nucléaires, des missiles, des armes biologiques et chimiques ou du nucléaire maritime, directement ou indirectement, sont strictement interdites. Les exportations ou reexportations vers les pays sous embargo américain, ou vers des entités figurant sur les listes d'exclusion d'exportation américaines, y compris, mais de manière non exhaustive, la liste de personnes qui font objet d'un ordre de ne pas participer, d'une façon directe ou indirecte, aux exportations des produits ou des services qui sont régis par la législation américaine en matière de contrôle des exportations et la liste de ressortissants spécifiquement désignés, sont rigoureusement interdites. L'utilisation de pièces détachées ou d'unités centrales de remplacement est limitée aux réparations ou à l'échange standard d'unités centrales pour les produits exportés, conformément à la législation américaine en matière d'exportation. Sauf autorisation par les autorités des Etats-Unis, l'utilisation d'unités centrales pour procéder à des mises à jour de produits est rigoureusement interdite.

LA DOCUMENTATION EST FOURNIE "EN L'ETAT" ET TOUTES AUTRES CONDITIONS, DECLARATIONS ET GARANTIES EXPRESSES OU TACITES SONT FORMELLEMENT EXCLUES, DANS LA MESURE AUTORISEE PAR LA LOI APPLICABLE, Y COMPRIS NOTAMMENT TOUTE GARANTIE IMPLICITE RELATIVE A LA QUALITE MARCHANDE, A L'APTITUDE A UNE UTILISATION PARTICULIERE OU A L'ABSENCE DE CONTREFACON.

Please
Recycle

Contents

Sun Quad GbE UTP x8 PCIe ExpressModule Release Notes 1

Known Issues With Sun SPARC and Solaris x86 Systems 1

Issue: nxge Driver for Specific Ethernet Cards Might Report Spurious Errors (CRs 6572623, 6573600, 6623776, and 6625536) 2

Installation Details: 2

Issue: Upgrading Solaris OS to Solaris 10 8/07 to Fix a Panic Problem Seen With Solaris 10 11/06 (CRs 6613003 and 6591438) 3

Workaround: Perform One of the Following 4

Issue: Installing the Correct Versions of `nxge` Data Integrity Patches for Your System 5

Workaround: Install the Following Patches 5

Known Issues With Sun SPARC Systems 5

Issue: MSI or SoftRing Settings Might Need Site-Specific Adjustment 5

Workaround: Refer to the Tuning Web Site 6

Issue: nxge.conf Missing Hex Code (0x) Prefix for “class-opt-ipv4-tcp = fe0” Value 6

Known Issues With Solaris x86 Systems 6

Issue: Interrupts Might be Missed 6

Workaround: To Avoid Missing Interrupts 7

Issue: Detaching Driver Can Kill Other Devices 7

Workaround: Do Not Unplumb a Configured Interface 7

Issue: Older BIOS Versions Might Hang 7

Workaround: Upgrade the System BIOS 7

Issue: SoftRing Mode is Disabled by Default 8

Workaround: Enable SoftRing Mode 8

Issue: Operating System Cannot be Installed Over the 10 Gigabit Ethernet Interface 8

Workaround: Create a Custom Boot Archive with `nxge` Driver Support 8

Issue: Limited Space for Option ROMs 9

Workaround: Disable Slots or Interfaces 9

▼ To Disable Slots and Interfaces from Option ROM Probing 9

Known Issues With Linux Systems 12

Issue: Card Fails on RHEL4U3 LargeSMP Kernel With Over 8 CPUs 12

Workaround: Reduce CPUs to 8 or Upgrade to RHEL4U4 12

Issue: System Panics When `irqbalance` Is Enabled 13

Workaround: Disable `irqbalance` 13

Issue: `ethtool` Utility 14

Workaround: See Support URL 14

Sun Quad GbE UTP x8 PCIe ExpressModule Release Notes

This document contains material not available when the *Sun Quad GbE UTP x8 PCIe ExpressModule User's Guide* was completed. Read this document before installing and configuring your card.

You can find the latest updates for the `nxge` driver software at this web site:

`http://www.sun.com/download`

Select Networking.

You can find the latest card documentation at this web site:

`http://docs.sun.com/app/docs/prod/net.inter.crds`

Known Issues With Sun SPARC and Solaris x86 Systems

This section describes the known issues and workarounds for the `nxge` driver on Sun SPARC and Solaris x86 systems at the time of this release.

Issue: nxge Driver for Specific Ethernet Cards Might Report Spurious Errors (CRs 6572623, 6573600, 6623776, and 6625536)

This issue is fixed in the following patch releases for the SUNWnxge 11.10 package version.

- SPARC platforms: 127111-08 or higher
- x86 platforms: 127112-08 or higher

Installation Details:

1. **Determine the current package version.**

   Obtain the SUNWnxge package version as follows:

```
# pkginfo -l SUNWnxge | grep VERSION
```

   If the unbundled SUNWnxge package is installed, the version is 1.0. For example:

```
VERSION=1.0,REV=2007.01.12.10.0
```

   This version was delivered as a standalone package, not bundled with the Solaris OS.

   If the bundled SUNWnxge package is installed, the version is 11.10. For example:

```
VERSION:  11.10.0,REV=2007.07.08.17.44
```

   This package is bundled to the Solaris 10 8/07 release.

2. **Upgrade SUNWnxge version 1.0.**

   If version 1.0 (unbundled SUNWnxge package) is installed, the SUNWnxge package and the Solaris kernel should be upgraded to Solaris 10 8/07 level.

Note – This step is not needed if version 11.0 is already installed.

To upgrade the SUNWnxge package, follow the workaround instructions in "Issue: Upgrading Solaris OS to Solaris 10 8/07 to Fix a Panic Problem Seen With Solaris 10 11/06 (CRs 6613003 and 6591438)" on page 3.

After this step, install the SUNWnxge version 11.0 and the following kernel update patches:

- SPARC platforms: 120011-14
- x86 platforms: 120012-14

3. **Install relief patches.**

   Install the following Kernel Update Patches

- SPARC platforms: 127111-08 or higher
- x86 platforms: 127112-08 or higher

Issue: Upgrading Solaris OS to Solaris 10 8/07 to Fix a Panic Problem Seen With Solaris 10 11/06 (CRs 6613003 and 6591438)

On a host with Solaris 10 11/06 OS installed, if you install the latest recommended patch cluster, which includes KU 120011-14, the system panics if you install an `nxge` Ethernet adapter (with `nxge` package version 1.0 and driver version 1.x).

This issue occurs when the `add_drv` command in the postinstall script of the `SUNWnxge` package is run (while adding the package), the system enters a panic cycle. The system does not panic if KU 120011-14 is removed.

The latest `nxge` driver packages are now bundled with Solaris 10 8/07 and later OS releases. This issue does not occur on systems with the Solaris 10 8/07 or later OS.

Note the following `nxge` patch dependencies:

- Patch 127741-01:
  - Requires Patch 120011-14
  - Is incompatible with Patches 118833-36 and 125100-10
- Patch 127742-01:
  - Requires Patch 120012-14
  - Is incompatible with Patches 118855-36 and 125101-10
- Patch 125670-04
  - Requires Patch 118833-36
  - Is incompatible with Patch 12011-14
- Patch 125671-04
  - Requires Patch 118855-36
  - Is incompatible with Patch 120012-14

Workaround: Perform One of the Following

Perform one of the following steps (Step 1 or Step 2).

1. **Upgrade to Solaris 10 8/07.**

   Before upgrading, check if the unbundled `nxge` driver packages are installed. For example:

```
% pkginfo -l SUNWnxge | grep 1.0,REV=2007.01.12.10.0
```

   If the packages are installed, and you have modified the `nxge.conf` file (on a Solaris 10 11/06 system), make a backup of the `nxge.conf` file before upgrading or reinstalling Solaris 10 8/07 or later releases. For Solaris 10 11/06 only (unbundled), the location of the `nxge.conf` file is `/kernel/drv/nxge.conf` for both SPARC and x86 platforms.

   For Solaris 10 8/07 (`nxge` bundled), the locations of the `nxge.conf` file are as follows:

   - `/platform/sun4u/kernel/drv/nxge.conf`
   - `/platform/sun4v/kernel/drv/nxge.conf`
   - `/platform/i86pc/kernel/drv/nxge.conf`

Note – Do not install the older unbundled `nxge` driver packages (downloaded for Solaris 10 11/06) if the system is upgraded or freshly installed with the Solaris 10 8/07 or later OSs.

---

2. **Or, on Solaris 10 11/06 systems, remove the unbundled `nxge` driver packages, and install the latest bundled packages from the Solaris 10 8/07 media.**

   a. **Backup the `nxge.conf` file if you have modified it (see Step 1).**

   b. **Remove the old `nxge` driver package version:**

```
# pkgrm SUNWnxge
```

   c. **Install KU patches for Solaris 10 8/07 level:**

   - SPARC platforms: 120011-14
   - x86 platforms: 120012-14

   d. **Add the new bundled version of the `nxge` driver package from the Solaris 10 8/07 media.**

```
# pkgadd SUNWnxge
```

Issue: Installing the Correct Versions of nxge Data Integrity Patches for Your System

SunAlert 103076 was created to fix data integrity issues with the nxge driver.

Note – There are two separate sets and versions of patches to fix the data integrity issues. Installing the wrong patch results in an actual failure rather than a standard "does not apply" exit.

Workaround: Install the Following Patches

For Solaris 10 11/06, install Data Integrity Patch 125670-04 or later.

Caution – Do not install Patches 125670/125671 or later if you have KU 120011/120012-14 or later installed.

For Solaris 10 8/07, install Data Integrity Patch 127741-01 or later.

Caution – Do not install Patches 127741/127742-01 or later if you have KUs 118833/118855-36 or later or 125100/125101-10 or later installed.

Known Issues With Sun SPARC Systems

This section describes the known issues and workarounds for the nxge driver on Sun SPARC systems at the time of this release.

Issue: MSI or SoftRing Settings Might Need Site-Specific Adjustment

The default MSI or SoftRing settings might need to be adjusted for your site.

Workaround: Refer to the Tuning Web Site

Refer to the following tuning web site for information on tunable parameters and how to adjust tunable MSI and SoftRing parameters:

http://www.solarisinternals.com/wiki/index.php/Networks

Issue: `nxge.conf` Missing Hex Code (`0x`) Prefix for `"class-opt-ipv4-tcp = fe0"` Value

When a Sun Quad GbE UTP x8 PCI Express Card or ExpressModule is installed in a Sun SPARC Enterprise M9000 server, and the `"class-opt-ipv4-tcp = fe0;"` value is uncommented (set) in the `/platform/sun4u/kernel/drv/nxge.conf` configuration file, the following messages are output during system boot:

```
WARNING: Unexpected token 'fe0' on line 112 of
/platform/sun4u/kernel/drv/nxge.conf
WARNING: Unexpected end of line on line 112 of
/platform/sun4u/kernel/drv/nxge.conf
```

Hex values are expressed with a prefix of `0x`. The correct format should be as follows:

```
"class-opt-ipv4-tcp = 0xfe0;"
```

Known Issues With Solaris x86 Systems

This section describes the known issues and workarounds for the `nxge` driver on Solaris x86 systems at the time of this release.

Issue: Interrupts Might be Missed

Interrupt migration feature in the Solaris x86 kernel may lead to interrupts being missed.

Workaround: To Avoid Missing Interrupts

You must add the following lines to the `/etc/system` file to avoid missing interrupts that can lead to an interface hang.

```
set ddi_msix_alloc_limit=1
set pcplusmp:apic_enable_dynamic_migration=0
set pcplusmp:apic_intr_policy=1
```

Reboot the system after adding these lines:

```
# boot -r
```

Issue: Detaching Driver Can Kill Other Devices

Detaching or unloading a driver can kill other devices and lead to a system panic.

Workaround: Do Not Unplumb a Configured Interface

Avoid unplumbing an interface after it has been configured. To stop using a configured interface, issue the following command:

```
# ifconfig nxgeX down
```

where *X* is the number of the interface you want to stop using.

Issue: Older BIOS Versions Might Hang

Older BIOS versions show intermittent system hang issues.

Workaround: Upgrade the System BIOS

- Minimum BIOS required for X4600 systems is 40
- Minimum BIOS required for X4100/X4200 systems is 29

Refer to:
http://www.sun.com/download/index.jsp?cat= Hardware%20Drivers&tab=3&subcat=x64%20Servers%20%26%20Workstations

Issue: SoftRing Mode is Disabled by Default

Default SoftRing mode is disabled under the Solaris x86 Operating System.

Workaround: Enable SoftRing Mode

Add the following line in `/etc/system` file and reboot.

```
set ip:ip_squeue_fanout=1
set ip_squeue_soft_ring=1
```

Then add the following to a startup script, or use the `ndd` utility before plumbing the interface:

```
# ndd -set /dev/ip ip_soft_rings_cnt 8
```

Issue: Operating System Cannot be Installed Over the 10 Gigabit Ethernet Interface

The `nxge` driver is not bundled with Solaris x86 Operating System and cannot be installed over a 10 Gigabit Ethernet interface.

Note – Support for operating system installation over the 10 Gigabit Ethernet interface is planned for a future Solaris release.

Workaround: Create a Custom Boot Archive with `nxge` Driver Support

Create a customized boot archive with nxge driver support. The following document shows how to customize the boot archive for the Solaris Operating System.

`http://www.sun.com/blueprints/0806/819-7546.html`

For Linux systems, refer to the documentation from your Linux distribution to create a customized boot archive with the nxge driver.

Issue: Limited Space for Option ROMs

POST may report "Not Enough Space to copy PCI Option ROM" when Sun 10Gigabit cards are plugged in the system due to limited space available for the Option ROMs.

Workaround: Disable Slots or Interfaces

- If the Sun 10 Gigabit Ethernet port will not be used for installing the operating system, then the slots with the Sun x8 Express 10 Gigabit Ethernet Fiber XFP Low Profile adapter must be disabled from Option ROM probing.
- If the Sun 10 Gigabit Ethernet port will be used for installing the operating system, then disable all the other slots as well as the on-board interfaces from Option ROM probing.

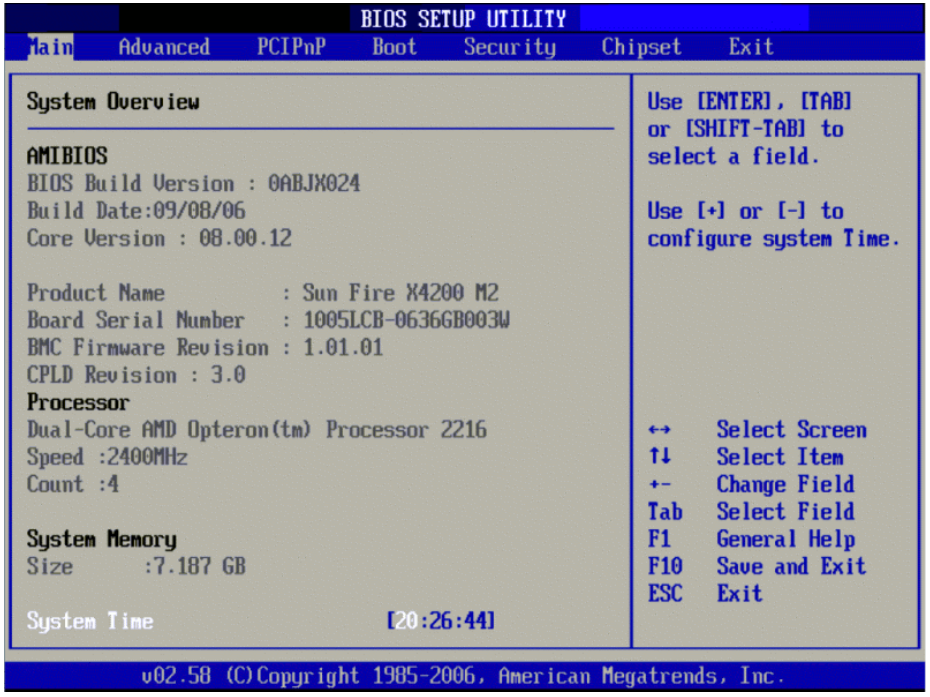
▼ To Disable Slots and Interfaces from Option ROM Probing

If there is not enough space available for the Option ROMs, you will see the following error message during system boot:

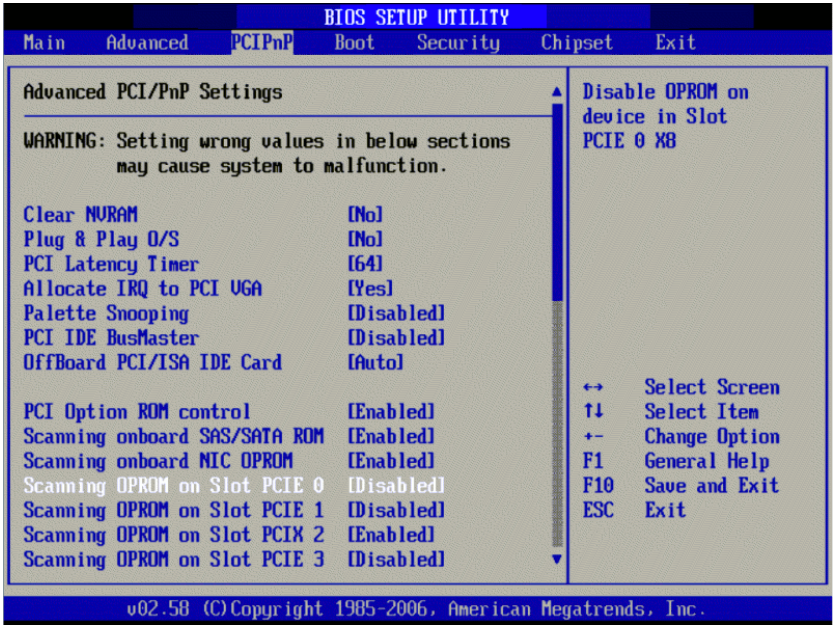
```
Press F8 for BBS POPUP  (CTRL+P on Remote Keyboard)


USB Device(s): 1 Keyboard, 1 Mouse, 1 Hub, 2 Storage Devices
Auto-Detecting Pri Master..ATAPI CDROM
Pri Master: MATSHITACD-RW CW-8124  DZ13
           Ultra DMA Mode-2                                          0078
Auto-detecting USB Mass Storage Devices ..
Device #01 : AMI Virtual CDROM
Device #02 : AMI Virtual Floppy
02 USB mass storage devices found and configured.
                                                                     DE78
No enough Space to copy PCI Option ROM  [04:00:01]
No enough Space to copy PCI Option ROM  [04:00:02]
No enough Space to copy PCI Option ROM  [04:00:03]
No enough Space to copy PCI Option ROM  [80:0A:00]
No enough Space to copy PCI Option ROM  [86:01:00]
No enough Space to copy PCI Option ROM  [86:01:01]
No enough Space to copy PCI Option ROM  [86:02:00]                   0085
BMC Responding
Press <ESC> to continue....5                                         DE87
```

1. **Press F2 to get to the BIOS Setup screen:**

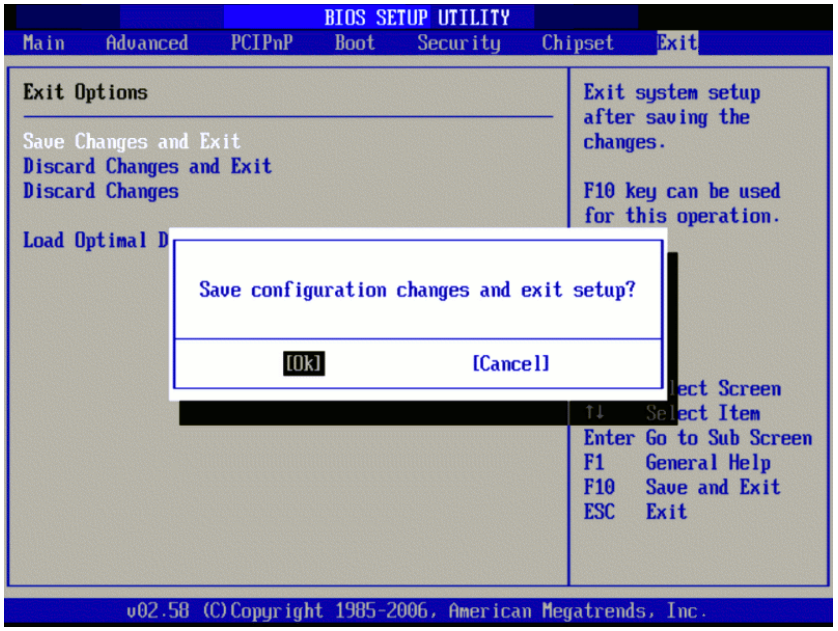


2. **Press the right arrow ket to get to the PCIPnP menu and disable the OPROM scanning for the slot that has the Sun Quad Gigabit Ethernet UTP PCI Express Card.**



This example shows PCIe slot 0.

3. **Save your changes.**



Known Issues With Linux Systems

This section describes the known issues and workarounds for the `nxge` driver on Linux systems at the time of this release.

Issue: Card Fails on RHEL4U3 LargeSMP Kernel With Over 8 CPUs

The Sun x8 Express 10 Gigabit Ethernet Fiber XFP Low Profile adapter will fail to function on RHEL4U3 LargeSMP Kernel with more than 8 CPUs.

Workaround: Reduce CPUs to 8 or Upgrade to RHEL4U4

This is an issue with interrupt distribution. You can use the following two workarounds:

- Reduce the number of CPUs to 8.

```
% vi /boot/grub/menu.lst
```

Add the following line at the end of the kernel parameters in the `menu.1st` file:

```
maxcpus=8
```

The following is an examle entry in a `/boot/grub/menu.lst` file:

```
title Red Hat Enterprise Linux Server (2.6.18-53.el5)
  root (hd0,0)
  kernel /vmlinuz-2.6.18-53.el5 ro root=/dev/VolGroup00/LogVol00 maxcpus=8
console=ttyS0,9600n8 rhgb quiet
  initrd /initrd-2.6.18-53.el5.img
```

- Upgrade the operating system to RHEL4U4.

Issue: System Panics When `irqbalance` Is Enabled

System panics observed when `irqbalance` is enabled.

Workaround: Disable `irqbalance`

You *must* disable `irqbalance` to avoid system crashes. Use the following procedure:

1. **Boot the system and configure the Sun x8 Express 10 Gigabit Ethernet interfaces as usual.**
2. **Disable irqbalance by doing any of the following methods:**

- Kill the `irqbalance` process:

```
# ps -ef | grep irqbalance
# kill -9 pid
```

- By stopping the `irqbalance` service SuSE10 or RHEL4U4:

```
# /etc/init.d/irq_balancer stop
```

Issue: `ethtool` Utility

The `ethtool` utility, as of version 5, does not provide full support of 10 Gigabit Ethernet network interfaces. Consequently, the `ethtool` utility does not support bonding on Sun x8 Express 10 Gigabit Ethernet interfaces.

Workaround: See Support URL

Wait for the fix to be applied to the `ethtool` source. For more information, see the 1170813 Patch ID for correctly reporting 10Gb/s support at:

`http://sourceforge.net/projects/gkernel/`