

Sun Blade 6000 Virtualized Multi-Fabric 10GbE Network Express Module Product Notes



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Sun Blade 6000 Virtualized Multi-Fabric 10GbE Network Express Module Product Notes

These product notes contain important and late-breaking information about Oracle's Sun Blade™ 6000 Virtualized Multi-Fabric 10GbE Network Express Module (Virtualized NEM).

The following topics are covered in this document:

- [“Supported Operating Systems” on page 2](#)
- [“Firmware and Software Updates” on page 3](#)
- [“Blade, FEM, and REM Compatibility” on page 5](#)
- [“Known Issues” on page 5](#)
- [“Fixed Issues” on page 20](#)

Supported Operating Systems

The following operating systems are supported for the Sun Blade 6000 Virtualized Multi-Fabric 10GbE NEM.

- Oracle Solaris 10 Operating System (OS) 10/08 and above (32-/64-bit)
- Red Hat Enterprise Linux (RHEL) 4.7 (32-/64-bit), RHEL 4.8 (32-/64-bit), RHEL 5.2 (32-/64-bit), RHEL 5.3 (64-bit), and RHEL 5.4 (64-bit)
- SUSE Linux Enterprise Server (SLES) 10 SP2 and SP3(64-bit) and SLES 11(64-bit)
- Windows Server 2003 R2 SP2 (32-/64-bit)
- Windows Server 2008 SP2 (32-/64-bit), and Windows Server 2008 R2 (64-bit)
- VMware ESX 3.5 U4 and ESX 4.0

Firmware and Software Updates

This section covers the following topics:

- [“Software Version 2.2” on page 3](#)
- [“Tools and Drivers CD” on page 3](#)

Software Version 2.2

The following updates are included in software version 2.2:

- Power sequencer firmware update. See [“Main 12V Power Sequencer Update \(CR 6915085\)” on page 6](#).
- LSI firmware version 5.04.03. See [“Server Modules With SAS-2 REMs Might Hang When Inserted Into a Chassis With SAS-1 Devices” on page 9](#) for an important note regarding this firmware update.

You can download SW 2.2 as follows:

1. Navigate to the following site:

<http://www.oracle.com/goto/blades>

2. Click on Drivers and Firmware in the Download box on the right side of the page.

The Sun Blade Systems - Firmware page is displayed.

3. Click on Network Express Modules.

The Sun Blade Systems Network Express Modules page is displayed.

4. Navigate to “Sun Blade 6000 Virtualized Multi-Fabric 10GbE Network Express Module Software 2.2”.

5. Click the download button, and log in as instructed, to access the firmware download.

Tools and Drivers CD

Tools and Drivers CD updates are available at:

<http://www.sun.com/servers/blades/downloads.jsp>

Refer to the *Sun Blade Virtualized Multi-Fabric 10GbE Network Express Module User's Guide* for instructions on installing the Virtualized NEM drivers.

The following sections contain information about Tools and Drivers CD versions:

Tools and Drivers CD 2.1

The Tools and Drivers CD version 2.1 (SW 2.1) contains the following updates:

- ESX 3.5 and 4.0 drivers
- SLES 11 and SLES 10 SP3 drivers
- RHEL 5.4 and RHEL 4.8 drivers
- Windows 2008 R2 (64-bit only)

Tools and Drivers CD 2.0

The Tools and Drivers CD version 2.0 (SW 2.0) contains the following updates:

- Multiple VLAN and Windows Server intermediate drivers to support Hyper-V
- 32-bit OS support for RHEL 4.7 and Solaris OS

ILOM version 2.0.3.12 build17 r44665 is also available with SW 2.0.

For issues fixed in SW 2.0, see [“Issues Fixed in SW 2.0” on page 21](#).

Tools and Drivers CD 1.0.1

The Tools and Drivers CD version 1.0.1 (SW 1.0.1) contains the following updates:

- Red Hat Enterprise Linux 5.3 driver for Sun Blade X6270 server module only
- Windows Server 2008 Driver updated to fix the following issue: Windows ipv6 NTttcp failure issue (CR 6776512)

Blade, FEM, and REM Compatibility

The following table lists the server blades, Fabric Express Modules (FEMs) and RAID expansion modules (REMs) that are supported with the Virtualized NEM. server blades that do not have FEMs or REMs listed have onboard network controllers or SAS expanders.

Sun Blade	FEM	REM
X6620	n/a	n/a
X6240	X4263A	X4620A or X4607A
X6250	X4681A	X4620A
X6270	X4263A	X4620A or X4607A
X6270 M2	X4263A	SG-SAS6-R-REM-Z
X6275-GbE	n/a	n/a
X6440	X4263A	X4620A or X4607A
X6450	X4681A	X4620A or X4607A
T6330	n/a	n/a
T6320	X4835A	X4607A or SG-SAS6-REM-Z (SAS-2)
T6340	X4835A	X4607A or SG-SAS6-REM-Z (SAS-2)

Known Issues

The following are known issues for the Sun Blade™ 6000 Virtualized Multi-Fabric 10GbE Network Express Module (Virtualized NEM).

- [“Hardware and Networking Issues” on page 6](#)
- [“ILOM Issues” on page 13](#)
- [“Operating System Issues” on page 15](#)

Hardware and Networking Issues

The following are known hardware issues and networking issues for the Virtualized NEM:

- [“Main 12V Power Sequencer Update \(CR 6915085\)” on page 6](#)
- [“Server Modules With SAS-2 REMs Might Hang When Inserted Into a Chassis With SAS-1 Devices” on page 9](#)
- [“Virtualized NEM Support for Sun Blade T6320 and T6340” on page 10](#)
- [“Packet Drop Might Occur With 100 Meter or Longer Cables \(6796609\)” on page 10](#)
- [“IPMP Configuration Might Cause Interface Failover \(6775751\)” on page 10](#)
- [“Link Aggregation Is Not Supported on the Virtualized NEM \(6749109\)” on page 11](#)
- [“Errors Displayed During PXE Boot \(6806643\)” on page 11](#)
- [“Only One Virtualized NEM Device Appears in Boot List \(6752737\)” on page 12](#)

Main 12V Power Sequencer Update (CR 6915085)

On rare occasions, the Virtualized NEM might shutdown unexpectedly.

To prevent this occurrence, you need to update the Virtualized NEM main 12V power sequencer firmware.

Before You Begin

Contact Oracle Service to gain access to the sunservice account for the CMM.

Note – System damage can occur. Perform the firmware update on an offline NEM and do not attempt this procedure without first contacting Oracle Service.

This section contains the following procedures:

- [“To Update the Main Power Firmware” on page 7](#)
- [“To Revert to the Original Main Power Firmware” on page 8](#)

▼ To Update the Main Power Firmware

1. **Download the following file from the Virtualized NEM SW 2.2 download site:**
`NEMHydraPwrUpd10.zip`.

See “[Software Version 2.2](#)” on page 3 for information on how to locate the download site.

2. **Unzip the `NEMHydraPwrUpd10.zip` file.**

You will need the following files for this procedure:

- `update_nem0_mainpwr.sh`- Script to upgrade NEM in slot 0
- `update_nem1_mainpwr.sh`- Script to upgrade NEM in slot 1
- `nem_pwr_ver.sh`- Displays the version of NEM power firmware
- `adm1066_update`- Binary to update power sequencer firmware (runs on the CMM)
- `main_pwrseq_rev110304.hex`- Modified power sequencer firmware to prevent unexpected shutdowns

Note – Make sure that you have execute permissions on these files. If you do not have execute permissions, use the `chmod +x` command on the files before copying them to the CMM.

3. **Copy the files listed in [Step 2](#) into the CMM’s `/coredump` directory.**

You will need information from Oracle Service to complete this step. If you have not already contacted Oracle Service, do so now.

4. **Log into the CMM ILOM CLI.**

5. **Navigate to the CMM `/coredump` directory:**

```
cd /coredump
```

6. **Update the NEM in slot 0, with the following command:**

```
./update_nem0_mainpwr.sh
```

7. **If necessary, update the NEM in slot 1:**

```
./update_nem1_mainpwr.sh
```

Note – Each command may take more than two minutes to complete.

8. **Power cycle the Virtualized NEM.**

9. Verify that the correct firmware version is installed with the following command:

```
./nem_pwr_ver.sh
```

The following output displays if the firmware has been correctly updated:

```
04
03
11
```

10. Exit the CMM.

▼ To Revert to the Original Main Power Firmware

1. Download the following file from the Virtualized NEM SW 2.2 download site:
NEMHydraPwrUpd10.zip.

See [“Software Version 2.2” on page 3](#) for information on how to locate the download site.

2. Unzip the NEMHydraPwrUpd10.zip file.

You will need the following files for this procedure:

- restore_nem0_mainpwr.sh- Script to restore original power firmware for NEM 0
- restore_nem1_mainpwr.sh- Script to restore original power firmware for NEM 1
- nem_pwr_ver.sh- Displays the version of NEM power firmware
- adm1066_update- Binary to update power sequencer firmware (runs on the CMM)
- main_pwrseq_rev3_3_mitac.hex- Original power sequencer firmware shipped with Virtualized NEM

Note – Make sure that you have execute permissions on these files. If you do not have execute permissions, use the `chmod +x` command on the files before copying them to the CMM.

3. Copy the files listed in [Step 2](#) into the CMM’s `/coredump` directory.

You will need information from Oracle Service to complete this step. If you have not already contacted Oracle Service, do so now.

4. Log into the CMM ILOM CLI.

5. Navigate to the CMM /coredump directory:

```
cd /coredump
```

6. Restore the NEM in slot 0, with the following command:

```
./restore_nem0_mainpwr.sh
```

7. If necessary, restore the NEM in slot 1:

```
./restore_nem1_mainpwr.sh
```

Note – Each command may take more than two minutes to complete.

8. Power cycle the Virtualized NEM.

9. Verify that the correct firmware version is installed with the following command:

```
./nem_pwr_ver.sh
```

The following output displays if the firmware has been correctly updated:

```
00
```

```
00
```

```
00
```

10. Exit the CMM.

Server Modules With SAS-2 REMs Might Hang When Inserted Into a Chassis With SAS-1 Devices

If a server module with a SAS-2 RAID Expansion Module (REM) is inserted into a Sun Blade 6000 modular system chassis that has SAS-1 NEMs and a Sun Blade 6000 disk module, the server blade's SAS-2 REM might hang.

Workaround

To prevent this problem, you need to upgrade the firmware of your SAS-1 components (SAS-1 NEMs and disk modules) to a firmware version that supports SAS-1/SAS-2 coexistence. This upgrade must be done before you insert the SAS-2 server module into the chassis.

At a minimum, all SAS expanders for SAS-1 NEMs and Sun Blade 6000 disk modules must be upgraded to firmware revision 5.04.03 to allow SAS-1/SAS-2 device coexistence in the Sun Blade 6000 modular system chassis. SAS expander firmware version 5.04.03 is available in the Virtualized NEM software release 2.2.

See the *SAS-1/SAS-2 Compatibility Upgrade Guide* (821-1800) for details on obtaining the firmware and performing the upgrade.

Virtualized NEM Support for Sun Blade T6320 and T6340

The Sun Blade T6320 and T6340 server modules require the Sun Blade T63X0 PCIe Pass-Through Fabric Expansion Module (FEM) in order to use the 10 GbE functionality of the Virtualized NEM.

Refer to the *Sun Blade T63x0 PCI Pass-Through Fabric Expansion Module User's Guide* for information on the release of this FEM and additional software and firmware requirements for these server modules.

Packet Drop Might Occur With 100 Meter or Longer Cables (6796609)

On-board Ethernet devices might see an excessive rate of packet drop using cables 100 meters or longer when link speed is negotiated at 1GB.

Workarounds

- Preferred workaround: Use an Ethernet cable shorter than 66 meters.
- Alternative workaround: Force the Ethernet link to 100Mb.

IPMP Configuration Might Cause Interface Failover (6775751)

When configured with IPMP, hxge interfaces might failover to the alternative interface without any real faults occurring. This is primarily due to IPMP's path probes failing. Path probes may fail when either the system or the given network interface is over utilized.

Workarounds

- Ignore the failover messages seen in `/var/adm/messages`.

- Re-balance system or link workload so that it is not over subscribed (for example, reduce CPU utilization to less than 100%).

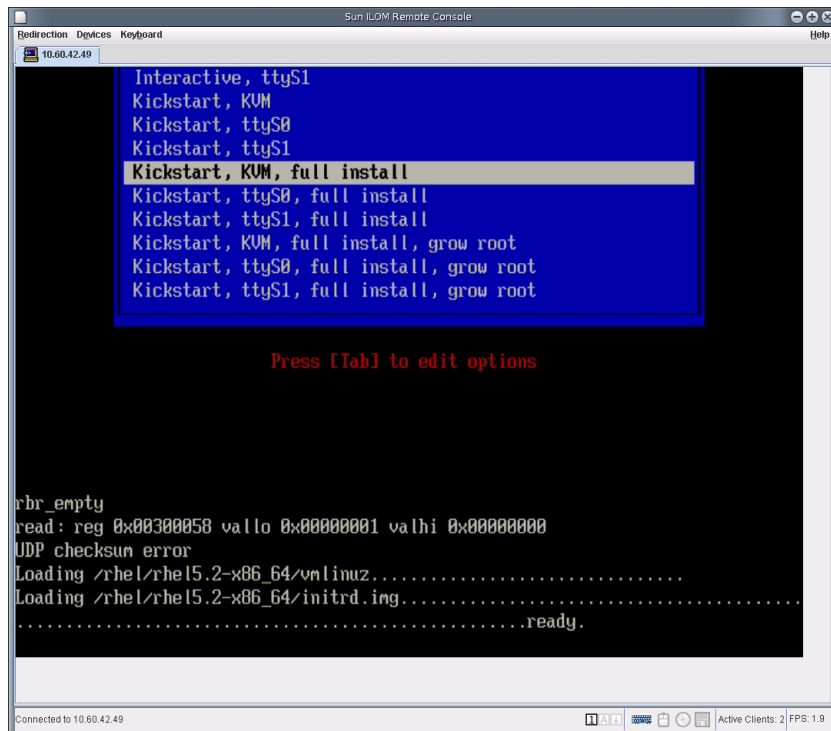
Link Aggregation Is Not Supported on the Virtualized NEM (6749109)

Link aggregation is not supported on the virtualized NEM. If multiple server modules are performing independent link aggregations, this will lead to unpredictable results. This is due to limitations in the link aggregation standard from the IEEE.802.1AX, specifically the Link Aggregation Control Protocol (LACP).

Errors Displayed During PXE Boot (6806643)

When using the Virtualized NEM for PXE booting over the 10 GbE interface, `rbr_empty` and `UDP checksum error` might be displayed during the boot process (See [FIGURE 1](#)). This should not affect the PXE installation.

FIGURE 1 Errors Displayed During PXE Boot



Only One Virtualized NEM Device Appears in Boot List (6752737)

When you press the F8 key or view the BIOS Setup Utility boot priority list, only one virtualized NEM device will appear.

To boot from the NEM that is not listed, do the following.

1. **Choose the NEM listed in the boot device list.**

[FIGURE 2](#) and [FIGURE 3](#) show the boot device list that appears when you either press F8 or use the boot list in the BIOS Setup Utility.

FIGURE 2 F8 Boot List

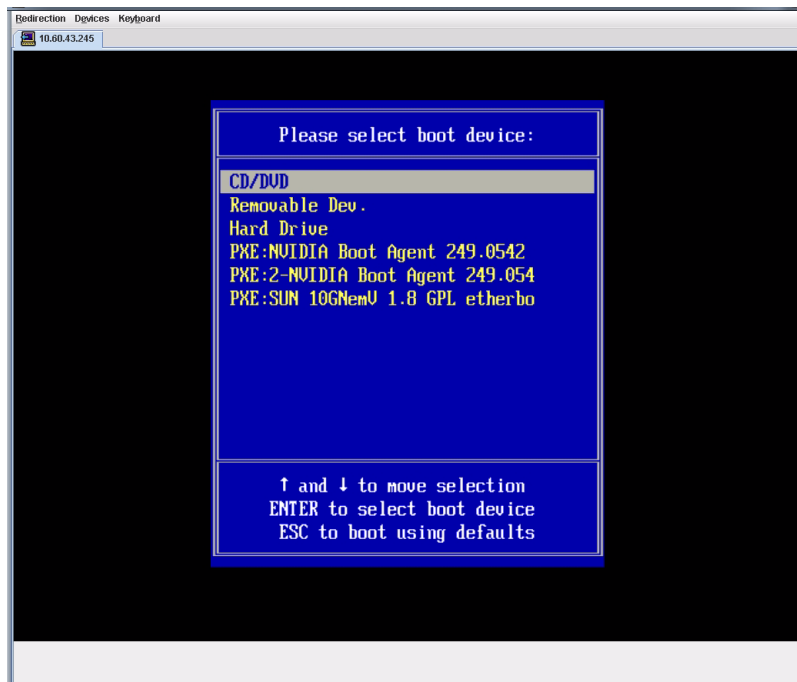
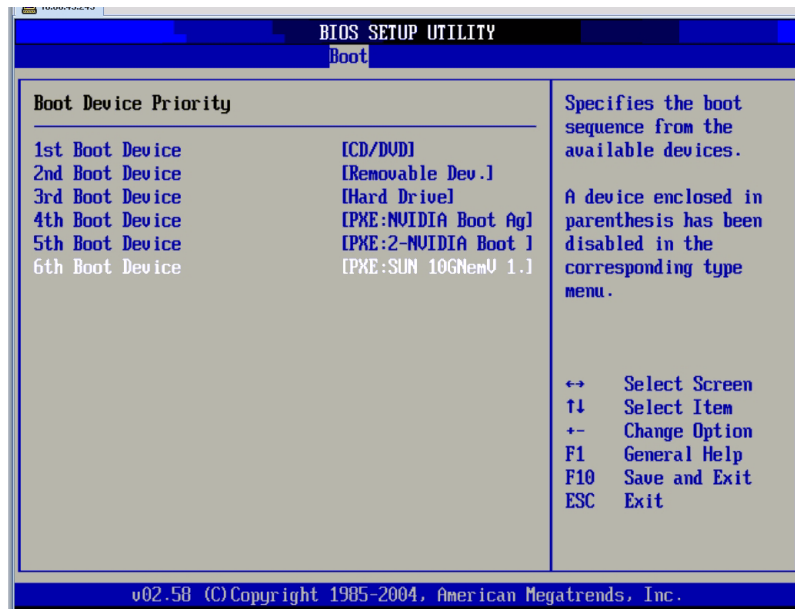


FIGURE 3 BIOS Setup Utility Boot List



2. Select the Virtualized NEM shown in the list.

The system will start to boot from the first Virtualized NEM device with matching device and vendor ids.

3. Press the ESC key to move to the next virtualized NEM device and boot from it.

ILOM Issues

The following are known ILOM issues for the Virtualized NEM:

- [“ILOM Proxy show /NEM0/state Command Displays an Incorrect Power Value \(6779318\)”](#) on page 14
- [“A Benign Error Message Appears When Resetting the NEM Using the ILOM Proxy \(6757019\)”](#) on page 14
- [“Setting the LED Using the ILOM Proxy Does Not Work \(6760490\)”](#) on page 15

ILOM Proxy show /NEM0/state Command Displays an Incorrect Power Value (6779318)

If you use the ILOM proxy show /NEM0/state command to view NEM power state, the value property will display Power Off, even though the NEM is powered on.

Workaround

Ignore the properties value given by the proxy show /NEM0/state command.

Do one of the following to read the correct power state:

- Use the proxy-> show/NEMx command and view the power_state property.
- Use the Sun Blade 6000 Virtualized SP CLI to view the correct power state.

a. Log on to the Virtualized NEM SP from the chassis CMM:

```
-> start /CH/NEMx/SP/cli
```

b. Use the following command to show the NEM properties:

```
-> show /NEM/OK
```

A Benign Error Message Appears When Resetting the NEM Using the ILOM Proxy (6757019)

After using the reset command to reset the Virtualized NEM using the ILOM proxy, you might receive a warning message, as shown in the following example output:

```
WARNING: This action will interrupt service to NEM1
This command should only be run if you are sure the device is not
in use
Press 'y' to continue. Press any other key to cancel this action
reset of NEM1 in progress...
board reset command sent. It may take a minute before it completes
reset of NEM1 failed with 255
```

The failure message can be safely ignored.

Setting the LED Using the ILOM Proxy Does Not Work (6760490)

If you try to set the NEM LED behavior using the ILOM proxy, the command will appear to work in the CLI, but it will not change the LED behavior.

Workaround

You can use the standard CMM ILOM or NEM SP to set the LED behavior.

Refer to the ILOM Supplement section of the *Sun Blade 6000 Virtualized Multi-Fabric 10 GbE Network Express Module User's Guide*.

Operating System Issues

The following are known operating system issues for the Virtualized NEM:

- [“System Panic When Changing MTU to Jumbo Frames Size With ESX 4.0 \(6880558\)”](#) on page 16
- [“SLES 11 hxge Driver Fails to Load \(6909431\)”](#) on page 16
- [“Blade Server Running Solaris OS Might Hang During Heavy Stress Test \(6871113\)”](#) on page 16
- [“The Windows Server 2008 Device Drivers Appear To Not Be Digitally Signed in Device Manager \(6815500\)”](#) on page 17
- [“Lost Network Link Might Not Be Recognized in Windows Server 2003 \(6805038\)”](#) on page 22
- [“Windows NTtcp Application Might Stop When Network Cable is Disconnected \(6777024\)”](#) on page 17
- [“Network Device Naming Instances Might Change on a Solaris OS Server Module \(6769339\)”](#) on page 17
- [“Driver Fails to Start When Jumbo Frames are Enabled in a Sun Blade X6440 System Running Windows \(6776566\)”](#) on page 18
- [“ethtool Shows Incorrect NEM Speed With RHEL 5.2 64-bit \(6788773\)”](#) on page 19
- [“A Benign Warning Message Appears When Unloading the RHEL 4.7 hxge Driver \(6762810\)”](#) on page 20
- [“Operating Systems Cannot be Installed Over the 10GbE Interface \(6759944\)”](#) on page 20

System Panic When Changing MTU to Jumbo Frames Size With ESX 4.0 (6880558)

When the hxge driver is installed on a sever running ESX 4.0, a system panic can occur after changing the maximum transmission unit (MTU) value to a jumbo frame size. This issue occurs due to a bug in vmkernel.

This issue is VMware PR 518560.

Workaround

Change the MTU value to a jumbo frames size when there is no current network activity on the server.

SLES 11 hxge Driver Fails to Load (6909431)

When attempting to load the hxge driver on SLES11, it fails to load with the following error:

```
FATAL: module '/lib/modules/2.6.27.19-5-  
default/kernel/drivers/net/hxge.ko' is unsupported  
Use --allow-unsupported or set allow_unsupported_modules to 1 in  
/etc/modprobe.d/unsupported-modules
```

Workaround

Load the driver with the `--allow-unsupported` flag as follows:

```
modprobe hxge --allow-unsupported
```

Blade Server Running Solaris OS Might Hang During Heavy Stress Test (6871113)

A blade server running Solaris OS and recovering from RBR empty might fail the test when under heavy stress.

The Windows Server 2008 Device Drivers Appear To Not Be Digitally Signed in Device Manager (6815500)

The message "Not digitally signed" will display in Windows Server 2008 device manager for each instance of the Sun Blade 6000 Virtualized Multi-Fabric 10GbE Network Express Module. This is a known issue in Windows Server 2008.

You can ignore this message. The Sun Blade 6000 Virtualized Multi-Fabric 10GbE Network Express Module network drivers are signed by Microsoft.

Windows NTttcp Application Might Stop When Network Cable is Disconnected (6777024)

When using the NTttcp application in Windows Server 2003 or 2008 OS, and the network cable is disconnected and reconnected within a short period of time, the NTttcp might stop transmitting traffic and exit.

Workaround

Restart the NTttcp network application.

Network Device Naming Instances Might Change on a Solaris OS Server Module (6769339)

When using the Solaris OS, customers might experience changes to their network device naming instances (hxge0 and hxge1) on a server module when moving from one slot to an alternative slot.

Workaround

Use the following workaround to identify the NEM network device:

- 1. Note the MAC address label assignment on the Sun Blade 6000 Virtualized 10Gb NEM located on the inner left hand side of the NEM module.**

2. Compare this MAC Address with the network device instances on the server module using `ifconfig -a`, and note down the first 5 octets that match.

For example, if the NEM module MAC address label has 00:14:4F:00:00:00, the server module slot zero will be assigned MAC addresses 00:14:4F:00:00:01 through 00:14:4F:00:00:04.

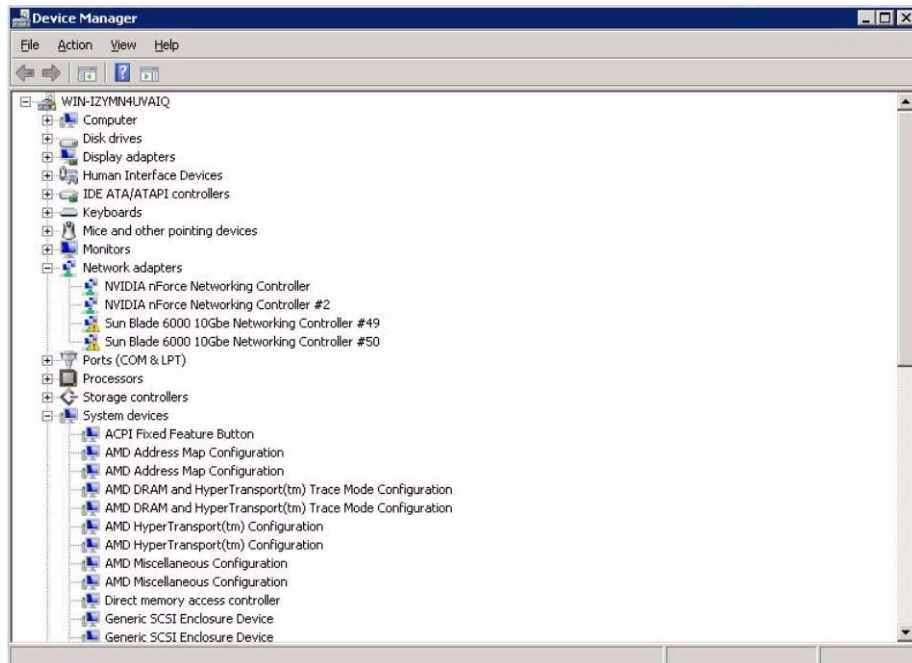
This is the normal behavior in the way Solaris performs its enumeration of network device instances.

Driver Fails to Start When Jumbo Frames are Enabled in a Sun Blade X6440 System Running Windows (6776566)

After Jumbo Frames is enabled or disabled for the Virtualized NEM (Sun Blade 6000 10GbE Networking Controller) on a Sun Blade X6440 server module running Windows, the network connection for Virtualized NEM could become disabled.

[FIGURE 4](#) shows a yellow error icon next to the disabled Sun Blade 6000 10GbE Networking Controller in the Device Manager display.

FIGURE 4 Disabled Sun Blade 6000 10GbE Networking Controller

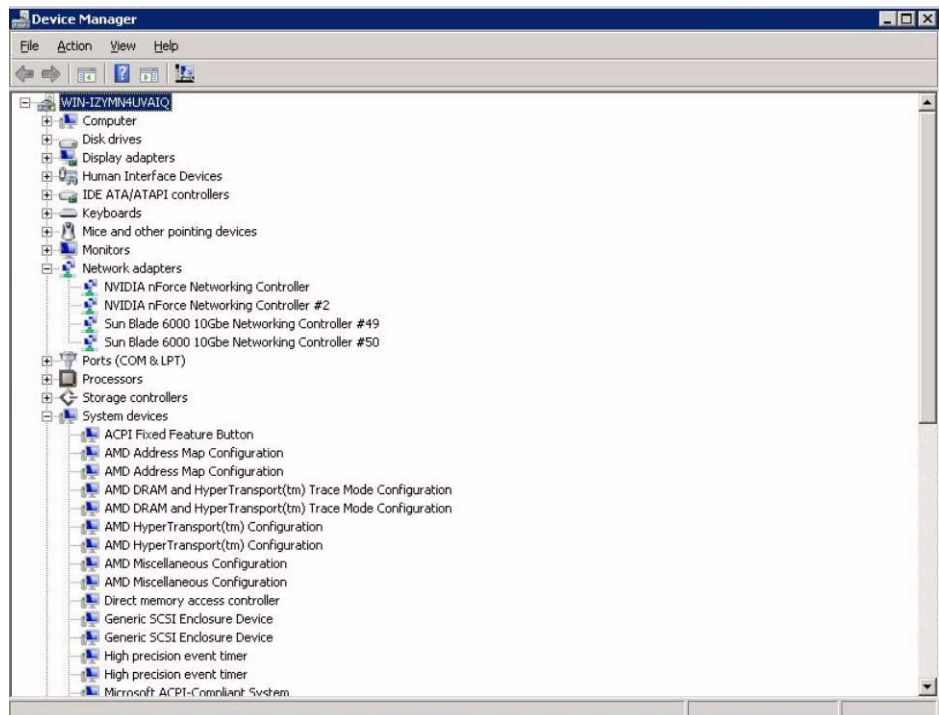


Workaround

Reboot the server module to recover the network connection. After the reboot, the network connection will be up and running with the desired Jumbo Frame setting.

FIGURE 5 shows the yellow error icon removed from the Sun Blade 6000 10GbE Networking Controller, indicating that the network connection is enabled in the Device Manager display.

FIGURE 5 Enabled Sun Blade 6000 10GbE Networking Controller



ethtool Shows Incorrect NEM Speed With RHEL 5.2 64-bit (6788773)

When running `ethtool` on a RHEL 5.2 64-bit system to determine the speed of the Virtualized NEM, `ethtool` will report an unknown speed. This is because RHEL 5.2 64-bit has an older version of `ethtool`.

A Benign Warning Message Appears When Unloading the RHEL 4.7 hxge Driver (6762810)

When unloading the RHEL 4.7 version of the Virtualized NEM Linux driver, the following type of warning message will appear:

```
Oct 22 23:16:26 ban25c15b19 kernel: Trying to free nonexistent
resource <bddf0000-bddffffff>
```

This is a benign message and can be ignored.

Operating Systems Cannot be Installed Over the 10GbE Interface (6759944)

The hxge driver is not bundled with any of the server module operating systems and cannot be installed over a 10GbE interface.

Note – Support for operating system installation over the 10 Gigabit Ethernet interface is planned for future OS releases.

Workaround

Create a customized boot archive with hxge 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 or Windows systems, refer to the documentation from your OS distribution to create a customized boot archive with the hxge driver.

Fixed Issues

The following issues have been fixed. Unless otherwise noted, the software updates mentioned are for the Virtualized NEM.

Issues Fixed in SW 2.1

Issues With Re-enabling Windows 2008 10GbE Driver (6834080)

After disabling and re-enabling one or both of the 10GbE network devices, one device will sometimes disappear from device manager. The device might also flag problem code 10 (cannot start).

Also, if driver is re-loaded manually, then disabled and re-enabled, the same failure might occur.

Workaround

Reinitialize the bus.

Issues Fixed in SW 2.0

The software updates included in SW 2.0 fix the following issues:

- 6868831: Reading of rdc stat registers during empty recovery leads to non-operation of the Solaris hxge.
- 6869394: The Solaris hxge driver potentially leaks memory.
- 6870142: An msix parity error is falsely reported in the Solaris hxge driver.
- 6870213: The Solaris hxge driver panics while running the UDP_STREAM test.
- 6861451: The **cfgadm -c configure/unconfigure** commands cause a panic on SPARC blade servers.

When you update to ILOM version 2.0.3.12 build17 r44665 (SW 2.0), the Fcode firmware will be updated to version 1.4, which fixes CR 6861451.

- 6859981: Multiple hydra daemons are running after blade servers have been rebooted or reset.
- [“Sun Blade X6220 Server Module Cannot be Booted Using the F12 Key \(6775898\)” on page 22](#)
- [“Windows ipv6 NTtcp failure issue \(6776512\)” on page 22](#)
- [“Lost Network Link Might Not Be Recognized in Windows Server 2003 \(6805038\)” on page 22](#)

Sun Blade X6220 Server Module Cannot be Booted Using the F12 Key (6775898)

This issue is fixed in Sun Blade X6220 server SW 3.0 (BIOS 114).

When using a Sun Blade X6220 server module to perform a network boot with Sun Blade 6000 Virtualized 10GbE Multi-Fabric NEM, the network boot will not work if you use the F12 key.

Workaround

Select F8 during BIOS Post and select PXE:SUN 10GNemV 1.8 GPL etherboot.

Windows ipv6 NTttcp failure issue (6776512)

This issue is fixed with the Windows Server 2008 driver update in SW 1.0.1.

Lost Network Link Might Not Be Recognized in Windows Server 2003 (6805038)

This issue is fixed with the Windows Server 2003 driver update in SW 1.1.

On a Windows Server 2003 OS server module with Sun Blade 6000 Virtualized 10GbE NEM in non-failover mode, if the network link is lost (for example, the network cable is unplugged) there might not be an indication in the Windows "Control Panel->Network Connections" window.

Workaround

- **Observe the link LED light above the SFP+ ports on Oracle's Sun Blade 6000 Virtualized 10 GbE NEM.**

If the LED is not illuminated, then the network link is down.