# IBM 8265 Nways ATM Switch

## This release note applies

## to

## ATM Control Point version 4.2.5

## PNNI and IISP

# Table of Contents

# 1.0 WARNING

- It is recommended to upgrade to Release **v4.2.5** from Release **v4.1.3**, **v4.1.4**, **v4.2.2** or **v4.2.4**

- For 8265 IISP code Release v4.2.5, the internal LES/BUS is supported **only** with a 32Mb hardware memory configuration.

- **CPSW2 modules only:** ***To prevent unrecoverable hardware damage, do not install a v.3.x PCMCIA card, or download v.3.x code onto the CPSW2 module (FC6502).***

- When multiple IP interfaces are configured on the 8265, it is **strongly** recommended to use the same IP subnet mask for all interfaces (but to have them in different IP subnets).

- It is **highly recommended** to have all 826x LECs in a dedicated management ELAN, all 826x CIP Client on a dedicated management ARP SERVER, and all 8265 Ethernet ports on the same maintenance ethernet segment, **out of production.**

- This code release supports up to 2 levels of PNNI hierarchy (level 0 and level 1).

- In case of multi-vendor ATM switches interconnection in a PNNI hierarchical network, make sure that other switches are able to operate correctly in a full-PNNI hierarchical network, before connecting it to an 8265 IBM V4 node.

- The CPSW2 module (FC6502) includes an integrated power controller (for fan and inventory management). The module contains a **red switch** located on the bottom left of the circuit board. Before installing the CPSW2 module, check that this switch is correctly set:
  - Switch OFF: Integrated Power Controller is Active.
  - Switch ON: Integrated Power Controller is Inactive.

- To interconnect with 8260s, 8285s, or 8265s that do not support PNNI hierarchies, you must upgrade the code on these switches to code level v3.2.3 or higher (for 8260/8285) and v3.3.5 or higher (for 8265). (See *8265 Installation Guide*.)

- In the current release, in order to change the **pnni peer group ID** of a node keeping the same **pnni level ID**, you must follow the sequence :
  - isolate the switch from the pnni network during the complete sequence
  - change the peer group id (if changing with the node 0, the switch resets)
  - change the atm address (the switch resets)
  - reconnect the switch now reconfigured to the rest of the pnni network

  If the level ID is changed with the peer group ID, the regular procedure can be applied.

- The CPSW2 (FC6502) does not support 8260 ATM Media Modules (no backward compatibility).

- Migration limitation from PNNI V3 code to PNNI V4 code (See section *8.5 Address Scoping for Static Reachable Addresses*).

- At migration time from V3 to V4, all ports DEFINED as public UNI will turn to VOID.

- The activation of the internal LES/BUS on the 8265 CP/SW CAN BE used for configurations with LESS than 1000 broadcast frames per second. For bigger configurations, the use of MSS is mandatory, do not use the 8265 LES/BUS.

# 2.0 New Features and Functions

The 8265 Release v4.2.5 does not bring any new functions or features from previous release but the Release v4.2.5 brings corrections or improvements in known problems on previous 8265 releases.

# 3.0 Fixes

## Fixes from v.4.2.0

- Fix of the v4.2.0 problem leading the 8265 to hang after 24 days of operation.
- If large number of PVCs are configured in the 8265, this can cause 8265 system error (ss_Fatal).
- When an 8265 CPSW Ethernet or Token Ring LEC is not configured, its reported AdminStatus is UP, when it should be DOWN. This incorrect status causes NWAYS Campus Manager to report the 8265 node as yellow instead of green.
- In case of high level of traffic (over 10K Frame/s , Frame 60 bytes) on the Ethernet port, the 8265 resets with System Error (software watchdog time-out caused by a system deadlock). Now in this stress environment, the Ethernet port will be disabled for 2 seconds and a message will be logged in the error log indicating a problem on the Ethernet interface.
  The problem is fixed but it is still highly recommended to have all 826x LECs in a dedicated management ELAN, all 826x CIP Client on a dedicated management ARP SERVER and all 8265 Ethernet ports on the same maintenance ethernet segment, out of production.
- When issuing at the same time a CLEAR PVC ALL and a snmp request, a system error can cause a 8265 system watchdog reset.
- In a hierarchical PNNI network, nodes or link failures can (depending on network configuration) split the network. This can temporally cause network to be advertised of PNNI resources by new Peer Group Leader when these resources are already advertised by the old Peer Group Leader. These PNNI database overflows can cause 8265 system error (Fatal DB No more Memory to allocate RTG2). In the 8265 Release v4.2.1, this mechanism has been reinforced but this problem can still occur in very large PNNI network or for PNNI network not correctly designed. It is strongly recommended in such a case to use the PNNI summary address function.
- The soft PVC Point_to_Multipoint in Reserved_Bandwidth mode could not be routed in a PNNI network. These PVCs are rejected with Clear Cause x3 (No Route to Destination)
- The 8265 MAC addresses are not correctly displayed by the WEB services.
- In large PNNI networks, the 8265 Path Selection (PNNI route computation) can compute invalid cost for UBR calls on some PNNI links.

- In some particular cases, the change of a 8265 node Leadership Priority is not advertised in the PNNI network, after having issued a COMMIT PNNI and a SAVE PNNI command, even if the 8265 new node PNNI configuration is correctly reported by the 8265 by a SHOW PNNI NODE_0 command.
- After the command SET PNNI NODE_1 NOT-CONFIGURED and COMMIT PNNI, a Terminal dialog message is prompted indicating that the NODE_0 has been deconfigured (instead of NODE_1).
- In Hierarchical PNNI, when the SVCC RC uses an ABR Call Set Up, the SVCC RC connection could not be established leading to the two PNNI Peer Groups not having any connection between each other.
- After a 8265 Switch reset within a PNNI network, a PNNI data base initialization problem can occur, leading to this 8265 not seeing its PNNI neighbor and this for half an hour (PTSE lifetime).
- When the maximum number of dynamic Reachable addresses (512) is reached on an 8265, an additional dynamic reachable address will cause a system error (BUS exception Data storage).
- In large PNNI network or in case of network split due to network failure, the large number of exchanged PTSEs can cause the 8265 PNNI neighbor link to enter in Exchanging state instead of Full state.
- If IMA cards are used to connect 2x 8265 with PNNI links, if SVCs with Reserved Bandwidth are set up through the IMA ports, and some IMA port goes down, when the IMA ports goes up again, the initial max reserved bandwidth value is not restored.
- In some particular cases, when having modified a lot of 8265 PNNI Nodes parameters (including Peer Group ID node_1, Leadership Priority node_0, Pnni summary address node 0 and node_1 and reachable address added), a 8265 system error can occur after the “save all” command, leading the 8265 to reset (Fatal HR).
- If 2 x 8265 are neighbor in a same PNNI Peer Group and one of the 8265 PNNI node_0 configuration is changed so that the 2 x 8265 are no more in the same NODE_0 and that they do not have the same parent NODE_1 Peer Group, It can be possible that one of the 8265 still sees its neighbor in a Full state.
- In some cases, the bandwidth management at module level is not processed correctly on Point To Multipoint party clearing. The bandwidth is not always released.
- The PNNI heterogeneous Peer Group function is not supported.
- Sometimes the policing is enable on VOID ports.
- In some cases of redundancy switch, some parameters can be not correctly mirrored between Active and StandBy CPSwitch.
- When the maximum number of PNNI links is reached on a 8265 (Max is 32), the PGL election mechanism can be altered. In such a case, PGL election can be started when not necessary.
- Some cranckback process (Ex : cranckbak enabled, and creating a PVC with a VPI.VCI already in use) can create a 8265 system error (Fatal CPQ93b: qa close failed or Fatal CPQ93b: Null Pointer supplied).
- 8265 interpret ILMI Link management trap as Cold Start instead of Notification Only. This lead to a UNI link failure when this notification is received.
- In some cases, an internal PNNI data corruption can affect the PNNI Hello Process. PNNI link can then stay in LOADING or EXCHANGING state even if the PNNI configuration is correct.
- In a network including a device (such an MSS 8210) which can generate a large amount of call setups and releases, without resetting its SAAL for a long time (without port disable/enable, reboot) the 8265 can wrap its internal call ref counter, and so, reject all the new call setups with UNI clear cause x51 *invalid call reference value*.

- Some 8265 internal system congestion process can lead to the 8265 reset (software watchdog time-out caused by a system deadlock).
- For some 8265 interface configuration (IP Ethernet, ELAN Eth and/or TR, CIP) with the default gateway defined, if the 8265 resets, the default gateway can be not properly initialized and not working properly**.**
- CRC errors appearing with high rate and/or regularly and continuously on the ATM network (PNNI or UNI links) are improperly queued in 8265 CP/SW hardware queues. This can lead to unpredictable behavior of the 8265 functionality going worth and worth until the 8265 resets (CS Poll cell missing,...). This problem is corrected by the **CP/SW FPGA 1D16 or 2D16** (see section 6.0 : *8265 Modules FPGA Levels*).

## Fixes from v.4.2.2

- When configuring the Call Pacing function the following filter ATM address can not be set: C5.00.79.00.00.00.00.00.00.00.00.00.A0.3E.00.00.01.00
- All leds on but 8265 still running. The Control Point Switch needs to be reworked.
- VPI/VCI changed on PVC after a restart. This interoperability problem only occured with Nortel C100 devices.
- Sysuptime correction. The 8265 will not reset the ILMI after 497 days when counters wrap back to 0.
- Bus error in PS when a lot of P2MP is used (more than 20%)
- Fatal in PS due to an unability to allocate reachability.
- Invalid CPU load reported by the MIB for low CPU values.
- ILMI down due to a get_request message corrupted
- Test led: ACTV and STBY messages are not always properly restored.

## Fixes from v.4.2.4

- Fix a problem of PNNI Level id of 0 in hierarchical mode.
- Clear VPC_link are now correctly mirrorred on backup CPSW.
- VPI/VCI range 0/14 is kept for an 8371 after an atm_subsystem reset
- Correct an SNMP vulnerability problem.
- Correct a reset when issuing the command “set signalling statistics on” with ‘NO’ option.
- Correct a hub reset due to dump signalling database.

# Fixes from v.4.2.5

- Atmping new option to continue xfic if cnx failed.
- Police admin always on when “show port x.x verbose”.
- Reset cp backup if no resp after reset.

# 4.0 Known Problems

- A module in slot 12 will be powered up by the new CPSW2 module (FC 6502) only if the chassis is a Release 4 chassis (P/N 26L0112 or 02L4093).
  The chassis level (in fact the backplane level) can be displayed at the console, by issuing the command “SHOW INVENTORY VERBOSE”. Alternatively, look for a “Release 4” label on the bottom left-hand side of the front of the chassis.

- Following a power-on or CPSW module reset, the CPSW module may enter Maintenance mode with code 39 and the following message is displayed on the CPSW module LCD:
  " FAT DIAG ERROR IN RB TRAFFIC MODE"**.** If this happens, reset the 8265 (or power off and then on again). The problem should not reoccur.

- When a CPSW2 module is already active in slots 11-12 and a redundant CPSW2 with integrated power control is plugged in slot 9-10, the module must be inserted quickly so as not to disturb current traffic. As the CPSW2 module powers on immediately, the insertion levers must be pressed firmly within 2 seconds of the CPSW module display being lit. Otherwise, the module may start before all connecting pins are properly seated, producing unpredictable results.

- In the current release, in order to change the **pnni peer group ID** of a node keeping the same **pnni level ID**, you must follow the sequence :
  - isolate the switch from the pnni network during the complete sequence
  - change the peer group id (if changing with the node 0, the switch resets)
  - change the atm address (the switch resets)
  - reconnect the switch now reconfigured to the rest of the pnni network
  If the level ID is changed with the peer group ID, the regular procedure can be applied.

- When multiple IP interfaces are configured on the 8265, it is **strongly** recommended to use the same IP subnet mask for all interfaces (but to have them in different subnets).

- When a large number of connections (over 1.5K) are set up (ELAN LES/BUS) on a 8265 MSS 8210 port, and a failure occurs in the network leading all connections to be cleared, a congestion problem can occur when all the connections try to be set up again at the same time on the 8265 MSS port. It can then take time for all the connections to recover. One way to limit the problem is to use the Call pacing function with tuned parameters setting.

- Incorrect times stamp in the SVCs log Table

# 5.0 MIB V4

v4.2.5 Mibs are the same as v4.1.4 ones.

If you manage your 8265 using network management software, update your MIB to level V4 by downloading the corresponding code from Internet web page:

**http://www.networking.ibm.com/support/products.nsf/techsupport/(8265)?OpenDocument**

Following are the MIB Changes in V4 (compared to 8265 V3):

- The two following attributes are now R/W:
  - ocPowerOverheatPowerDownMode
  - ocPowerSlotAdminStatus
- The following attribute is new (Ptses Dump):
  - PnniDumpVertex

# 6.0 Documentation

No new documentation corresponding to v4.2.5

Information from the Internet :

8265 product information and code updates are available on the Internet at the following URL:

**http://www.networking.ibm.com/support/products.nsf/techsupport/(8265)?OpenDocument**

# 7.0 8265 Modules FPGA Levels

FPGA Media Modules levels for v4.2.5 are the same as v4.1.4 ones.

According to the following 8265 module compatibility table, upgrade each 8265 module to the latest FPGA picocode.

| **Module** | **Feature Code** | **Faceplate** | Oldest FPGA level | **Latest FPGA level** |
|---|---|---|---|---|
| **CP/SW** | 6501 | CPSW | 1D13 | **1D16** |
| **CP/SW** | 6502 | CPSW | 2D13 | **2D16** |
| **155 Mbps 4P Flex module** | 6543 | A4-MB155 | 1D03/DD03/1D23<br>2D03/2D23/2D04<br>3D04 | **1D24 (1)**<br>**2D05 (2)**<br>**3D05 (3)** |
| **155 Mbps 4P MMF Integrated module** | 6540 | A4-MF155 | 1D03/DD03/1D23<br>2D03/2D23/2D04<br>3D04 | **1D24 (1)**<br>**2D05 (2)**<br>**3D05 (3)** |
| **622 Mbps 1P MMF module** | 6511 | A1-MF622 | 2D03/2D23/2D04<br>3D04 | **2D05 (2)**<br>**3D05 (3)** |
| **622 Mbps 1P SMF Module** | 6512<br>6513<br>6514 | A1-SF622 | 2D03/2D23/2D04<br>3D04 | **2D05 (2)**<br>**3D05 (3)** |
| **Carrier 2.0 module** | 6558 | A-CMU2 | 2D03/2D23/2D04<br>3D04 | **2D05 (2)**<br>**3D05 (3)** |
| **Carrier 2.5 module** | 6559<br>6560<br>6561 | A-CMU2.5S<br>A-CMU2.5A<br>A-WAN2.5 | 2D14<br>2D14<br>2D14 | **2D15 (4)**<br>**2D15 (4)**<br>**2D15 (4)** |

**IMPORTANT NOTE :**

8265 modules have three implementations involving different families of Xilinx chips. Before downloading FPGA code to an 8265 module, perform a "show module x verbose" and note the current FPGA code level. Apply FPGA code as follows:

**1.** For **4P155** Mbps modules currently running FPGA 1D03, DD03 or 1D23 upgrade with FPGA **1D24**
**2.** For **4P155**/**1P622** and **carrier 2.0** modules currently running FPGA 2D03, 2D23 or 2D04 upgrade with FPGA **2D05**
**3.** For **4P155**/**1P622** and **carrier 2.0** modules currently running FPGA 3D04, upgrade with FPGA **3D05**
**4.** For **carrier 2.5** module currently running FPGA 2D14, upgrade with FPGA **2D15**

# 8.0 Networking Rules

This section describes 8265 module performance and lists the rules to follow when building and validating your network.

## 8.1 ATM Peer Group Intra connection (PNNI)

An ATM Peer Group is a group of ATM hubs or switches interconnected by Private Network-to-Network Interfaces (PNNI). The PNNI protocol supports networking functions such as routing, node failure and recovery, backup and topology management.

- **Number of Switches in the Same Peer Group:**

  Depending on the network topology and complexity, the peer-group can have up to 100 nodes (assuming there are up to 200 foreign addresses and 500 links in the peer group).

- **Network Recommendations for LAN Emulation System:**

① Limit the number of nodes to 50.
② Separate 8265 Network Management functions (internal LECs) from user workstations.

- **Maximum Number of Physical Links and/or PNNI VPCs per 8265:** 32

## 8.2 ATM Peer Group Interconnection (IISP)

Interim Inter-switch Signaling Protocol (IISP) defines the interface between two 8265s belonging to different ATM Peer Groups in the same sub network or in different sub networks.

- IISP links are supported over both physical links and Virtual Path connections (VP tunneling).
- Parallel IISP links can be enabled between two clusters.
- The following limitations apply when configuring IISP ports:
  - ❖ Soft PVCs cannot be routed through IISP links. It is necessary to define a PVC on each individual Peer Group involved in the connection.
  - ❖ The maximum number of static reachable addresses that can be defined per 8265 is 64.

## 8.3 IP Over ATM (RFC 1577)

- The CPSW supports an IP client implementation to be managed over ATM (SNMP, Telnet, TFTP, Ping). The supported MTU size is 9188 bytes.
- The IP Over ATM client imbedded in the CPSW supports up to 64 concurrent IP Over ATM connections.

## 8.4 ATM Forum Compliant LAN Emulation Client

Each 8265 LAN Emulation Client supports up to 30 connections to other LECs.

## 8.5 Address Scoping for Static Reachable Addresses

New and migrated static reachable addresses are assigned a default SCOPE value of 1-3 (PNNI level 96).
Thus, if you change the level identifier of node:0 to a higher value (for example, 88), the default static reachable addresses will not be advertised outside the node. To ensure that static reachable addresses are advertised outside such a node, use the SCOPE parameter of the SET REACHABLE ADDRESS command to change the scope of each static reachable address to, for example, ‘4’ (PNNI level 80).

Note that there is no other way to change the scope in the current code level.

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