

Sun™ Quad FastEthernet™ SBus Adapter Release Notes



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Part No. 805-3893-13
July 1998, Revision A

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Sun Quad FastEthernet SBus Adapter Release Notes

This document contains the following important information about the Sun™ Quad FastEthernet™ SBus Adapter and the Sun Quad FastEthernet 2.1 driver software:

- “Required Software Patches” on page 2
- “Conflicts With FastEthernet Switches (100BASE-T)” on page 5
- “Increasing Performance on Enterprise Servers with Four Quad FastEthernet Adapters” on page 5
- “Increasing Synchronized Queues to Improve Network Performance” on page 6
- “Disabling IP Forwarding Routing Protocols on Application Servers” on page 6
- “Increasing TCP/IP Performance on Solaris 2.6 Systems” on page 8
- “Sun Enterprise 10000 Series System” on page 9
- “Dictionary Overflow Problem on SPARCstation 5 Systems” on page 11
- “Known Problems With the Installation and User’s Guide” on page 11

Note – If your system is running the Solaris™ 2.6 Hardware: 5/98 operating environment, or subsequent compatible versions, do not use the driver on the *Sun Quad FastEthernet 2.1* CD-ROM. The software on the Solaris CD-ROM is more current and replaces previous versions of the driver. For information on this version of the driver, refer to the *Platform Notes: The Sun Quad FastEthernet Device Driver*, which is shipped with the Solaris documentation. For information on patches, see “Sun Quad FastEthernet 2.2 Software Patches” on page 4.



Caution – To avoid a system panic, you *must* follow the hardware and software installation procedures in the *Sun Quad FastEthernet SBus Adapter Installation and User’s Guide* (805-3114-10) and these release notes.

Required Software Patches

To achieve the best performance from the Sun Quad FastEthernet driver software, you must install a patch. Before installing a patch or the software from the *Sun Quad FastEthernet 2.1* CD-ROM, check to see if there is already another version of the Sun Quad FastEthernet driver on your system.

Checking for Installed Sun Quad FastEthernet Software

Previous versions of the Sun Quad FastEthernet driver have been included with other Sun products. Before installing the Sun Quad FastEthernet 2.1 software, check your system for other versions of the Sun Quad FastEthernet driver.

Bundled Sun Quad FastEthernet Drivers

Beginning with the Solaris 2.6 Hardware: 5/98 release, the Sun Quad FastEthernet driver is bundled with the Solaris operating environment. This version of the Sun Quad FastEthernet driver is more current than the one shipped on the *Sun Quad FastEthernet 2.1* CD-ROM.

Note – If your system is running the Solaris 2.6 Hardware: 5/98 environment, or future compatible Solaris releases, do *not* install the software from the *Sun Quad FastEthernet 2.1* CD-ROM.

If your system is running the Solaris 2.6 operating environment, and you are unsure if it is running the Hardware: 5/98 release, check the contents of the `/etc/release` file.

```
% cat /etc/release
Solaris 2.6 5/98 build_id_name SPARC
Copyright 1998 Sun Microsystems, Inc. All Rights Reserved.
Assembled on 24 April 1998
```

If this file exists, and it contains `Solaris 2.6 5/98`, your system is running the Solaris 2.6 Hardware: 5/98 release. See “Installing the Required Quad FastEthernet Software Patches” on page 4 for patch information.

Checking for Quad FastEthernet Software Shipped With Other Products

Other versions of the Sun Quad FastEthernet software have been shipped with an earlier release of the adapter and with the Sun Trunking™ software.

- **To check your system for installed Sun Quad FastEthernet software, type the following at a command prompt:**

```
% pkginfo -x SUNWqfed
SUNWqfed          Sun Quad FastEthernet Adapter Driver
                  (sparc) 3.0
```

Use the table below to translate the `pkginfo` output.

TABLE 1 `pkginfo` Output Description

<code>pkginfo -x</code> Output	Description and Action
No output	Your system does not have the Sun Quad FastEthernet software installed. Follow the installation instructions in the <i>Sun Quad FastEthernet 2.1 CD Insert</i> , and then install the patch listed in “Installing the Required Quad FastEthernet Software Patches” on page 4.
1.0	Your system has the Sun Quad FastEthernet 2.0 software installed. You must remove this 2.0 version of the software and install the 2.1 software as described in the <i>Sun Quad FastEthernet 2.1 CD Insert</i> . After installing the software, install the patch listed in “Installing the Required Quad FastEthernet Software Patches” on page 4.
1.1	Your system already has the Sun Quad FastEthernet 2.1 software installed. Install the patch listed in “Installing the Required Quad FastEthernet Software Patches” on page 4.
3.0	Your system has the Sun Quad FastEthernet software installed with the Sun Trunking 1.0 software. Do not install the software from the CD-ROM and do not install any patch listed in these release notes. <i>Note:</i> If you remove this version of the software, you will not be able to use the Trunking 1.0 software.
3.1	Your system has the Sun Quad FastEthernet 2.2 software installed. This version was shipped with the Sun Trunking 1.0.1 software and the Solaris 2.6 Hardware: 5/98 software. Do not install the software from the CD-ROM, but do install the patch listed in “Installing the Required Quad FastEthernet Software Patches” on page 4.

Installing the Required Quad FastEthernet Software Patches

Install the patch, listed below, that is appropriate for the version of the Sun Quad FastEthernet software and the Solaris environment installed on your system. These patches correct panics during dynamic reconfiguration, difficulties with certain FastEthernet switches, and problems with general network performance (refer to these patches' README files for more information).

Sun Quad FastEthernet 2.1 Software Patches

This version of the Sun Quad FastEthernet software is shipped with the *Sun Quad FastEthernet 2.1* CD-ROM. Install the software from this CD before installing the patch.

TABLE 2 Sun Quad FastEthernet 2.1 Patches

Operating Environment	Patch Identification Number
Solaris 2.4	106176-x
Solaris 2.5	106177-x
Solaris 2.5.1	105532-x
Solaris 2.5.1 Hardware: 4/97, 8/97, and 11/97	
Solaris 2.6 (prior to Solaris 2.6 Hardware: 5/98)	105541-x

Sun Quad FastEthernet 2.2 Software Patches

This version of the Sun Quad FastEthernet software is shipped with the Sun Trunking 1.0.1 software and the Solaris 2.6 Hardware: 5/98 environment.

TABLE 3 Sun Quad FastEthernet 2.2 Patches

Operating Environment	Patch Identification Number
Solaris 2.5.1 Hardware: 4/97, 8/97, and 11/97	106531-x
Solaris 2.6	106532-x
Solaris 2.6 Hardware: 5/98	

The patches listed above are current as of the printing of this document. Future revisions of these patches will also correct problems with this software. These patches may also be included in future jumbo kernel patches.

Note – For information on how to get the latest patches and patch revisions, visit the SunSolve™ website at <http://sunsolve.sun.com>. Otherwise, contact your local SunService™ representative for assistance or your local SunService authorized service provider for more information.

Conflicts With FastEthernet Switches (100BASE-T)

There are two FastEthernet (100BASE-T) switches that may present difficulties when working with the Sun Quad FastEthernet adapter:

- Bay Networks model 28115/ADV
- SynOptics model 28115

If you use the adapter with these switches, you will encounter difficulties (refer to bug ID 4071199 for more information). Installing the Quad FastEthernet 2.1 driver patch will fix these difficulties (see “Installing the Required Quad FastEthernet Software Patches” on page 4).

Increasing Performance on Enterprise Servers with Four Quad FastEthernet Adapters

If you have four Sun Quad FastEthernet adapters in an Enterprise server, you may experience slow performance and response times during periods of high network traffic. This poor performance is usually caused by applications that use data buffer and socket buffer sizes greater than 8 Kbytes.

You can achieve better network performance by adjusting your application’s data buffer size and socket buffer size to be less than or equal to 8 Kbytes. Refer to the application’s documentation for instructions on how to set these buffer sizes.

Increasing Synchronized Queues to Improve Network Performance

To increase the size of STREAMS synchronized queues, thereby increasing network performance, add the `sq_max_size` variable to the `/etc/system` file.

```
set sq_max_size=n
```

Set the `sq_max_size` variable to *n*, where *n* is the maximum number of messages that are allowed for each IP queue. A safe value to set this variable is 25 for each 64 Mbytes of RAM in the system. For example, if your system has 64 Mbytes of RAM, you would set the variable to 25 (50 if the system has 128 Mbytes of RAM, 100 if your system has 256 Mbytes of RAM, and so on).

You can be more aggressive if you choose, but you may overrun STREAMS resources.

Refer to the Solaris documentation for more information.

Disabling IP Forwarding Routing Protocols on Application Servers

By default, the Solaris operating environment will configure systems using more than one network interface to be an IP forwarding router. Application servers are typically multihomed, which mean that they contain more than one network interface but do not run IP routing protocols or forward IP packets. If you do not disable the IP forwarding and routing protocols on multihomed application servers, the servers may experience poor performance.

NFS servers and database servers are a couple of examples of multihomed application servers. The purpose of these application servers is to provide a presence on multiple networks. These networks usually contain dedicated routing devices (routers, layer-3 switches, or dedicated Sun systems) in the network infrastructure that provide the IP forwarding routing services.

To maximize the performance of your multihomed desktop or application server, we recommend disabling the IP forwarding and routing protocols.

Disabling Routing Protocols on Solaris 2.4 Systems

Note – If your system is running the Solaris 2.4 environment, you cannot stop the IP forwarding protocols by creating an `/etc/notrouter` file.

1. **Create an `/etc/defaultrouter` file that contains the host name of the default gateway router serving your network or subnetwork.**

You can find the default router by inspecting the route table with the `netstat -r` command. Make sure to use the `netstat -r` command while your system is connected to the network. The `defaultrouter` file should only contain the name of the selected router.

2. **Add the following lines to the end of the `/etc/init.d/inetinit` file:**

```
# Disable IP forwarding
#
/usr/sbin/ndd -set /dev/ip ip_forwarding 0
```

3. **Shut down and reboot your system.**

Disabling Routing Protocols on Other Supported Systems

One method of disabling IP forwarding is to create an `/etc/notrouter` file and then reboot your system.

1. **As superuser, type:**

```
# /usr/bin/touch /etc/notrouter
```

2. **Shut down and reboot the system.**

3. After rebooting your system, verify that IP forwarding has been disabled in the kernel.

```
# /usr/sbin/ndd /dev/ip ip_forwarding
```

If you receive a 0 result, your system will never forward IP packets. If you receive non-zero result, your system may still forward IP packets.

If you received non-zero result, your system may contain an `/etc/defaultrouter` file. The existence of this file may prevent the `/etc/init.d/inetinit` boot script from detecting the `/etc/notrouter` file. You may want to remove the `/etc/defaultrouter` file or, alternatively, force the `ndd` parameter, `ip_forwarding`, to equal 0.

For more information, refer to the *TCP/IP and Data Communications Administration Guide* shipped with the Solaris documentation.

Increasing TCP/IP Performance on Solaris 2.6 Systems

If you are running your Solaris 2.6 system with a large TCP window, and you experience slowdowns during periods of high network traffic, you should decrease the TCP default maximum retransmission timeout interval variable (`tcp_rexmit_interval_max`) to 60000.

- As superuser type:

```
# ndd -set /dev/tcp tcp_rexmit_interval_max 60000
```

The changes are immediate, and they affect all the TCP connections in the system. However, the changes will be lost when you reboot your machine.

Note – You may not need to perform this workaround if you use a smaller TCP window (for example, an 8 Kbyte or a 16 Kbyte window).

To avoid losing the TCP/IP setting, you can put the parameter change in a run control script in the `/etc/rc2.d` directory, similar to the following example.

```
#!/sbin/sh
# Local kernel modifications
#
case "$1" in
'start')
    echo "Setting local kernel parameters...\c"
    ndd -set /dev/tcp tcp_rexmit_interval_max 60000
    echo ""
    ;;
'stop')
    echo "No kernel parameters changed."
    ;;
*)
    echo "Usage: $0 {start|stop}"
    ;;
esac
exit 0
```

Sun Enterprise 10000 Series System

Link Status Lights

When using the Sun Quad FastEthernet SBus adapter on an Sun Enterprise™ 10000 series system, you may encounter link status lights that do not illuminate on ports connected to a live network.

If you want to boot off of a Sun Quad FastEthernet interface, you must use the 501-4837-02 revision of the SBus adapter (which uses the 525-1742-02 FCode PROM). See the adapter's label to check the revision number. Future compatible adapter revisions will also correct this problem.

If you have the 501-4837-01 revision of the adapter, and you are not using it as a boot device, the driver software will work around this link status lights problem. However, you will not be able to boot off of the 501-4837-01 revision of the adapter.

Note – There will be brief periods when the lights do not illuminate. For instance, before the device driver initializes, the lights may not be on. After the driver initializes, the lights should operate correctly.

Sun Enterprise 10000 Patches

The Sun Enterprise 10000 system, containing a Sun Quad FastEthernet SBus adapter (model 1049A, and future compatible adapters) and running the Quad FastEthernet 2.1 driver software, requires the following patches.

Sun Enterprise 10000 Patches

Solaris 2.5.1 system patches:

- 105174-04 Patch to the dynamic reconfiguration daemon (`dr_daemon`)
- 105029-05 Adds alternate pathing (AP) support for the Quad FastEthernet device
- Sun Quad FastEthernet device driver patch (see “Installing the Required Quad FastEthernet Software Patches” on page 4)

Solaris 2.6 system patches:

- 106284-01 Patch to the dynamic reconfiguration daemon (`dr_daemon`)
- Sun Quad FastEthernet device driver patch (see “Installing the Required Quad FastEthernet Software Patches” on page 4)

System Service Processor (SSP) 3.0 Patches

These patches are for Solaris 2.5.1 systems only:

- 104853-04 Prevents dictionary overflow messages at the OpenBoot prompt
- 104915-08 Quad FastEthernet `dr` safe and HSWP driver list
- 104846-09 System service processor (SSP) 3.0 bringup and power fixes

After installing these patches, perform a reconfiguration boot on your system. You may also have to run `test-all` at the OpenBoot™ prompt to initialize the adapter.

The patches listed above are current as of the printing of this document. Future revisions of these patches will also correct the described problems. These patches may also be included in future jumbo kernel patches.

Note – For information on how to get the latest patches and patch revisions, visit the SunSolve website at <http://sunsolve.sun.com/>. Otherwise, contact your local SunService representative for assistance or your local SunService authorized service provider for more information.

Dictionary Overflow Problem on SPARCstation 5 Systems

The Sun Quad FastEthernet SBus adapter is supported on SPARCstation™ 5 systems. However, if your SPARCstation 5 system contains a CPU with a clock speed less than 170 MHz (70 MHz, 85 MHz, or 110 MHz), the Quad FastEthernet adapter may not co-exist with other SBus adapters.

SPARCstation 5 systems with these slower clock speeds contain an inadequate amount of firmware memory to support the Quad FastEthernet adapter with other adapters. You may see the following error messages when attempting to boot a SPARCstation 5 system with the Quad FastEthernet adapter and another adapter:

```
Dictionary overflow - here ffd55870 limit ffd55a00  
  
Can't open boot device
```

If you see this problem, and you require a system with the Quad FastEthernet adapter and another adapter, you will need to upgrade the system. For more information, refer to bug ID number 4073415.

Known Problems With the Installation and User's Guide

Sun Quad FastEthernet 2.1 Directory Path

In certain sections of the *Sun Quad FastEthernet SBus Adapter Installation and User's Guide* (805-3114-10), the base directory of the CD-ROM is shown as `/cdrom/sun_quadfast_2_0`. With the release of the Sun Quad FastEthernet 2.1 CD, the base directory is `/cdrom/sun_quadfast_2_1`.

For example, Step 6 (page 18) of the “Updating the Solaris Archive to Use the qfe Interface” procedure would become:

6. Insert and mount the Sun Quad FastEthernet 2.1 CD-ROM.

- If your system is running Volume Manager, it should automatically mount the CD-ROM to the `/cdrom/sun_quadfast_2_1` directory.
- If your system is not running Volume Manager, mount the CD-ROM as follows:

```
# mkdir -p /cdrom/sun_quadfast_2_1
# mount -F hsfs -r /dev/dsk/c0t6d0s2 /cdrom/sun_quadfast_2_1
```

Host File Configuration

Note – “Host File Configuration” on page 11, contains inaccurate `qfe` interface numbers and `hostname.qfe<num>` file names. The corrected section is shown below.

After installing the Sun Quad FastEthernet driver software, you must create a `hostname.qfe<num>` file for the adapter’s Ethernet interfaces. You must also create both an IP address and a host name for its Ethernet interfaces in the `/etc/hosts` file.

To prepare your system for the Sun Quad FastEthernet SBus adapter:

1. **At the command line, use the `grep` command to search the `/etc/path_to_inst` file for `qfe` devices.**

```
# grep qfe /etc/path_to_inst
"/sbus@1f,0/SUNW,qfe@1,8c10000" 1 "qfe"
"/sbus@1f,0/SUNW,qfe@1,8c00000" 0 "qfe"
"/sbus@1f,0/SUNW,qfe@1,8c30000" 3 "qfe"
"/sbus@1f,0/SUNW,qfe@1,8c20000" 2 "qfe"
```

In the example above, the four `SUNW,qfe@1` instances are from a Sun Quad FastEthernet SBus adapter installed in slot 1. For clarity, the instance numbers are bold.

2. Create an `/etc/hostname.qfe<num>` file, where `<num>` corresponds to the instance number of each interface you plan to use.

If you wanted to use all of the adapter interfaces in Step 1, you would need to create four files:

Filename	Instance Number	Adapter Ethernet Channel
<code>/etc/hostname.qfe0</code>	0	0
<code>/etc/hostname.qfe1</code>	1	1
<code>/etc/hostname.qfe2</code>	2	2
<code>/etc/hostname.qfe3</code>	3	3

Guidelines for `hostname.qfe<num>` Files:

- Do not create `/etc/hostname.qfe<num>` files for Sun Quad FastEthernet SBus adapter channels you plan to leave unused.
- The `/etc/hostname.qfe<num>` file must contain the host name for the appropriate network interface.
- The host name should have an IP address and should be entered in the `/etc/hosts` file.
- The host name should be different from any other host name of any other interface, for example: `/etc/hostname.le0` and `/etc/hostname.qfe0` cannot share the same host name.

Using the instance examples in Step 1, the following example shows the four `/etc/hostname.qfe<num>` files required for a system called `zardoz` that has an onboard FastEthernet device (`zardoz`) and a Sun Quad FastEthernet SBus adapter (`zardoz-11`, `zardoz-12`, `zardoz-13`, and `zardoz-14`).

```
# cat /etc/hostname.hme0
zardoz
# cat /etc/hostname.qfe0
zardoz-11
# cat /etc/hostname.qfe1
zardoz-12
# cat /etc/hostname.qfe2
zardoz-13
# cat /etc/hostname.qfe3
zardoz-14
```

3. Create an appropriate entry in the `/etc/hosts` file for each active `qfe` channel. Using the example in Step 1, you will have:

```
# cat /etc/hosts
...
127.0.0.1    localhost
129.144.10.57 zardozi   loghost
129.144.11.83 zardozi-11
129.144.12.41 zardozi-12
129.144.13.67 zardozi-13
129.144.14.30 zardozi-14
```

4. Reboot your system.

Editing the `driver_aliases` File

Steps 4 and 5 in “Booting a Diskless Client System” (page 15) and “Performing a Net-Install of the Solaris Environment Over the `qfe` Interface” (page 18) contain inaccurate examples. Also, a new step has been added after Step 5. Below are the corrected steps in the procedures.

4. Check the `driver_aliases` file for the `qfe` line required by the adapter.

```
# grep 'qfe SUNW,qfe' driver_aliases
```

If this line already exists in the `driver_aliases` file, you can skip to Step a. Otherwise, you will need to add this line to the file before installing the adapter.

5. Using a text editor, add the following line to the end of the `driver_aliases` file.

```
qfe SUNW,qfe
```

- a. Create the following symbolic link:

```
# ln -s <archive_of_arch>/devices/pseudo/clone@0:qfe \
<archive_of_arch>/dev/qfe
```