IBM 8260 Multiprotocol Intelligent Switching Hub Release Note for 8260 Switching Modules

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This release note contains important operating information about the IBM 8260 Switching Modules, and applies to the following Switching Modules at software Version v2.00 or later:

- Model Number SWA2-MOD
- Model Numbers SWE4-FX and SWE4-FX-A
- Model Numbers SWE4-TX and SWE4-TX-A
- Model Numbers SWE10-F and SWE10-F-A
- Model Numbers SWE10F2-FF and SWE10F2-FF-A
- Model Numbers SWE12F2-TPF and SWE12F2-TPF-A
- Model Numbers SWE12-TP and SWE12-TP-A
- Model Numbers SWE16-TP and SWE16-TP-A
- Model Number SWE18-TX-F
- Model Number SWE18-TP-A
- Model Numbers SWE20-F and SWE20-F-A
- Model Number SWE20-TP-A
- Model Number SWE24-TPT-A
- Model Numbers SWE24-TP and SWE24-TP-A
- Model Numbers SWF4-F and SWF4-F-A.

This release note includes the following sections:

- Important Download Procedure
- New Features
- Installation Requirements
- Corrected Problems
- Known Problems
- Operating Considerations
- Where to Find User Documentation.

Note: The v2.15 software release corrects problems in FDDI modules that are shipped with motherboards at hardware revision -AB (SWE4-TX-AB), or Switching Modules that are shipped with motherboards at hardware revision -AB and medium or large memory modules.

Important Download Procedure

Caution: If you do not follow this download procedure, all bridge port communication is lost, and if you are using IP relay for connectivity, you cannot download code to the Distributed Management Module (DMM).

Note: Due to a delay in software availability, the operational code and boot code that are required to upgrade the Switching Modules will not be available at the same time for module upgrades.

Download Procedure for Switching Modules at Versions Earlier than Version v2.00

If your hub contains any Switching Modules that operate with earlier than Version v2.00 software, complete the following procedure:

1. Upgrade all DMMs that are installed in the hub to software Version v5.00. See the *8260 Multiprotocol Nways Distributed Management Module User's Guide* for information about DMM downloading.

Caution: Do not upgrade to any later version until instructed to do so in Step 5.

2. Download the following boot software code to the indicated Switching Modules that are installed in the hub:
   - Version v1.04 to any –A Switching Modules
   - Version v1.12 to any non –A Switching Modules.
3. Download Switching Module software Version v2.00 to any Switching Modules that are *currently installed* in the hub, even if they are already running Version v2.00.

Caution: Do not install the new Switching Modules yet.

4. Download the PacketChannel/ATM Switching Module software Version v2.00 boot code, and then Version v2.02 operational code to all PacketChannel/ATM Switching Modules (Model Number SWA2-MOD) that are installed in the hub.
5. Upgrade all DMMs that are installed in the hub to software Version v5.25.
6. Follow the upgrade procedure in the section Download Procedure if Switching Modules Are at Version v2.00 or Later on page 3.

Download Procedure if Switching Modules Are at Version v2.00 or Later

If your hub contains any Switching Modules that operate with Version v2.00 or later software, complete the following download procedure:

1. If any Switching Modules are running boot software earlier than Version v1.04, download bootcode Version v1.04 to those Switching Modules.
2. Download Switching Module software Version v2.15 operational code to any Switching Modules that are installed in the hub.

Caution: Do not install the new Switching Modules yet.

3. Download PacketChannel/ATM Switching Module software Version v2.11 or later operational code to all PacketChannel/ATM Switching Modules (Model Number SWA2-MOD) that are installed in the hub.
4. Upgrade all DMMs that are installed in the hub to software Version v5.25.
5. Install your new Switching Modules into the hub. (Refer to the *8260 Switching Module Quick Start and Reference*.)

New Features

There are no new hardware features in Version 2.15.

The following new hardware and software features were provided in Version v2.11.

Hardware Features

The following new hardware features were provided in the v2.11 release:

- 18-port Fast Ethernet 100BASE-TX Switching Module (Model Number SWE18-TX-F)

  The maximum achievable port density for 100BASE-TX in an 8260 hub is increased by the introduction of the SWE18-TX-F. The 18-port Fast Ethernet card uses front-end repeaters to provide group switched capability.

  The 18-port Fast Ethernet Switching Module uses the same motherboard as the existing 4-port Fast Ethernet Switching modules (Model Numbers SWE4-TX-A and SWE4-FX-A), and supports many, but not all, of the same features as existing Fast Ethernet Switching Modules. See the 18-port Fast Ethernet Switching Module specification for further information.

- 20-Port Ethernet 10BASE-T Switching Module (Model Number SWE20-TP-A)

  The 20-port Ethernet, 10BASE-T Switching Module is an Ethernet Switching Module that increases the 8260 hub port density for switched 10BASE-T with RJ-45 connectors. The 20-port Switching Module supports the same features as existing Ethernet Switching Modules.

Software Features

Release v2.15 New Software Features

Release Version v2.15 provides the following new software features:

- New functionality prioritizes the selection of which SwitchModule bridge port becomes the IP relay master of the interface for a vbridge network. If the default selection of LOW_TO_HIGH is used, the priority scheme searches for the bridge port with the lowest slot and port numbering on a -A module on that vbridge. If no such bridge port is found, the priority scheme searches for a bridge port with the lowest slot and port numbering on a non -A module on that vbridge.

  If the HIGH_TO_LOW selection is used, then the priority scheme searches for the bridge port with the highest slot and port numbering on a -A module on that vbridge. If no such bridge port is found, the priority scheme searches for a bridge port with the highest slot and port numbering on a non -A module on that vbridge.

  Regardless of the setting, the -A modules always have priority over non -A modules when determining the IP relay port. This setting is saved to NVRAM as part of the IP group. The following commands implement the new functions:

  SET IP ELECTION_PRIORITY <LOW_TO_HIGH, HIGH_TO_LOW>

  SHOW IP ELECTION_PRIORITY

  SHOW IP ALL

  SAVE IP

  REVERT IP

Release v2.11 New Software Features

The following new software features were provided in the v2.11 release:

- Support for traffic from multiple Vbridges to be transmitted and received between two Switching Module ports via a single link through the use of Frame Tagging.
  - Frame tagging is supported only on Switching Modules SWE4M-TX-A (top level assembly number 02L3848 or higher) and SWE4M-FX-A (top level assembly number 02L3849 or higher). You can determine the top level assembly number by inspecting the shipping label on the outside of the shipping box.
  - If the Switching Module is already installed in the hub, see Chapter 8 in the *8260 Switching Module User's Guide* for more detailed information.

- Support for additional statistical information including:
  - Information relating to transmit buffer overflows (Model Number SWEXX-A Switching Modules only)
  - Peak rates statistics for the following:
    - Transmit and receive frame rates
    - Transmit and receive byte rates
    - Maximum number of addresses held in the address forwarding table (AFT) at a given time.
- Reduces network recovery times on resilient link switchover.
- Switching Module time of day.
- Provides the ability to set port up and down alerts on a per-port basis.
- Provides the ability to configure packet rate limiting for any multicast MAC address.
- Provides the maximum and latest CPU utilization parameters for Switching Modules (not supported on Model Number SWE2-MOD PacketChannel/ATM Switching Modules).

PacketChannel/ATM Switching Module

- Selectable ILMI MIB Vbridge object `atmfmyIpNmAddress` via the following command:

  > **set atm <*slot*> ilmi vbridge <*vbridge*>**

  - Support for a variable Loss of Signal Detection, which affects the PHY switchover timing. The Loss of Signal Detection can be configured from 0 (default) through 60 seconds via the following command:

    > **set atm <*slot*> loss of signal detection <*value*>**

- The MAX size of the MTU has increased to support the maximum size FDDI packets.
- Peak Cell rates for ddVCCs now include 2 & 8 Mbps. Also, the range of acceptability has increased from 5 percent to 10 percent.

Installation Requirements

Before you install a Switching Module or management module, read the following installation requirements:

1. Table 1 lists the minimum software versions that are required for Switching Modules, PacketChannel/ATM Switching Modules, and management modules that are installed in the 8260 hub to interoperate. Ensure that you download each module with the appropriate software image.

Table 1. Minimum Software Versions Required for Switching Modules and Management Modules Installed in the 8260 Hub

Module	Operational Code Version	Boot Code Version
Switching Module	v2.00[a]	v1.12
Model A Switching Module (model number includes -A)	v2.00[a]	v1.03 or later v1.04 (18-Port)
PacketChannel/ATM Switching Module (SWA2-MOD)	v2.02[a]	v2.00 or later
DMM or EC-DMM	v5.25 (must install v5.00 before installing Switching Module software Version earlier than v2.00)	v1.03
Controller (8000M-RCTL)	v1.15	v1.03
Advanced DMM/Controller (A/DMM-CTLR)	A/DMM – v5.25 (must install v5.00 before installing Switching Module software earlier than Version v2.00) Controller – v1.15	A/DMM – v1.03 Controller – v1.04

a. Separate software v2.00 or later images exist for Switching Modules, Model A Switching Modules, and PacketChannel/ATM Switching Modules (the same software image is not used for all three). Due to a delay in software availability, these codes may not be available at the same time for module upgrades.

2. For interoperability to utilize any Switching Module that is installed in the hub, the Switching Modules and management modules must be upgraded as follows:
   - Switching Modules must be upgraded to Version v2.15, Packet Channel/ATM Switching Module must be upgraded to Version v2.11.
   - DMM (including the A/DMM) must be upgraded to Version v5.25.
3. When you download new code, always download the boot code before the operational code.

Note: The operational code must be downloaded after the new boot code is downloaded, even if the most current version is already installed.

4. After you download new code, enter the CLEAR LOG command for all Switching Modules that are in the hub. This command removes the download-related information from the Switching Module NVRAM so that, in the event of a Switching Module crash, the SHOW LOG command displays only pertinent troubleshooting information (register and stack information) about the Switching Module.

   For general download procedures, refer to the *8260 Hub Distributed Management Module User's Guide*, Chapter 11, the section titled Downloading Firmware.

5. To determine the type of backplane that is installed in the 8260 hub, enter the DMM SHOW HUB command. If the hub has a:

   — **PacketChannel backplane** (hub type of 8260-Pxx) — Install Switching Modules in any slot. For example, if the Hub Type is 8260-PA, you can install Switching Modules in any slot.

   — **SwitchChannel backplane** (hub type of 8260-Gxx) — Install Switching Modules only in slots:

      — 1 through 8 of the 10-slot 8260 hub

      — 1 through 8 and 13 through 17 of the 17-slot 8260 hub.

   8260 hubs with hub type 8260-Axx or 8260-0xx do not have the required backplane and do not support Switching Modules.

   If you are installing only one Switching Module, the hub does not require a SwitchChannel or PacketChannel backplane. The single Switching Module acts as a stand-alone switch.

6. The following configurations can cause problems between clients and servers on different Switching Modules. These problems include transfer failure of large files or data.

   — A 10-slot or 17-slot 8260 hub with a SwitchChannel (hub type 8260-G17 or 8260-G10) backplane that was shipped before July 15, 1996

   — A SwitchChannel upgrade kit that was shipped before July 15, 1996.

   To prevent this problem, order and install the Backplane Ribbon Cable Upgrade Kit (Part Number SWEU-BP). This upgrade is free.

Corrected Problems

This section describes hardware and software problems corrected in Versions v2.15 and v2.11.

Problems Corrected in Version v2.15

The following software problems have been corrected in Version v2.15:

All 8260 Switching Modules

- Various customer reported system hangs, event log resets, AFT database corruption, and static address distribution problems have been corrected.
- When a new SwitchModule bridge port was added to an existing vbridge, no election was performed and the current master retained mastership. Now a new election is performed. This fixes problems that occurred in previous releases when the IP master went down and then came back up. Also see the New Features section for information about the IP Relay election priority command.
- FB/FL traps were displaying the incorrect gen_type. They have been corrected to display the correct gen_type.

FDDI Switching Modules

- Random fast reboots on FDDI non -A modules or -A modules with large memory models kept occurring. This has been corrected.
- Packets were discarded if the packet lengths were unequal. This problem has been fixed for both FDDI Switching Modules and Ethernet bridging.

Packet Channel/ATM Switching Modules

- The Packet Channel/ATM Switching Module (Model No. FC7302) supports 512 virtual connections that can be split between VPI and VCI channels. Previously, the SET_ATM <SLOT> VPI_VCI_BITS X/Y command only checked for VPI and VCI limits of 0-to-3 and 6-to-9, respectively. This command has been changed to also check that the combination of VPI and VCI bit settings does not exceed 9. The legal combinations of VPI/VCI are:

  0/9

  1/8

  2/7

  3/6

- The Packet Channel/ATM Switching Module BPORT_LEC ELAN_NAME parameter previously did not support non-alphanumeric characters. The command line for entering the parameter, SET BPORT_LEC XX.YY ELAN_NAME ABCDEFG has been changed to use the same format as the set tftp filename command:

  ENTER BPORT_LEC 6.1 ELAN_NAME <CR> (INPUT)

  ENTER BPORT_LEC 6.1 ELAN_NAME (OUTPUT)

  >(PROMPT OUTPUT) ABC_DEF_123_!@#$% (ANY CHARACTER INPUT)

Problems Corrected in Version v2.11

All General Switching Modules

- The use of more than 50 static addresses caused an instability in the hub.
- Module resets occurred when another Switching Module was reset or inserted into the hub.
- The hub lost IP connectivity when using a vbridge for an interface.
- To make IP connectivity work, the vbridge master port and the IP relay master port had to be on the same Switching Module.
- There were cases where two or more vbridge master ports were elected for a vbridge. This caused problems with the Spanning Tree Protocol, and management of the vbridge.
- Failure to transmit the Spanning Tree Protocol BPDUs during heavy traffic loads.
- The command >**show vbridge <*n*> mac <*x-x-x-x-x-x*>** did not always return valid data.
- Upon topology changes, topology change BPDUs were not always sent, resulting in aging of network issues.

Ethernet Switching Modules

- Module hangs occurred that were associated with a specific traffic sequence on a blocked or disabled port. When a discarded packet was immediately followed by a broadcast ARP packet on a port in the blocked state, it caused the module to hang.
- Module hangs occurred that were associated with one or more stuck transmit queues. A specific sequence of short FDDI frames caused the hardware servicing a port's transmit queue to lock up. This caused the global multicast queue to overflow, resulting in no longer forwarding flooded frames (broadcast, multicast, and unknown destination address). As a result, many protocols did not work even on the non-stuck ports. For example, the Spanning Tree Protocol on the Switching Module no longer worked properly; ports in the blocked state went into forward state.
- The Spanning Tree Protocol timers were not being cleaned properly, causing module reset.

FDDI Switching Modules

- FDDI Concentrator Module hangs occurred with multiple stations attached and under high traffic conditions.

Note: Poor performance occurs due to GMC resets when large FDDI packets are sent sequentially. This is a hardware-related issue.

- SMT packets failed to be sent during heavy traffic load.
- Various invalid traps were generated: Neighbor Change traps, MAC Not Copied traps, and illegal connections.
- Blocked ports on modules with FDDI interfaces improperly transitioned into listening, learning, and forwarding states.
- Occasionally, the SHOW BRIDGE_PORT VERBOSE command displayed incorrect FDDI upstream and downstream neighbor MAC addresses.

Fast Ethernet Switching Modules

- Upon disabling redundancy, the backup port's MAU remained enabled even though it was shown as disabled on the display.

PacketChannel/ATM Switching Module

- Calls to open 25 Mbps data-direct VCCs were rejected due to the incorrect calculation of the cells per second.
- NVRAM sometimes got corrupted and, upon a module reset, may have lost some configuration data.
- The PacketChannel/ATM Switching Module did not buffer packets while waiting for the LE_FLUSH_RESPONSE message, resulting in lost packets.

Known Problems

This section describes the known problems for the 8260 Switching Modules:

- General Known Problems
- Ethernet Switching Module
- FDDI Switching Module.

General Known Problems

The following known problems apply to all 8260 Switching Modules:

1. Bridging non-SNAP frame formats that result in 61 & 62 byte frames are not being padded correctly upon translation from FDDI to Ethernet. Those improperly padded frames are dropped by the recipient Ethernet station as runts. This results in a failure to attach to the server when using Novell 4.x with FDDI 802.2 frame formatting.

   Only the Switching Modules with the following part numbers are affected by this problem:

   – SWE10-F-A
   – SWE12-F2-TPF-A
   – SWE12-TP-A
   – SWE16-TP-A
   – SWE20-F-A
   – SWE20-TP-A
   – SWE24M-TP-A.

   To determine the Switching Module part numbers, inspect the shipping label on the outside of the shipping box.

2. If frames with the same source address arrive at two different ports on the same Switching Module and broadcast thresholds (rate limits) are enabled for the frame protocol type, the second port's traffic is not rate limited. This problem occurs only on networks that contain loops. To prevent this problem, ensure that your network contains no network loops.

3. The following issues apply to the Switching Module address forwarding table (AFT):
   - Some Switching Modules may have erroneous permanent MAC address entries in the AFT. To clear these entries, enter the following DMM command for each virtual bridge in the hub:

     > **clear vbridge 1 aft all all**

   - When you enter the SHOW VBRIDGE AFT STATUS command to retrieve the AFT status, the number of addresses for any one of the address types (learn, mgmt, and self) may be incorrectly listed.
   - The Switching Modules only support 500 AFT entries, and not the 2000 AFT entries, as indicated in the *8260 Nways Multiprotocol Switching Module User's Guide*.
4. Occasionally, in roving analysis configurations in which a 24-port 10BASE-T Switching Module port or a Telco Switching Module port is defined as the system analyzer, you may be unable to retrieve information from the port.

Ethernet Switching Module

There is an error in Chapter 6 of the *8260 Nways Multiprotocol Switching Module User's Guide*. The per-port RMON etherstats group does not include the packet size counters.

For 10 Mbps Ethernet port and 100 Mbps Ethernet port, four RMON groups (Etherstats, Histories, Events, and Alarms) are partially supported for all ports simultaneously.

FDDI Switching Module

1. Random resets on FDDI when detecting SMT frames with a remainder of 7. Random resets were occurring due to packet information being written to an incorrect address.
2. The FDDI port utilization was always reported incorrectly as 100%.
3. When a port experiences collisions, Frame Check Sequence (FCS) and alignment error counters in the 100BASE-X statistics display incorrectly increment.
4. The percent error counter in the 100BASE-X statistics display may not accurately reflect the actual percentage of errors.
5. The following known problem applies to Switching Modules SWE4-TX, SWE4-FX, SWE4-TX-A, and SWE4-FX-A only:
   - If you disable the autonegotiation function on a port after the port has completed autonegotiation, the duplex mode setting on the port reverts to the previous manually configured setting. When autonegotiation is enabled, you cannot configure duplex mode through the DMM terminal commands. To configure duplex mode using DMM commands, disable autonegotiation.
   - Backup MAU does not autonegotiate after resilient link mode is disabled.

Operating Considerations

Consider the following issues when you use your Switching Module:

- Due to the power requirements for the SWE18-TP-A Switching Module, not all configurations that include that Switching Module support N+1 power supply redundancy. Refer to the SWE18-TP-A section in the *8260 Quick Start and Reference* to verify the power requirements for your hub configuration.

- The Switching Module does not allow the deletion of default translation entries from the protocol table. These entries are set up for proper translation between FDDI and Ethernet.

  When you enter the SHOW PROTOCOLS FORWARDING command, the following default table appears:

Protocol	Name	Priority	Rate Limit	Forward On Ports
dsap 42	spanning tree	normal	disable	ALL
enet 08-00	ip	normal	disable	ALL
enet 08-06	ip arp	normal	disable	ALL

- Switching Modules implement broadcast thresholds (rate limits) at the module level, not per port. Broadcasts are limited on a FIFO (first in/first out) basis, regardless of the port or virtual bridge. As a result, some Switching Module ports may transmit more frames of the protocol type to be rate limited than other Switching Module ports.

- IPX Ethernet_SNAP protocol bridging from Ethernet to FDDI to Ethernet is not supported by Switching Modules, because the IEEE 802.1H standard bridges FDDI SNAP to Ethernet II. For more information, see the *8260 Switching Modules User's Guide* (Document Number SA33-0409), Chapter 5, the section Configuring the Translation Setting.

- IBM FDDI Adapters (Part Numbers 58G6406 through 58G6415) require the following default driver modifications:

  a. If you are running DOS and OS/2 Device Driver, set the SRCRTG parameter to No.

  b. If you are running DOS Driver and IBM DOS TCP/IP, set the SRCRTG parameter to No and the Emulate parameter to Ethernet.

  For more information about these modifications, see the adapter documentation.

- When you enter the SHOW BRIDGE_PORT VERBOSE command for an FDDI Switching Module port, the MAC address 00-00-F1-00-00-00 may appear. This MAC address is a default address to indicate that the neighbor is unknown.

Where to Find User Documentation

The *8260 Switching Modules User's Guide* (Document Number SA33-0409) is available in Adobe Acrobat format on the *IBM Hub Documentation* CD-ROM that is shipped with the product.

This CD-ROM also contains:

- Additional IBM documentation in Adobe Acrobat format
- Adobe Acrobat Reader (Version 3.0) and Reader installation instructions.

If you have difficulty installing the Acrobat Reader, use an Internet browser to download the reader from the Adobe home page (http://www.Adobe.com).