HP EISA FDDI/9000 Release Notes

HP 9000 Networking

Manufacturing Part Number: B5502-90006
E0499

United States

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1. HP EISA FDDI/9000 Release Notes

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The information in this release note covers versions **B.10.20.08** and **B.11.00.05** for HP EISA FDDI/9000 LAN adapters for servers (product

number A3659A) and for workstations (product number B5502A).

What's in this Version (B.10.20.08)

The following sections describe HP EISA FDDI/9000 products A3659A for servers and B5502A for workstations for **HP-UX B.10.20.08**.

NOTE The HP EISA/FDDI adapter complies with FCC regulatory standards. See the *Installing and Administering HP EISA FDDI/9000 and HP HSC FDDI/9000* manual (provided with the product) for the complete FCC Regulatory Compliance statement.

Benefits

HP EISA FDDI/9000 is a high-performance FDDI networking solution for HP servers and workstations. HP EISA FDDI/9000 provides the physical and data-link services as defined by the ANSI X3T9.5 specifications for FDDI and is supported over the TCP/IP network protocol stack.

Features

Using fiber optic media, HP EISA FDDI/9000 offers a back-to-back or single-attach connection via an FDDI concentrator, and a dual-attach connection directly onto an FDDI dual-ring network. HP EISA FDDI/9000 also supports dual homing and high availability environments using MC/ServiceGuard.

Fixes

Two patches have been incorporated into this version of HP EISA FDDI/9000. See the section "Patches and Fixes in this Version" for more information.

Known Problems and Workarounds

One known problem exists with the `lanadmin` (1M) command. The `lanadmin set MTU` command does not work. Instead, use the following command:

`/usr/bin/fddilink lan`*`x`* `-w SETMTU` *`new_MTU_value`*

where *x* is the instance number.

Compatibility Information and Installation Requirements

Software Requirements

- HP-UX 10.20 operating system.

  If you are currently running HP-UX 9.x, you must upgrade to HP-UX 10.01, then to 10.20 before installing HP-EISA FDDI/9000 version B.10.20.03, or later.

Hardware Requirements

- HP 9000 server or workstation with an EISA bus
- A CD-ROM to install/update media
- Fiber optic cable terminated with a MIC connector

Memory and Disk Space Requirements

- 16 MB memory
- 800 KB free disk space

Install/Upgrade With System Up or Down

One reboot is required for installation and configuration.

Installing and Upgrading HP EISA FDDI/9000

The *Installing and Administering HP EISA FDDI/9000 and HP HSC FDDI/9000* manual (J3703-90004) contains complete instructions for installing this product. Refer to this document for more information.

NOTE

If you install the EISA FDDI hardware before the software, the system will display the following error: "`Warning: one or more EISA cards could not be configured`." Ignore this message. When you install the

software, you will resolve this problem.

If you have an earlier version of HP EISA FDDI/9000, you must do the following:

1. Remove all EISA FDDI patches.
2. Install this version (B.10.20.08).

Patches and Fixes in this Version (B.10.20.08)

The following patch has been incorporated into this version of the HP-EISA FDDI/9000 software:

- PHNE_17061
- PHNE_15665

Table 1-1 PHNE_17601

Symptom	Defect
1. The system panics with a data page fault when many Input/Output (I/O) cards are configured on a system with EISA FDDI card/driver.	1. When multiple I/O cards are configured it is possible that the driver's attempt t map its I/O buffer fails. Under these conditions, when the driver attempts to unmap these I/O buffers, the system panics with a data page fault.
2. NFS server daemons operating over EISA FDDI hang, eventually followed by a system hang.	2. When the driver fails to enqueue packets for transmission (as was seen under heavy NFS traffic), the driver treats these packets as dropped. However, it failed to free the buffers for the packet. this resulted in kernel memory leak, eventually leading to a system hang.

Table 1-1 PHNE_17601 (Continued)

Symptom	Defect
3. High checksum errors and degraded network performance, observed over EISA FDDI interface, on B and d class systems which are non-cache coherent I/O (that is, CCIO).	3. On systems without CCIO support, the driver needs to maintain cache coherency during DMA transactions, by flushing/purging the CPU cache as necessary. The EISA FDDI driver did not synchronize its inbound data buffer pool with the processor cache. Hence, stale data was passed up to the upper layers, resulting in checksum errors and re-transmissions, leading to degraded performance. To verify this problem, run `netstat(1M)` to display bad checksum. In addition, t check if the system supports CCIO, run the following command on the system: `/usr/bin/grep "^ccio" /stand/system`
4. When OSI stack is configured on top of EISA FDDI interface it fails to communicate with its peers, resulting in application aborts.	4. The control field in the packet header of outbound Unnumbered Information (UI) packets in the EISA FDDI driver was not initialized. As a result, communication was not established with remote hosts, causing application aborts.
5. System panics during system shutdown when OSI stack is configured over EISA FDDI driver.	5. During system shutdown, the OSI stack sends the OSIUNBIND request to the driver. The driver failed to unbind the protocol stack stream as it incorrectly compared the service access pooling (SAP) values and returned and error. However, the OSI stack was unbound and any attempt by the driver to send packets on that stream resulted in a system panic.

Table 1-1 PHNE_17601 (Continued)

Symptom	Defect
6. System crashes, with either an HPMC or a memory protection fault panic, under high network traffic over the EISA FDDI interface.	6. Under heavy network traffic conditions, the EISA FDDI driver may sometimes invoke internal card resets to recover from transmit hangs. In the driver's watchdog timer, when attempting an internal reset (for automatic recovery), the driver invokes a kernel sleep routine while waiting for reset completion. Since the watchdog timer executes in an interrupt system context, calling sleep leads to a system crash (HPMC or memory protection fault). An alternate mechanism of completing resets in driver interrupt routines has been implemented.
7. System panics with an instruction page fault when multiple promiscuous streams are enabled over the EISA FDDI interface.	7. When multiple streams enable promiscuous mode on a single interface, the driver failed t distinguish between bound and unbound streams. As a result, the streams queue pointer was corrupted, resulting in a panic.
8. The `netfnt(1M)` output for traces generated by the EISA FDDI driver is incorrect.	8. The EISA FDDI formatting routines were using incorrect offsets into the trace buffers, resulting in incorrect output.

Table 1-2 PHNE_15665

Symptom	Defect
1. The EISA FDDI interface may hang after logging the message, "Waited for stat2_ine4 but it never came" to syslog.	1.A software reset mechanism was introduced in the EISA FDDI driver to work around hardware defects in the Motorola FDDI system Interface (FSI) chip. This mechanism did not detect all the circumstances under which the card had to be reset.

Table 1-2 PHNE_15665

Symptom	Defect
2. When an attempt is made to change the MAC address of the card using `lanadmin(1M)`, the link becomes unusable for up to 10 seconds and the MAC address remains unchanged.	2, The MAC address of the card cannot be changed. Users were not prevented from attempting to do this.
3. DLPI applications that use hierarchical sub-binding to SNAP SAPs other than IP or ARP may sometimes receive packets not meant for them from the EISA FDDI link.	3. The driver forwarded SNAP packets that were neither IP nor ARP to all applications registered with SNAP SAPs other than IP or ARP.

EISA FDDI 10.20: New Defect Fixes

Besides the above patch fixes, this release also has:

1. Fix to allow setting/resetting of Maximum Transmission Unit (MTU) size using `lanadmin`.
2. Fix to prevent setting of the MAC address to either all zeros (`0x000000000000`) or broadcast address (`0xffffffffffff`), consistent with the behavior of other HP networking drivers. the driver now returns EINVAL for such MAC address values.
3. Fix to reduce the high inbound error count. The high inbound errors were caused by:
   - Packets dropped due to the upper layer (IP) being marked down, as inbound errors.
   - Packets whose format was not recognized by the driver (unknown protocols) were treated as inbound errors.

   In this release these are no longer treated as inbound errors.
4. Fix for panics that may occur when promiscuous mode is turned on or off. There was a time-window during which packets could be sent up to the promiscuous stream after it is disabled, resulting in a panic.
5. Fix to allow IP and ARP packets to be passed up when operating in SAP promiscuous mode, even when the interface is marked down by IP.

6. Fix for panics that may occur when running in promiscuous mode under heavy load, leading to low-memory conditions. Under such conditions, panics may occur due to multiple frees of the same buffer.
7. Fix for the behavior of the ifOper MIB variable, as seen by using `lanadmin`.this MIB variable will now indicate the operational state of the link. This flag will be assigned an “up” state when the interface is configured by IP, provided the hardware state of the card is correct and the card is ON (connected to) and operational ring.

What's in this Version (B.11.00.05)

The following describes HP EISA FDDI/9000 products A3659A for servers and B5502A for workstations for **HP-UX B.11.00.05**.

NOTE The HP EISA/FDDI adapter complies with FCC regulatory standards. See the *Installing and Administering HP EISA FDDI/9000 and HP HSC FDDI/9000* manual (provided with the product) for the complete FCC Regulatory Compliance statement.

Benefits

HP EISA FDDI/9000 is a high-performance FDDI networking solution for HP servers and workstations. HP EISA FDDI/9000 provides the physical and data-link services as defined by the ANSI X3T9.5 specifications for FDDI and is supported over the TCP/IP network protocol stack.

This version of HP EISA FDDI/9000 supports the 32-bit version of HP-UX 11.00 operating system.

Features

HP EISA FDDI/9000 supports ANSI specifications for high-performance FDDI networking using fiber optic media via single-attach or dual-attach connections. HP EISA FDDI/9000 also supports dual homing and high availability environments using MC/ServiceGuard.

Fixes

There are three patches included in this version. See the section "Patches and fixes in this Version (b.11.00.05)" for more information.

Known Problems and Workarounds

None

Compatibility Information and Installation Requirements

Software Requirements

- HP-UX 11.0 operating system.

Hardware Requirements

- HP 9000 server or workstation with an EISA bus
- A CD-ROM to install/update media
- Fiber optic cable terminated with a MIC connector

Memory and Disk Space Requirements

- 16 MB memory
- 800 KB free disk space

Install/Upgrade With System Up or Down

One reboot is required for installation and configuration.

Installing and Upgrading HP EISA FDDI/9000

The *Installing and Administering HP EISA FDDI/9000 and HP HSC FDDI/9000* manual (J3703-90004) contains complete instructions for installing this product. Refer to this document for more information.

If you have an earlier version of HP EISA FDDI/9000, you must do the following:

1. Remove all EISA FDDI patches.
2. Install this release (B.11.00.05).

Patches and Fixes in this Version (B.11.00.05)

There are three patches included in this version of the software.

Table 1-3 **PHNE_16503**

Symptom	Defect
1. The driver fails to disable previously enabled multicast addresses, with error code set to 'EINVAL'.	1. The driver was comparing the canonical form of the address with its non-canonical form stored in its private data structure. since the comparison failed, the driver always returned an error.
2. The driver returns garbled data when queried for statistics by applications using the Network Management library calls.	2. the Network Management functions use the DL_HP_GET_MIB_STATS `ioctl` to communicate with the driver. This `ioctl` was not supported.
3. `lanadmin` displays Operation Status as "down(2)" even if the interface is up.	3. The driver was not updating the operation status field in its data structure after the initialization was complete. As a result, incorrect status was displayed by the `lanadmin(1M)` command.
4. System hangs under heavy network traffic over EISA FDDI.	4. Under heavy network load, the driver fails t enqueue packets due t lack of transmit descriptors. In such a condition the driver is supposed to free the buffers associated with the packet. This was not being done. As a result, kernel runs out of memory leading to a system hang.

Table 1-4 **PHNE_15667**

Symptom	Defect
1. The EISA FDDI interface may hang after logging the message "`Waited for stat2_ine4 but it never came`" to syslog.	1. A software reset mechanism was introduced in the EISA FDDI driver to work around the hardware defects in the Motorola FDDI System Interface (FSI) chip. This mechanism did not detect all the circumstances under which the card had t be reset.
2. When an attempt is made to change the MAC address of the card using `lanadmin(1M)`, the link is unusable for up to 10 seconds and the MAC address remains unchanged.	2. The MAC address of the card cannot be changed. Users were not prevented from attempting to do this.
3. Under certain conditions, too many informative driver messages are logged to syslog, causing it to overflow.	3. SMT and other informative messages were incorrectly sent to syslog instead of the NetTL log.
4. The fddiif utility sometimes reports negative numbers in the statistics.	4. though the statistics are maintained as unsigned integers by the driver, fddiif displayed them as signed values.
5. When the locale is set and `lanadmin(1M)` is used in the interactive mode, the following error message is displayed after a certain number of commands are executed: `Cannot open shared library`	5. The EISA FDDI lanadmin(1M) shared library did not close the catalog file after using it.

Table 1-5 **PHNE_13395**

Symptom	Defect
1. Inbound data corruption is seen on non-cache coherent systems when UDP checksum is turned off. This problem is observed readily on D200/D210 systems with EISA FDDI.	1.A missing cache purge at the time the receive buffer is set up causes stale data to appear in the received packed. The stale data starts at cache line boundaries and can run to multiples of the cache line size.

Table 1-5 PHNE_13395 (Continued)

Symptom	Defect
2 An underrun is seen on transmission of every frame larger than 3000 bytes when EISA SCSI is present.	2. When EISA SCSI is present, system firmware automatically disables BCLK stretching, resulting in a slight slowdown of the EISA bus. This, coupled with the limited bandwidth of the EISA bus, restricts the ability of the EISA FDDI card to DMA the packet at the rate needed by the FDDI network. The EISA FDDI card, by default, sets its transmit FIFO watermark to 2KB, which means that it starts transmission on the FDDI network after it has got 2 KB of data in its FIFO. This patch increases the watermark to the FDDI MTU (4352 bytes).
3. HPMCs could occur during the execution of the code that autorecovers the interface after transmit time.	3. The transmit hang autorecovery code uses the kernel sleep/wakeup synchronization mechanism t await the completion of events. As autorecovery could be initiated with no process context, the above scheme does not work. The fix incorporates an interrupt driven state transition mechanism t complete the recovery.

EISA FDDI 11.00: New Defect Fixes

Besides the above patch fixes, this release also has:

1. Fix to allow setting/resetting of Maximum Transmission Unit (MTU) size using `lanadmin`.
2. Fix to prevent setting of the MAC address to either all zeros (`0x000000000000`) or broadcast address (`0xffffffffffff`), consistent with the behavior of other HP networking drivers. the driver now returns EINVAL for such MAC address values.

3. Fix for panics that may occur when promiscuous mode is turned on or off. There was a time-window during which packets could be sent up to the promiscuous stream after it is disabled, resulting in a panic.
4. Fix for panics that may occur when running in promiscuous mode under heavy load, leading to low-memory conditions. Under such conditions, panics may occur due to multiple frees of the same buffer.