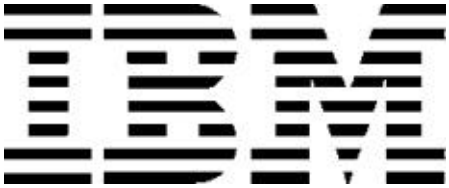
IBM Corporation

IBM Nways RouteSwitch Release Notes
Version 3.0.2
Form Number GC30-3874-03
Rev. E

June 20, 1997



Nways RouteSwitch Release Notes Version 3.0.2 8273 and 8274 Series

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Revision History

Release	Revision	Date	Description of Changes
3.0	A	3/24/97	Initial Release
3.0	B	3/31/97	Documentation change only. Include PR 6587.
3.0	C	4/7/97	Documentation change only. Page 17, Section 9 on NI images for HSM and HSM2.
3.0.2	D	6/4/97	General Availability Release to include: Firewalls, PNNI, and Token Ring RIF Stripping.
3.0.2	E	6/11/97	Added ASMS image to memory requirements. Documentaion change only to release notes.

1. Introduction

These release notes cover the basic feature set supported, known limitations, bugs and known work-arounds for IBM Nways RouteSwitch Version 3.0.2 software. Please read this document in its entirety as it contains important operational aspects that may impact your network.

2. 3.0 Feature Set Supported

Hardware and software features supported with the release 3.0 are the following:

Hardware:

IBM Nways RouteSwitch:

- 8274-MOD-500 Chassis
- 8274-MOD-513 Chassis
- 85H7141 8274-MOD-513 power supply
- 8274-MOD-913 Chassis
- 85H7139 8274-MOD-913 Power Supply
- 8274-MOD-900 Chassis
- 85H7113, 85H8504-8 / 85H7112, 85H8503, 86H2850-16MB
- 7105, 6865, 0565, 0566
- 85H7103 10BaseFL Adapter Card for 7105
  85H7101 10BaseT RJ-45 Adapter Card for 7105
  85H7104 10BaseT RJ-45 and AUI Adapter Card for 7105
  85H7100 10Base2 Adapter Card for 7105
  85H7102 Single-mode 10BaseFL Adapter Card for 7105
- 85H7106 10BaseFL 8 port Ethernet Module
- 85H7108, 85H6863 10BaseT RJ-45 12 port Ethernet Module
- 85H7099 Adapter board for Ethernet Universal Switching Module
- 85H7107 10BaseT, 50 Pin Telco Connectors, 12 port Ethernet Module
- 85H7096/85H7095 One or two port Full Duplex 100Tx
- 85H7094/85H7093 One or two port 100BaseFx
- 85H7092/85H7091 One or two port 100BaseFx (SM)
- 85H8722 4 port shared 100BaseT + 1 Full Duplex 100BaseTx
- 85H8724 4 port shared 100BaseTx + 1 Full Duplex 100BaseFx (MM)
- 85H8726 4 port shared 100BaseTx + 1 Full Duplex 100BaseFx (SM)
- 85H8728/85H8729 Four or 8 Port WAN Switching Module, Universal Serial External DTE/DCE Wide Area Network Interface Daughter Card
- 85H7053/85H7054 One or two port ATM 500Kbytes SRAM, 34 Mbps E3, BNC connectors
- 85H7088, 85H6876 Token Ring Dual Mode Module

New Hardware in 3.0 Release*:

IBM Nways RouteSwitch:

- 8274-MOD-W5 Wide, 5 slot IBM Nways RouteSwitch with Route-Cell backplane
- 85H7140, 250W, -48V DC power supply for 8274-MOD-W5
- 8274-MOD-W9 Wide, 9 slot IBM Nways RouteSwitch with Route-Cell backplane
- 85H7139, 500W power supply for 9e, 9x and 9wx MOD 900, MOD 913, MODW9
- 86H0586, or 86H0587; 86H2850 16Mbyte DRAM, 4 Mbyte Flash, 86H0588 socket, 960M VBUS for narrow or wide chassis
- 86H2995 or 86H0531; Eight port, 155Mbps OC3c/STM-1 CSM, multimode fiber for narrow or wide chassis
- 86H2997 or 86H0530; Eight port, 155Mbps OC3c/STM-1 CSM single mode fiber for narrow or wide chassis
- 86H3003 six port multimode and two ports single mode 155 Mbps SONET ST3c/STM-1
- 86H0607 Frame to Cell Switching Module (Narrow and wide module)
- 85H8728 or 86H0605; WAN Switching module, 4 ports Universal Serial External Interface. Supports the five serial cable types (V.35, RS-232, X.21, RS-530, and RS449) for wide chassis
- 85H8729 or 86H0606; WAN Switching module, 8 ports Universal Serial External Interface. Supports the five serial cable types (V.35, RS-232, X.21, RS-530, and RS449) for wide chassis
- 86H0588 Hardware Routing Engine
- 86H0583, 86H0582, 86H0585, 86H0584 FDDI Switching Module, SC connectors, supports single mode (category 2)
- 86H3009, 86H3013 One or two port ASM-SAHI multimode fiber
- 86H3017, 86H3021 One or two; port ASM-SAHI single mode fiber

*New hardware must be supported by version 3.0.2 MPM software. IBM Nways RouteSwitch Network Manager applications must also be version 3.0 to support new hardware.

The following include modules which contain either HSM or HSM2* boards.

- 85H7098/85H7025 100BaseT Switching Module
- 85H7087/85H7027 Multi-mode ATM Module ¨ö and 2 Mbyte SRAM
- 85H7083/85H7081 Single Mode ATM Module ¨ö and 2 Mbyte SRAM
- 85H7079/85H7077 One or two port, 155 Mbps UTP 5, RJ45 connectors ¨ö MByte
- 85H7078/85H7076 One or two port, 155 Mbps UTP 5, RJ45 connectors 2 MBytes
- 85H7051/85H7052 ATM ¨ö Mbyte w/BNC connectors
- 85H7055/85H7056 FDDI Module Multi-mode
- 85H7057/85H7058 CDDI Module
- 85H7028 FDDI/CDDI Module
- 85H7060/85H7061 FDDI Single Mode sub-module
- 85H7090 Module (4 Mbps or 16 Mbps)
- 85H7089 Module (4 or 16 Mbps Rev B4 and above, 16 Mbps only for revisions)
- 85H7088 Module (4 Mbps or 16 Mbps)

* Version 2.0.4 and subsequent releases support HSM2. See section 9 for additional information. Version 3.0.2 and previous software versions support HSM.

8273 Series:

- 8273-10E

- 8273-100
- 8273-10U
- 8273-85H7118 10BaseFL Adapter Card for the 8273-10U
- 8273-85H7116 10BaseT Adapter Card for the 8273-10U
- 8273-85H7119 10BaseT RJ-45 and AUI Adapter Card for the 8273-10U
- 8273-85H7115 10Base2 Adapter Card for the 8273-10U
- 8273-85H7117 10BaseFL Adapter Card for the 8273-0U
- 8273-85H7130 FDDI sub-module. One DAS port.
- 8273-85H7131 FDDI sub-module Multi-mode
- 8273-85H7129 CDDI sub-module four CDDI ports
- 8273-85H7124 DS3 sub-module. One port, 45 Mbps, BNC connectors
- 8273-85H8721 E3 sub-module. One port, 34 Mbps, BNC connectors
- 8273-85H7128 ¨ö and 2 Mbyte ATM sub-module-Multi-mode
- 8273-85H7126 ¨ö and 2 Mbyte ATM sub-module- Single-mode
- 8273-85H7114 One full duplex AUI port for 8273-10U
- 8273-85H7123 4 Port 100BaseT sub-module
- 8273-85H7120 One 100BaseTx full duplex port sub-module
- 8273-85H7121 One 100BaseFx full duplex port sub-module (MM)
- 8273-85H7122 One 100BaseFx full duplex port sub-module (SM)

New Hardware in 3.0 Release*:

8273 Series:

- 86H0596 Frame Relay Sub-module. Two universal external DTE/DCE WAN connectors.
- 86H0597 Frame Relay Sub-module with compression. Four universal external DTE/DCE WAN connectors.

*New 8273 Series hardware must be supported by version 2.1.3 8273 Series software. IBM Nways RouteSwitch Network Manager applications must also be version 2.1 to support new hardware.

Software Major Features:

- IBM Nways RouteTracker Manager including enhancements to Version 2.0.4
- Ethernet RMON (Groups: Ethernet Statistics, History Control, Ethernet History, Alarm and Event)
- IP Routing
- IPX Routing
- ATM Services
  Ethernet LAN Emulation Client
  Route-Lane with PVC's
  RFC 1483 (LLC Encapsulation over ATM)
  RFC 1577 (Classical IP over ATM)
  RouteSwitch point to point bridging
  VLAN Trunking over ATM
- ATM UNI 3.0/3.1
- PVCs and SVCs
- VLAN Trunking over FDDI
- Source Route Bridging
- Virtual Rings and Virtual Rings over Trunks (backbones)
- STM-1 Coded in accordance with ITU Ch. 4 of I.432 (Geneva July 1995)
- Flooding Limits

- 2K CAMS
- Adaptive MAC Learning Algorithm
- SVC/PVC Recovery Improvements
- SNMP Trap Support
- Hot Swap of like modules
- MPM Redundancy
- IPX Any-to-Any Switching
  LLC Output Option for Translations
- Frame Relay
- Duplicate MAC Support
- Multicast Virtual LAN's
- IEEE 802.10 VLAN Tagging over FDDI
- Router VLAN Management
- IPX Client Network Policy refinement
- Port Forwarding Policy
- Port Mirroring (10BaseT)
- Optional Token Ring Copy Bit Setting
- Banyan Vines Translations
- IPX Raw over FDDI
- IBM Token Ring Support Functional Address

New Software Major Features*:

- Route-Cell
- DHCP BootP Relay
- Domain Bridging
- IPX RIP/SAP Filtering
- Group Mobility 1
- IP Multicast Routing
- 802.5 LAN Emulation Client
- ROUTE-LANE Enhancements
  - Extending clients from 16 to 32
  - RFC 1483 Encapsulation option
- Advanced Routing including OSPF and RIPII
- Enhanced Diagnostics
- 86H0588 Layer 3 frame forwarding ASIC, IP, IPX route forwarding with
- Flood Limits Override
- MPM Port Monitoring
- VLAN Advertisement Protocol
- Distributed CAM Utilization
- IBM RI/RO Format interoperability
- IP Firewall
- Token Ring Source Route RIF Stripping

New software features are only supported in version 3.0.2 IBM Nways RouteSwitch and 8273 Series software and are only supported by IBM Nways RouteSwitch Network Manager Version 3.0 applications.

Note: For ATM interoperability testing results, please contact IBM Technical Support.

3. Technical Support and Service

This section provides contacts for help if you have questions about the IBM RouteSwitch products or if a RouteSwitch product is not working correctly. It also explains how to access the IBM electronic sites to obtain the latest versions of microcode and release notes.

Electronic Support

This section explains how to access the IBM electronic site to obtain the latest version of microcode, drivers, and software by using the Internet World Wide Web, FTP, or the IBM BBS.

- WWW: **http://www.networking.ibm.com/** - This is the IBM Networking home page. From here, you can access product announcements, publications, and other information regarding hardware and software updates, and a technical support information database. The direct path to the support area is: **http://networking.ibm.com/nes/neshome.html/.**
- FTP: **lansupport.raleigh.ibm.com**\
- IBM Bulletin Board System: Using a modem you can access the IBM BBS to obtain the latest versions of software. Set your modem and communications software to 8 data bits, no parity, and 1 stop bit. Dial one of the following numbers:
    - United States: (919) 517-0001
    - Toronto: (905) 316-4255
    - Toronto: (416) 956-7877
    - Vancouver: (604) 664-6464
    - Montreal: (514) 938-3022

Voice Support

IBM Network Hardware support: **1-800-772-2227**. Follow the menu prompts for Network Hardware.

4. General Instructions and Notes

1. If you are upgrading from IBM Nways RouteSwitch Version 1.2 or later to 3.0.2 , you just need to download the 3.0.2 software and then reboot the IBM Nways RouteSwitch - see Chapter 3, of the *IBM Nways RouteSwitch User's Guide* for details on software downloading and configuration.

2. IBM Nways RouteSwitch Version 3.0.2 requires 16 MB SIMM and 4 MB Flash. (See Section 9)

3. To perform IBM Nways RouteSwitch and 8273 Series (version 3.0.2) installation with floppy diskette(s) which is required on a PC follow these instructions:

   Using a PC, insert the first floppy, CD to the directory where software installation is to occur and type X:install (X = the drive letter for installation). Instructions are provided for the remainder of the installation.

4. 8273-100 and 8273-10U, version 1.0 require 8 MB SIMM and 2 MB Flash. It is recommended that 8273-10E, version 2.1 be used when performing extended IP or IPX routing. 8273-10E has a 16MB SIMM and 4 MB Flash.

5. IBM Nways RouteSwitch Network Manager 3.0 is required for managing the new features contained in

IBM Nways RouteSwitch version 3.0.2 software. See IBM Nways RouteSwitch Network Manager 3.0 release notes for IBM Nways RouteSwitch Network Manager, IBM Nways RouteTracker Manager, and IBM Nways RouteMonitor applications for more detail.

6. The 86H0586, 86H0587, 85H7113, 85H8504, 85H7112, 85H8503, 86H2850 (MPM-management module) may be in slot 1 or 2.

7. A fully loaded (all slots occupied) unconfigured - or reconfigured - 8274-500 Series may require 2 minutes to load the first time. A fully loaded 8274-900 Series may require 5 minutes. Do not become alarmed during boot-time if you have logged in and start processing a command and find yourself locked out. The IBM Nways RouteSwitch is still initializing the virtual port database. During this time no configuration changes should be made

8. If a PC is directly connected to the IBM Nways RouteSwitch, the IBM Nways RouteSwitch Spanning Tree will reconfigure when installed or rebooted (this is generally not a problem). However if a network layer protocol is started at boot time (via the autoexec.bat) of the PC and is dependent upon a connection (such as an IPX connection), then the network layer process will not be able to start until the Spanning Tree process has completed. In the event that the IPX client is unable to attach to its server the following steps may be used to solve the problem:

   a) If only 1 client is attached, the port type can be changed to optimize device switching using the modvp command. **This configuration will turn off spanning tree.**
   b) If the system constraints allow, the spanning tree forwarding timer can be changed to a lower value. This should not be done without careful consideration for the network needs of spanning tree.
   c) If necessary either the NETX or VLM commands can be re-entered. In some versions of NETX the driver is loaded regardless of whether a connection is made. When this occurs the driver must be unloaded then restarted. NETX version 3.32 and VLM version 1.20 were used in the IBM testing and do not require an unload between commands.

9. A modification to the aging timer for transparent bridging will only take place on newly learned entries. Any entries learned on the previous timer will time-out on that value. Once they time-out, and the entry is re-learned, the correct aging timer will be used.

10. The mpm.cmd file cannot be altered by any DOS editing because unrecognizable characters are added to the file. However, an on-line editor can be used.

11. Speeds on the console/modem ports greater than 19,200 are not supported using the load command.

12. Only one Source Route Bridge Number can be assigned to a Group.

13. Hot swap of network interface modules is supported under the condition that the module is swapped with a like module. The command ‘Swap’ should be turned on before replacing any module. The MPM must be in the ready state prior to insertion. This can be determined by the color of the OK light on the MPM. The light should be blinking green. Any removal or insertion must be completed in a single removal and insertion operation. Partial removals or insertions can cause board and/or IBM Nways RouteSwitch failure.

14. Please see the Hardware Compatibility Matrix in section 15.0 to verify your IBM Nways RouteSwitch platform is compatible with IBM Nways RouteSwitch software version 3.0.2.

15. Concurrent Bridging and Trunking of Group 1 is not supported on FDDI interface. In order to Trunk Group 1 on FDDI interface do the following:

a. Create a new Group (crgp) and move the FDDI interface (ex. 2/1) to this new Group. This action moved the Bridge port of this interface to the new Group.

b. You can now create a service and Trunk Group 1 on this interface. Ex: cas 2/1, service is Trunk, Group is 1.

c. vi will display:

```
Group  Slot/Intf  Type/Inst/Srvc
  2      2/1      Brg/ 1/na
  1      2/1      Tnk/ 1/na
```

16. When changing the encapsulation type (e.g., 802.3 to Ethernet II), you must reset the physical port (either by pulling the physical cable out and pushing it back in or using the User Interface commands to disable and then enable port).

17. When downloading files using ftp , FAT filenames are changed to uppercase which makes files unreadable. The user must change filenames to lowercase. The following versions do not display this problem: WFWG of ftp version 32b, ChameleonNFS, and SUN's PCNFS.

18. Upon initial start-up (or after removal of mpm.cnf file) of a system with large numbers of physical ports, primarily the 9 slot chassis, the message: "File system compaction in progress....." may be seen. This is not a problem, unless it repeats indefinitely. This message may be seen from time to time if network management functions are occurring. One time is not a problem, immediate repetitions are a problem and if they occur contact IBM Technical support

19. Each group within the IBM Nways RouteSwitch or 8273 Series executes the IEEE 802.1d spanning tree algorithm. Spanning tree defines its bridge ID as the lowest MAC address of all the virtual ports attached to the given Group. If a virtual port is moved from "Group A" to "Group B", then a spanning tree reconfiguration may result. If 'Group A's" bridge ID is the MAC address of that virtual port, then its bridge ID must change. This will require a spanning tree reconfiguration. If the virtual port added to "Group B" has a MAC address lower than all other virtual ports attached to "Group B", a spanning tree reconfiguration must occur. If the user performs such port moves via a Telnet session, they will experience a temporary lockout (up to 30 seconds) in their session, if spanning tree reconfigures on the Group supporting their Telnet session.

20. Translations from source routing to transparent bridging are not supported (e.g. Token Ring source routing to Ethernet transparent).

21. A configuration file expansion is the operation of adding new configuration parameters to the current config file. In order to perform a configuration file expansion the following criteria must be met. There must be enough flash for the config file expansion. The required amount of free space on flash must be the configuration file size plus 8192 bytes for each configuration. As a general rule 75000 bytes of flash memory should always be available. When using 2 Mbytes of flash on the MPM the total amount of used flash may not exceed 1.45 Mbytes; and when using 4 Mbytes it may not exceed 3.45 Mbytes. The *ls* command will identify how much flash is available. To conserve flash memory remove any files that are not needed. For example, remove tsm.img if the IBM Nways RouteSwitch does not have any token ring modules.

22. The MIB II traps cold start, linkdown and link up are not supported in this release. Comparable functionality is available through IBM traps. (PR 1195)

23. After removing or deleting a configuration file, the 8273 Series or IBM Nways RouteSwitch must be rebooted.

24. When using IBM Nways RouteTracker Manager VLANs to segregate IPX servers, do not enable IPX routing at the Group level (the default VLAN contained in that group). In order to have the IBM Nways RouteSwitch or 8273 Series participate in IPX routing along with the server, IPX routing should be enabled on the IBM Nways RouteTracker Manager VLAN.

25. Use of the "break" key on a terminal/PC will change the baud rate of the serial port connected to the IBM Nways RouteSwitch. The baud rate will cycle to the next highest baud rate. When it gets to 38,400, it will cycle back to 1200 baud. The cycle is as follows: 9600 ⇒ 19200 ⇒ 38400 ⇒ 1200 ⇒ 9600.

26. When a port is in optimized device mode it will only transmit unicast traffic directed to that device and all broadcast and multicast traffic. It will not transmit any unknown unicast traffic. Therefore, as long as the MAC address is known, communication will exist. If the device is not heard from for 5 minutes, the MAC address will become unknown and communication will cease until the MAC station address is relearned. In most cases this will not be a problem because the device will transmit frames which will cause the MAC to be relearned. If there is a lapsed time, communication will not occur after the time-out and before relearning the MAC address. If client/server relationships exist on a fixed timer using optimized device ports the default time-out value should be altered such that the value is 1 minute greater than the server/client time-out. For example: If IPX server/clients are involved and the default watchdogs are 5 minutes apart, then the IBM Nways RouteSwitch time-out value should be 6 minutes. This will ensure that the IBM Nways RouteSwitch forwarding table will always have the end stations MAC address.

27. Do not attempt to run a UI command while the chassis state is changing. If this occurs a message will appear "please standby, chassis configuration changing.....". If, however, the "....." following the message do not discontinue after a maximum of 30 seconds, a module may be hung up. Type control-C to abort the message and attempt to determine the problem either by monitoring the module LEDs, or by using the slot command.

28. When a destination node is moved to a different location in IBM Nways RouteTracker Manager VLAN, the source does not learn the new location until the destination node sends a packet.

29. If a token ring port is configured as source routed only (SR), then transparent frames received from the network (i.e. those not source routed) will be discarded. If user desires transparent frames to be received, they must configure the token ring port as source route transparent (SRT).

30. Do not use different software versions for image files. All image files must be at the same version. Mixing image file versions (e.g. 2.0.3 mpm.img and 3.0.2 for all other image files such as esm.img, fsm.img, etc.) can cause config file corruption.

31. The flood limit that is applied by ESM code is approximate and can be ± 15%.

32. On a reboot from the UI command line, the system sends a warmStart Trap.

33. There is no limit on the number of times a 85H7088 port can detect a difference in ring speed and reset itself. This may be a problem when more than one port in a ring has ring speed auto detect capability and the ports are configured at different speeds. Under these circumstances, it is important to know what the ring speed should be and to configure it explicitly. The default speed is 16 Mbps. In the future, a limit will be placed on the number of times a 85H7088 port will detect ring speed and reset itself.

34. User Guide correction to Chapter 27. This section describes trap mask as two (2) word values with word 1 entered followed by word 0. Trap mask is now four (4) word values with the ordering consistent with the IBM trap mib (words 0-4).

35. If a group is declared to be a Default Group for Frame Relay Virtual Circuit creation, then it cannot be deleted, even if it is not currently being used. Rmgp will display the message "Cannot delete". Group has active entries." **Work-around**: "frm slot/port" to remove the group as a Default and then rmgp. (PR 4549).

36. Vrouter port doesn't support FDDI-raw frame - when vrouter ports are configured as Ethernet 802.3 and FDDI port as FDDI-raw, FDDI-raw packets received on the other side of router are not routed.

37. SNA traffic on Token Ring and IBM Nways RouteTracker Manager VLANs: If the user wants to configure IBM Nways RouteTracker Manager vlans for SNA traffic based on DSAP/SSAP protocol rules, it is recommended that the user also configures port rules for ports that connect the IBM Nways RouteSwitch to the server. The reason being that the servers normally will not generate traffic unless a client talks to it. But before the client initiates the SNA session, it sends out the "Duplicate MAC test" frames which carry the SNA dsap/ssap values. As a result, the client gets assigned to the SNA vlan and subsequent SNA traffic will not go out on the server port as that port is not still part of the SNA vlan.

38. In order to use Autoencaps feature user must create a dummy IBM Nways RouteTracker Manager vlan.

39. Removing and loading in a brand new mpm.cfg, configsync will not sync secondary MPM. The following commands must be performed:

    ii) On Primary, remove the mpm.cfg file.

    jj) Load in new mpm.cfg file via FTP onto the primary.

    kk) Perform 'configsync'. The messages "syncing. Config files are currently synchronized." Will be displayed.

    ll) Perform 'ls'. Note size of mpm.cfg

    mm) Perform 'sls'. Note size of mpm.cfg

40. Autoencapsulation will not work properly if IPX server is down when IPX client boots up.

41. This version of software supports ATM SVCs on up to 10 ASM ports. Up to 16 LANE LECs are also supported per port and a maximum of 64 LECs per IBM Nways RouteSwitch has been tested.

42. Multicast Routing is not supported over ATM CIP connections in Version 3.0 initial release. If this option is selected, the traffic will not be sent to these connections. Multicast routing is not supported over frame relay connections that have multiple virtual circuits. In order to use Multicast routing over a frame relay connection only one virtual circuit for the connection must be made.

43. Caution should be used when issuing the *mrrtab* command in the user interface. There is a known problem when there are large quantities of routes defined in the system (>3000 routes). Use the *mrrnum* command to display the number of known routes in the system. Use of the *mrrtab* with large quantities of routes may cause the switch to hang, or crash due to lack of memory.

44. The Flash file system has a limit of 32 files. When this limit is reached, which includes crash dumps and

other files, the config file will cease to expand properly and new files cannot be loaded. Local files will fail, even if ample room exists on the Flash.

45. For 8273-10U with 8273-85H7114 (full duplex): Source learning will not flush the MAC table for the port when the cable is moved. This occurs because the link never goes down on these full duplex ports. This will cause traffic to continue to go to the old port and not flood. The MAC will not move correctly to the new port. Wait until the source learning timer expires (normally 5 minutes) after removing the cable before reinstalling to the new port.

46. 'fls' provides a summary of the flood limits for all or a specified Group.

47. Usage: fls [group number]. If no Group number is specified, then the flood limits override for all Groups is displayed.

48. The path to the LANE well known address (wka = 47.00.79.00.00.00.00.00.00.00.00.00.A0.3E.00.00.01.00) needs to be statically configured on all Route-Cell's not directly connected to the MSS (or any LANE server). The Route-Cell's which have the directly connected server will learn the correct path via the ILMI address registration process.

    Additionally, addresses required for all ATM server connectivity must be statically configured. This includes any LES/BUS requirements. The "prpadd" and "pradd" are used to add these routes.

49. In order for ILMI to participate in the uni version registration, the mpm.CMD file must contain the command "ume_snmp_allowed=1". This command must be input before the "cmInit" command. Without this command the uni version in the connected device must be correctly configured for the version desired.

50. IBM Fiber RI/RO Support:

When connecting to the Ring-In or Ring-Out ports of an IBM token-ring concentrator (8230, 8260, etc.) using the 85H7089, the ports of the 85H7089 should be configured for IBM RO operation. In addition, if the ports are configured to support either source-routing or source-route transparent (SRT) operation, the TSM should be connected to Ring-In or Ring-out of the concentrator, but not to both.

51. Syslog has been modified so that a user may now select the filtering level for the individual tasks. Changes include new selections in the syslog menu that allow the individual task logging level to be changed (for debugging and critical event capture). The new syslog menu is:

    SYSLOG current configuration:

    1) Log host - UNDEFINED
    2) Log host IP -
    3) Syslog port (514) - 514
    4) Default facility code - local0
       41) Override internals - no
    5) Default priority mask - emerg
       51) Override internals - no
       52) Display internals - no
    6) Console logging - yes
    7) 7) Log Task ID - yes
       71) Use Task Name - no
    8) 8) Message tag - switch

Entries 41, 51, 52, and 71 are new. 41) will force all syslog messages to use the facility code specified in entry 4, regardless of what is hardcoded in the IBM Nways RouteSwitch S/W. 51) allows the user to modify the task log level, again overrides the hardcoded values. menu entry 51 is especially useful to users that what to use syslog for event notification (like SSCOP/ILMI up down, port enable/disable.....)

The atm Service Registry Table can be manipulated with a new command: masrt. This command allows the user to add LECS or ANS entries to the Registry, for subsequent querying via ILMI by atm end stations. Currently entries must be added/modified/deleted via this command. A single LECS entry can be chosen to be mapped to the WKA using this command, though the switch will not currently support the actual mapping. (this is added to support an IBM request for functionality similar to the 8260 - again it LECS WKA mapping is not fully supported yet, the hooks are in the UI only).

52. All IBM mibs need to be reloaded for the 3.0.2 version release.

53. 86H0607 does not work in slot 1.

54. When connecting an IBM Nways RouteSwitch CSM port (not an ASM port) to another manufacturer's ATM switch if the user wishes to use SVCs, the following configuration change(s) must be made:

    - If the link is an IISP link, the other manufacturer's port must be configured to be the USER side (as opposed to the NETWORK side).

    - If the link is a PNNI link, the IBM Nways RouteSwitch node identifier must be greater (higher in value) than the other manufacturer's. This can be done by configuring either switch.

55. The IBM Nways RouteSwitch performs the standard mapping of IP Multicast addresses (224.0.0.0 to 239.255.255.255) to MAC level multicast addresses (group addresses). Many token-ring network interfaces do not support receiving multicast (group) addresses. Token-ring devices typically send IP multicast traffic using the MAC level broadcast address (0xFFFFFFFFFFFF) or the MAC level functional address defined in RFC 1469. As a result when sending IP multicast traffic, the IBM Nways RouteSwitch will not interoperate over token-ring with devices that do not support sending and receiving traffic using MAC level multicast (group) addresses. Note: OSPF traffic is sent using IP multicast addresses on LANs. Routing for VLANs that include Token Ring segments should be limited to RIP.

56. In a topology where a loop exists do not configure static routes on each of the switches (in the loop) such that each switch points to another switch (in the same loop).

57. Problem with Fast Cache when running Virtual Routes configured for Snap. Set RouteCacheDisable=1 in the mpm.cmd file.

58. Secondary MPM will take over as primary MPM after a cold start. No problem if both MPM's are configured the same.

59. The 2210, 8210 and 6611 do not recognize OSPF Hello Packets from 8274 and therefore do not establish OSPF neighbors making them incompatable at this time.

5. 86H0588 Notes

1. Large Routed Frames over IBM Proprietary FDDI Trunking:

If a FDDI port is configured for IBM Proprietary FDDI Trunking, large routed frames received from that port, will not be correctly routed by the 86H0588. Data corruption will occur if the frame is larger than 1856 bytes, including the MAC header. Since Ethernet frames are smaller than 1856 bytes, they will not be affected by this limitation. Only large frames such as those generated by FDDI and Token Ring will be affected.

2. 86H0588 Must be in slot 1:

3. If an MPM has an 86H0588 installed, the MPM must be installed in slot 1. Slot 1 is optimized for high performance routing.

6. IBM Nways RouteTracker Manager Notes

1. In order to disable precedence for Network Address Rules over Port Rules and Protocol rules, User must add the following command to the mpm.cmd file.

   precedence = 0

7. IP Firewall

Establishing communications between the IBM switch and the Check Point Enterprise Management Station (EMC) requires the following steps to be taken (refer to the Check Point Firewall-1 product documentation):

1. The switch and EMC must be running and connected to the network. The switch must have a VLAN created and a port attached to the EMC's network. The switch should have the firewall function disabled initially.
2. The switch needs to be configured into the EMC network object database. The network object type must be "Switch". In addition when creating the switch network object you must do an SNMP fetch of the switch's network interfaces. Frequently you must hit the "SNMP Fetch" button twice in order to get the switch's interface list. The network object database must be installed on the EMC before attempting to establish communications with the switch (use the "Install Database" option under the Rule Base Editor window's Policy menu).
3. After the database is installed on the EMC you must establish a Skey seed for the switch. Refer to the appropriate Check Point documentation for details. Then run the "fwconfig" command on the switch. Enable the firewall, enter the IP address of the EMC and the same Skey seed that was entered on the EMC. The firewall should come up and communication with the EMC should be established.

When creating the switch network object, if you want to specify an "External Interface", use the Interface and number indicated under the Network Interfaces list. For example, the network interface name is "vn25" and the "Num." is 2, you must enter "vn252" on the "External Interface" line.

If new groups or VLANs are added or deleted on the switch after the switch network object is created, the switch network object MUST be updated to reflect these changes. This is accomplished by doing an "SNMP Fetch" on the switch object. Also, any filter that is loaded into the switch must be reloaded after a network object interface change. Failure to do this will result in new interfaces running in unprotected mode.

The following enhancements have been made to the "fwconfig" command which are not in the product documentation:

1. The name of the current filter loaded on the switch is now displayed when the view configuration option is selected.
2. The state of the connection to the EMC is now displayed when the view configuration option is selected.

For this release if the switch firewall is running and you disable the firewall using the "fwconfig" command and you then want to re-enable the firewall, you must reboot the switch or unpredictable results may occur.

When using the Check Point management GUI, certain options are present which are not supported by this release of the switch Firewall-1 implementation. These include:

In the "Rule Base Editor" window, under the "Properties¡¦" menu the following are not supported:

Under the Security Policy menu:

1. Apply Gateway Rules to Interface Direction is always "Eitherbound".
2. Enable Decryption on Accept.
3. Use FASTPATH is always enabled.

Under the Services menu:

1. Intel Phone is not supported.

Router Access Lists are not supported.

Authentication is not supported.

Security Servers are not supported.

SYNDefender is not supported.

Under the Miscellaneous menu:

1. Load Balancing is not supported.
2. SKIP Encryption is not supported.

When creating rules using the rule base editor the following are not supported:

Under the "Action" column of the rule:

1. Drop and Reject are equivalent and result in the packet being dropped.
2. Authenticate is not supported.
3. Encrypt is not supported.
4. Network Address Translation is not supported in this release.
5. The EMC does NOT run on Windows'95.

8. IBM Support for Functional Address (IBM Spanning Tree)

1. The user can enable on a per Group basis the IBM spanning tree algorithm. This capability is provided by one of the menu items under the 'stc [Group ID]' command. When the user selects IBM spanning tree, the IBM Nways RouteSwitch automatically sets the default values for maximum age, forward delay, and hello time (6, 4, and 2 seconds, respectively) as seen in the subsequent menu items. Unlike the IEEE spanning tree algorithm, in the IBM spanning tree algorithm these values are fixed. However, for consistency in menu displays, IBM chose to not only display these values as in the IEEE spanning tree case but, in addition, enable the user to change them. In fact, the user should not change these values.

2. The default spanning tree algorithm for each Group is IEEE. If the user wishes to change spanning tree parameters on a per Group basis through use of the 'stc [Group ID]' command, at least 1 virtual port needs to be attached to the Group. An error message is displayed to this effect if the user selects the 'stc [Group ID]' command and there are no virtual ports attached to the specified Group.

3. When the user selects IBM spanning tree, additional default settings are carried out as follows:

   a. all virtual ports attached to the Group in question whose physical port is either 4Mb or 16MB token ring are initialized to use Functional rather than Group addresses;

   b. all virtual ports attached to the Group in question whose physical port is neither 4Mb nor 16Mb are set to manual forwarding mode; and,
   c. as additional virtual ports are attached to the given Group, rules a) and b) are applied.

      Virtual ports that are in manual forwarding state means that they are not participating in any flavor of spanning tree (neither IEEE nor IBM). Since this state occurs automatically as a result of rule b), IBM decided to forward any IEEE spanning tree frame received on such a port to all other virtual ports in the Group that are in manual forwarding state. This is to prevent a loop in the topology as a result of applying rule b) mechanically.

4. For a Group configured for IBM spanning tree, the user can override the default settings at his or her discretion. However, as a general rule, overriding the manual forwarding state to enable IEEE spanning tree on that port only is not recommended. The user is now running a "hybrid" of IBM and IEEE spanning tree within the same Group. This may have some unintended consequences, and, although not forbidden, is not recommended.

5. It appears that IBM SRT bridges send on token ring an IEEE-style BPDU with an STE RIF (0xC200). We do not support this mode of operation. The IBM Nways RouteSwitch will neither process nor forward these frames.

6. IBM Spanning Tree uses the following 48-bit Functional Address (FA) given in canonical form to transmit BPDUs: hexadecimal 0300 0000 8000. IBM has discovered that IBM clients and servers are permitted to use this address to transmit data.

7. With the current architecture of the IBM Nways RouteSwitch / 8273 Series, we cannot support the same FA for data and Spanning Tree. The FA for IBM Spanning Tree is programmed into our MPM CAM; therefore, all data frames with this FA are claimed by the MPM! This prevents the data from passing through our switch. However, we provide the following workarounds:

- There exists an 'mpm.cmd' settable global variable 'faBpGrpDisable' such that when set to 1, Spanning

Tree will not program the FA into the MPM CAM. This works for those environments that are not running IBM Spanning Tree. The setting of the variable 'faBpGrpDisable' should be placed BEFORE the 'cmInit' command in file mpm.cmd.

- There exists an 'mpm.cmd' settable global variable 'faBpGrpOverride' which allows the user to set the lower 32-bits of the FA to some value other than hexadecimal 0000 8000 which is the lower 32 bits of the IBM Spanning Tree FA. The upper 16 bits are always hexadecimal 0300. This works for those environments whose applications use FA hexadecimal 0300 0000 8000, who need IBM Spanning Tree, and whose switches are all IBM or third-party bridges / switches whereby their IBM Spanning Tree FA is configurable. The setting of the variable 'faBpGrpOverride' should be placed BEFORE the 'cmInit' command in file mpm.cmd.

9. Memory Requirements

Version 3.0.2 requires 16 Mbytes of DRAM. 4 Mbytes of Flash memory are available and required for Version 3.0.2. Also remember configuration information is also stored in FLASH. See the following table for the flash memory required for each module.

Filename*	Image Size (Bytes)	Module Type
mpm.img	1843236	85H7113 or 86H0586 image
mpm.cmd	18	85H7113 or 86H0586 command file containing system commands for booting.
mpm.cfg	1k	85H7113 or 86H0586 configuration file fixes at 1K to allow the chassis bootstrap to initialize.
mpm.cnf, tmpmpm.cnf	32k minimum with a maximum of 512k. Also a temporary shadow file exists (tmpmpm.cnf) during expansion and it will be the same size as the mpm.cnf.	85H7113, or 86H0586 configuration file (size indicated is the default (or minimum) size. As configurations are added the size will increase.
asm.img	44004	85H7087, 85H7078, 85H7051 switching module loadable image
asms.img	39226	86H3009, 86H3013, 86H3017 and 86H3021 switching module loadable image
cell.img	634470	Route-Cell – Dynamically loadable image for the MPM to manage all types of CSMs. (86H7995)
diag.img	54901	Off-line Enhanced Diagnostics image for the MPM
dni.img	17868	Off-line Enhanced Diagnostics image for the NI
gated.img	479977	Advanced Routing – Dynamically loadable GateD image for OSPF, and RIP II
mrd.img	64317	Advanced Routing – Dynamically loadable image for Multicast Routing function
e12.img	32782	Image for the following switching modules : 85H7108, 85H7107, 85H7106
esm.img	32429	Image for the following switching modules : 85H7105
fesm.img	30265	Image for the following switching modules : 86H3029 with HSM motherboard
fesm2.img	30232	Image for the following switching modules : 86H3029 with HSM2 motherboard
fsm.img	37482	Image for the following switching modules : 85H7055, 85H7057, 85H7028
tsm.img	31759	Image for the following switching modules : 85H7090, 85H7089
wsm2.img	41839	Image for the following switching modules : 85H8728, 85H8729, 86H0597
wsmdcser.img	13294	Image for the following WSM modules to support Frame Relay: 85H8728, 85H8729, 86H0605, 86H0606, 86H0596, 86H0597
wsmdrv.img	122652	Dynamically loadable image for the MPM to support Frame Relay interfaces

Filename*	Image Size (Bytes)	Module Type
trbyr6.pga	11106	6 Ring Out ports for Bytex Interfaces (configuration selection F-RO-6PORT-BYTEX) for 85H7089 modules.
trbyrr.pga	11860	3 Ring In/Ring Out ports for Bytex Interfaces (configuration selection F-RI/RO BYTEX) for 85H7089 modules.
trlobe.pga	8534	6 IEEE 802.5j Lobe ports for endstation connections (configuration selection F-LOBE-802.5j) for 85H7089 module.
trstatn.pga	9242	6 IEEE 802.5j Station ports for connections to a MAU (configuration selection F-STATION-802.5j) for 85H7089 module.
trsyr6.pga	7669	6 Ring Out ports for Synoptics Interfaces (configuration selection F-RO-6PORT-SYNOPTICS) for 85H7089 module.
trsyrr.pga	8919	3 Ring In/Ring Out ports for Synoptics Interfaces (configuration selection F-RI/RO SYNOPTICS) for 85H7089 module.
trxyln3.pga	8919	3 Ring In/Ring Out ports for IBM compatible devices e.g. Synoptics RI/RO devices (configuration selection F-RIRO-IBM) attached to the 85H7089 module.
trxyln6.pga	7669	6 fiber dedicated switch ports for IBM compatible devices e.g. IBM and Synoptics (configuration selection F-6PORT-IBM) attached to the 85H7089 module.

Note: Release 3.0 and higher require 4 Mbytes of FLASH for the IBM Nways 8274 RouteSwitch and 8273 Series.

Due to the increasing number of images files and varying sizes of the image files, the user has an enormous amount of flexibility in configuring an IBM Nways 8274 RouteSwitch or 8273 Series. The table above shows the images with a brief description of what each image is used for. All images will fit into 4 Mbytes of FLASH, however the FLASH is also used to store configuration information so in most cases not all images are used and additional space will be required for configuration information. Therefore it is highly recommended that users remove all images not required for operation on a given switch (make sure you back them up on another device e.g. PC or Unix endstation). Once they are backed up remove (*rm* command) any Network Interface Module files that are not used to conserve flash memory usage. For example, if the token ring module (TSM) is not installed in the IBM Nways RouteSwitch the tsm.img file and all .pga files may be removed.

Very important : The chassis requires a minimum amount of space available in FLASH for booting. All the resident images in FLASH can not exceed 3.520 Mbytes when booting the IBM Nways RouteSwitch or 8273 Series with the default configuration. If your images exceed this amount you MUST delete some images from FLASH. Also if you are running with any configuration other than the default, you will need additional available FLASH.

10. MPM Upgrade

Release 3.0 and greater requires 16 Mbytes of DRAM memory, therefore there is a memory upgrade available

for the MPM, the Model no. Is 85H7110. This upgrade kit expands the Management Processor Module DRAM memory to 16 Mbytes. The upgrade includes one 16 Mbyte simm and installation instructions. Another upgrade kit Model no. 85H7109 only contains the Flash memory increase to 4 Mbytes. **For MPM upgrades IBM memory is required.**

11. HSM2 Modules

The HSM is the base switching intelligence for all IBM switching modules except for the 10BaseT switching modules. The HSM2 is an enhanced version of the original HSM, which provides improved performance, specifically for two-way traffic.

HSM2 support requires software release 2.0.5. or later. If any modules in the chassis are equipped with HSM2's, software release 2.0.5 or later must be loaded in the chassis' MPM. Additionally, user's transitioning from 1.x software also requires additional memory. The HSM2 requires images ending in the letter 2, (i.e. asm.2.img, fsm.2.img).

In software release 3.0 all network interface images, except for FESM2 and WSM2 are compatible with HSM and HSM2.

12. IP Address Formats

Release 3.0 will provide the user a more concise syntax to specify the dotted decimal format of a 32-bit IP address. The new syntax conforms to the traditional Internet interpretation. The rules are as follows:

i) a.b.c.d (a, b, c and d treated as 8 bits)
2) a.b.c (a and b treated as 8 bits; c treated as 16-bits)
3) a.b (a treated as 8 bits; b treated as 24 bits)
4) a (a treated as 32 bits)
5) a. (equivalent to a.0.0.0)
6) a.b. (equivalent to a.b.0.0)
7) a.b.c. (equivalent to a.b.c.0)

One can see the more concise syntax in the following 2 examples. The IP address 3.0.0.1 can now alternatively be expressed as 3.1 or 3..1 or 3...1; the IP subnet mask 255.255.0.0 can now alternatively be expressed as 255.255. or 255.255..

The following lists some of the commands where the user can employ this more concise syntax: ftp, telnet, crgp, modvl, ping, snmpc, and xlat.

13. ATM LANE

13.1. 802.3 LEC

All translations performed on outbound 802.3 LECs services are the same translations that are performed on outbound physical Ethernet ports. Under the UI commands “mas”, and ”cas”, there is a field called use_translations. This field controls whether outbound 802.3 LEC services should enable or disable translations when transmitting frames originating from a physical Ethernet segment. It should also be noted that when the field use_translation is set to 0, all translations from dissimilar medias are still performed, and only translations on data frames from physical Ethernet media to 802.3 LECs will be disabled. This option is provided to provide increased performance when moving data between physical Ethernet media and 802.3 LANE.

13.2. 802.5 LEC

All translations performed on outbound 802.5 LECs services are the same translations that are performed on outbound physical Token Ring ports. Under the UI commands “mas”, and ”cas”, there is a field called use_translations. This field should control whether outbound 802.5 LEC services should enable or disable translations when transmitting frames originating from a physical Token Ring segment. However, this option is not applicable to 802.5 LEC services. Please disregard this field.

13.3. ATM 802.3 LEC to Ethernet segment translations

When translating data frames received from an ATM 802.3 LEC service to be output on an Ethernet segment, the user has the option to enable or disable translations. There is a parameter called atm_ethernet_xlat under the UI “cas” and “mas” command which defaults to a 1, meaning translations are enabled. For details on actual protocol translations and meaning of various translation options please refer to the IBM Nways RouteSwitch User Manual.

14. IBM Nways RouteSwitch Version 2.1 Problem Resolution

The IBM Nways RouteSwitch Versions 2.1.1 and 2.1.2 known problems have been fixed in this release.

- ATM trunking of source route packet puts RI twice into packet. This problem occurs when the user disables the bridge port and then creates a trunk service. (PR 2617)
- IPX eth2 clients lose connection when vrouter port is set to ethsnap. (PR 3980)
- Resetting the board at the map command does not reset the board. (PR 4270)
- Status of *syncctl* is not available. (PR 2615)
- Sending ATM 1483 as a vIPRouterFramingType disables CIP IP Router. (PR 2765)
- SNMP Port Mirroring table shows all the module types, not just the Ethernet. (PR 3977)
- *atmxProtocolType* command has invalid value for ASM-E3. (PR 4021)
- Renegotiation fails when disabling compression, while compression is running. (PR 4162)
- Inverse ARP response is lost with compression enabled. (PR 4163)
- When a system runs out of MAC addresses, a duplicate Vport is assigned for the same services. (PR 4242)
- Spanning Tree will send a topology change trap to NMS on a port that goes down and up even if there is no Spanning Tree bridge connected to that port. (PR 4309)
- TSM port will reset constantly if an IBM STP cable is connected, without connecting the cable to the

MAU on the other end. (PR 4310).

- Port ring speed was set to 4 Mbps. SmartBits was set to 16 Mbps. When port speed was changed to 16 using tpvcfg, it never came up. (PR 4943).

The IBM Nways RouteSwitch Versions 2.1.3 known problems have been fixed in this release.

- 4498 Flooding may cause the 8273 Series with 100BaseT to reboot. (PR 4498)
- 5299 If the beacon state on the ring last longer than 10 seconds, the TSM port will be reset. (PR 5299).
- 5309 Static MAC table does not accept duplicate MAC input. (PR 5309)
- 5310 Unnecessary duplicate MAC traps may be sent when port goes through Spanning Tree changes. (PR 5310, 5292)
- 5318 Topology change increases rapidly for bridges over 4 hops away when the Max Age is set to below 8 seconds. (PR 5318)
- 5344 TI chipset may hang when too many errors are introduced in the ring on the HSM2 board. (PR 5344).
- 5369 8273 Series is unable to create NI dump files. (PR 5369)
- 5376 SNMP query for forward table does not return all entries. (PR 5376)
- 5382 Full duplex Ethernet AUI performance issues. (PR 5382, 5296)
- 5445 The Spanning Tree state of the primary link may recycle when reconnected to secondary link. (PR 5445)
- 5502 Implemented DHCP relay over the router interface. (PR 5502)
- 5584 FSM incorrectly strips 64 byte packet padding from Ethernet LLC frames (PR 5584)
- 5692 The command 'fwtvl' does not display IBM Nways RouteTracker Manager MAC entries correctly. (PR 5692, 5376)
- 6099 When using HP OpenView to set value User cannot set VPortManualMode. (PR 6099)

The IBM Nways RouteSwitch Versions 2.1.3.D known problems have been fixed in this release.

- When using the *macinfo* command, do not use the space bar to scroll down. Using the space bar will terminate the command. (PR 2116)
- ATM LEC default frame type does not accept a set command from SNMP. (PR 3266)
- Switch does not operate with IBM 8229 source route transparent bridge. (PR 3986)
- IP Ethsnap client encapsulation are set to eth2/snap when autoencaps is on. (PR 4191)
- IBM BPDUs sent with bogus port type. (PR 4271)
- Repeated RIP and SAP table update requests may cause all memory to be consumed by the switch. (PR 4610)
- Disconnecting and reconnecting LECS on Cisco7000 causes some Elans never to rejoin. (PR 4741)
- Enabling multicast claiming causes a break in AppleTalk over FDDI trunking. (PR 4938)
- LEC's require excessive time (5 minutes) to reconnect when the LANE server is disconnected/reconnected. (PR 4975)
- When displaying the VAS command bogus VC's are reported which are not associated to the LANE network (PR 5221)
- 100BaseT occasionally locks up and stops receiving packets. (PR 5349)
- When frames with an unknown source address are received through the LANE bus at a high rate, MPM utilization is high. (PR 5599)

- Configurations containing redundant bridges with the switch may cause the SNA client to occasionally lose their connection to the host. Unable to ping a switch if source route ring number is higher than 1000 decimal. (PR 5701)
- The IEEE 802.1D Spanning Tree Bridge Protocol Data Unit (BPDU) is sent out every 2.5 seconds. (PR 5721)
- A Ping to the MPM fails if the source route bridge ring ID is greater than 1024. (PR 5730)
- All multicast traffic received from LANE BUS will be claimed by MPM when Multicast Claiming is turned on. (PR 5820)
- IP and IPX source routing do not operate over FDDI trunking. (PR 5830)
- Duplicate IP packets occur when framing type is Token Ring source routed. (PR 5862)
- ILMI inconsistent in setup when using IBM 8260 ATM switches. (PR 5865)
- When devices associated with IBM Nways RouteTracker Manager port based rules are physically moved to another VLAN they maintain their original VLAN association. (PR 5883)
- IP ping fails on Token Ring if routing (modvl) frame is set to type Ether 2. (PR 5906)
- IBM spanning tree should not fast age SR MAC during topology change. (PR 5910)
- FR sent inverse arp messages every RIP cycle. (PR 5935)
- Large sap table causes routing delays. (PR 5938)
- Inaccurate RMON statistics. (PR 5968)
- With duplicate MACs, the port VLAN membership is not updated to indicate the VLAN membership of the second instance of the duplicate MAC. (PR 5986)
- When many ATM SVC services are enabled simultaneously, QSAAL may momentarily go down (PR 6042)
- When using HP OpenView to set value User cannot set VPortManualMode. (PR 6099)
- Cisco LES/BUS will forward the LE-ARP request back to the LEC which requested the LE_ARP on Control Distribute VC. This may cause an echo effect and a Data Direct is created to the originator. (PR 6149)
- Port rule VLAN membership is lost when a MAC ages out on another port. (PR 6161)
- 85H7108 may fail if ports 2, 3 or 4 are moved to another group and a large frame is received from the VBUS that requires fragmentation. (PR 6181)
- High MPM utilization caused by incorrect learning of TB frame on SR port. (PR 6266)
- SR hop count is one lower than actual. (PR 6269)
- Lane control time-out default change from 2 min to 20 seconds. (PR 6299)
- After Map IBM Nways RouteSwitch is not always able to address register with some ATM switches. (PR 6321)
- Following a map command LEC may remain in a wait state and require a mas command to manually reset the LEC. (PR 6334)
- ESM modules may crash under certain traffic patterns. (PR 6376)
- Frame relay port does not get initialized when hot swapped. (PR 3876)
- Port translation defaults to the factory set up. Default should be to the fddidef set up. (PR 3952)
- If 50 or more VCs are configured, all VCs become active and inactive constantly. (PR 4275)
- CIP group can be disabled even though CIP services exists. (PR 4452)
- The 'tsc' command shows Token Ring cards that used to be in the chassis but were replaced by other types of cards. (PR 4565)
- Macinfo- multiple VLAN in trunk, only one has vci number, the rest are zero. (PR 4684)
- The auto ring speed detection will switch between 4 and 16 Mbps four times maximum. After this maximum limit is reached, the port will not switch anymore but there is no indication that this limit has been reached. (PR 4732)
- MAC addresses are shown in the macinfo table, but not in the fwt table. (PR 4755)
- If many routes or servers are present and a system asks for all routes or servers at a high rate, IPX will consume all available memory. For 2000 servers, the maximum rate of requests is 1 request per ¨ö second. For 2000 routes the rate is 10 per second. The problem is the IPX router specification demands

that if the time between requests is less than the time it takes to send all of the RIP or SAP updates then the switch will buffer the responses with no limit. (PR 4759)

- After reboot, default routing service is not created when there is trunking services entry on the same Slot/Port. This problem occurs when user first configure default ROUTING service on a given port level, then configure the trunking services. After configure trunking services, user REMOVE the default ROUTING service on the same port. Reboot the switch, re-enter the default ROUTING service on the same port then reboot the switch one more time and at this time the problem occurs where the default routing service is not assigned. (PR 4803)
- Changed a VLAN from CIP to no CIP. System still believes that VLAN is CIP. (PR 4837)
- Inverse arp debug msgs. are displayed. (PR 4870)
- A 85H7088 port is configured as a lobe and set at 4 Mbps. A station running at 16 Mbps is connected to the port and the port comes up. Tpvc command shows it is open and speed is 4 Mbps and the rest of the ports configured on the same module to Auto. If user pulls one of the cables connected to port configured as auto, the port goes down, as well as the port configured for 4 Mbps also goes down. (PR 4925)
- New primary may give invalid block message when it takes over. (PR 4989)
- Removing Frame Relay service removes vport from existing VLAN rules. (PR 4920)
- When the secondary MPM is becoming primary the following message may be received:
- BootP translation from Token Ring to Any is not supported. (PR 5060)
- Incorrect translations of vines redirects. (PR 5107)
- Pings between switches may traverse the multicast virtual circuit (BUS) and new data direct virtual circuit's may not be established. (PR 5294)
- Trunk services cannot be removed once the FDDI board is removed. (PR 539)
- Prompt is offset after VLAN display. (PR 553)
- With redundant LES and heavy MPM traffic the switchover to the backup LES may not function. (PR 5568)
- With redundant LES/BUS and heavy MPM traffic may be forwarded to a blocked port and may not recover. (PR 5667)
- When MPM utilization approaches 100% ATM may lose SSCOP and may not recover. (PR 5734, 5822)

  Chassis mgr discovered Takeover (0x48bd9ca0) has a problem!
  cmInit: Taking over as Master
  IBM Nways RouteSwitch preparing for reboot.....rebooting. (PR 4990)
- ILMI stack does not support UNI version auto-detection from the ATM switch. IBM Nways RouteSwitch returns NO_SUCH_NAME to the *get* request for the UNI version in ILMI and most ATM switches will then default to UNI 3.0. As a side effect, if UNI 3.1 is used on the IBM Nways RouteSwitch while the ATM switch defaults to UNI 3.0. Upper layer applications such as LANE will not be able to complete SVC setups due to UNI version mismatch. If this is not corrected LANE will keep on trying to join the ELAN and fail. This will cause memory to be used up and does not subsequently clear memory. Over time if the system is running in this mode all the memory of the IBM Nways RouteSwitch may be used up. (PR 4471)

The IBM Nways RouteSwitch Versions 3.0.1 known problems have been fixed in this release.

- When a new module is added into an empty slot, default encapsulations are not applied automatically, even after rebooting the IBM Nways RouteSwitch. (PR 3034)
- ATM may fail when the MPM is at 90% utilization and the network interface CAM is full. (PR 4104)
- ATM UI display trunk numbers out of sequence. vi, cas, mas, and vas affected. (PR 4430)
- Command *takeover* does not always respond. It may take awhile before the original primary performs a reboot. (PR 4988)
- Duplicate MAC's do not age out correctly. (PR 5338)

- Multiple IP responses received from MPM when source routing is enabled. (PR 5698)
- Deleting a VP while passing traffic stops traffic in forward direction only. (PR 6182)
- 'vas' does not display VCI connection numbers with ROUTE-LANEL. (PR 6247)
- Changes to source routing entries in vSr table are not set in SNMP. (PR 6308)
- For RFC 1483 the wrong pid/pdu for the bpdu's are used (uses 0x07 and should use 0x0e). (PR 6328)
- Hot swap of LANE on the last ASM slot does not work. (PR 6330)
- User can change the 86H0607 port 2 to SVC and start creating services (e.g. lane), and it is not allowed, as is indicated with the following message: pmProtCreate(): invalid pPort=114 Creating service failed. (PR 6388)
- Bridge aging timer changes to 0 on reboot if it was modified before rebooting system. (PR 6395)
- PVC service becomes disabled on reboot or cable break on SVC config port. (PR 6410)
- VAP learned non-canonical link addresses displayed non-canonical in macinfo and fwt that should always be in canonical. (PR 6421)
- ASM accepts a vpi 0 instead of rejecting it. (PR 6449)
- OSPF over multiple ATM connections can cause infinite adjacency loop. (PR 6455)
- Restart of ATM services does not activate OSPF. (PR 6456)
- Routing to or from Token Ring media with default router encapsulation other than Token Ring does not operate. (PR 6494)
- A problem occurs when using the configsync command on the primary MPM and the secondary MPM has 32 files, and a true synchronization of configuration information is required. (PR 6497)
- vcrs command may cause the tUi_more mask crash and the system to reboot automatically. (PR 6501)
- After a soft reboot, the ILMI and SSCOP may not come up on some ports. (PR 6503)
- Entries are not returned on SNMP gets for SVC tables. (PR 6510)
- SNMP configuration for PNNI static routes are not implemented in Version 3.0. (PR 6511)
- When using redundant MPMs, the secondary MPM must have at least one file in FLASH. If not, any attempt to access the secondary MPM from the Primary MPM will result in a Secondary MPM not fully initialized message. There is no workaround to this problem if the only access to the device is through the Primary. (PR 6535)
- CSM-155-8S Single mode Cell Switching Module Slot command shows as "M" and it should be "S". VAP command should be "Single" and shows as "Multi." (PR 6587)
- IISP routing domain loop causes the signalling task to crash. When two Route-Cell switches are connected via IISP, the same ATM prefixes are configured on two parallel links between the switches on both sides. When an end system searches for an ATM address that does not exist but matches the prefixes configured on the IISP links, a routing loop is created which causes the signalling task to crash eventually. The user has created a static route loop. Call control is not aware that the remote issuing the request is looping. It only knows that it needs to call PNNI to route the request and PNNI is directing back to the originator. (PR 7041)

15. Known Problems

The problems listed here include problems known at the time of the product's release. Any problems not discussed in this section should be brought to the attention of the IBM Technical Support organization as soon as possible. They may be contacted at **1-800-772-2227.** See Technical Support and Service on page 4 for more information.

15.1. User Interface and Known General Problems

Problem Report 284
When using the *fportc* command, a user can enter more than one assignment statement. If the user opts to use more than one assignment then there will be one prompt per assignment.

Work-around: NONE.

Problem Report 1607
fsck in bootstrap always runs at 9600 baud. Running at a baud rate other than 9600, removing a file, and power cycling during the compaction will cause permanent failure.

Work-around: NONE

Problem Report 1965
Statistics are not broken down for each group on an FDDI trunk port.

Work-around: NONE

Problem Report 2383
No ATM service or instance can be specified for Static MAC input.

Work-around: NONE

Problem Report 2600
Cannot change FDDI connection rejection policy via user interface.

Work-around: Use IBM Nways RouteSwitch Network Manager

Problem Report 4464
When the UNI version is changed and the option to reset the board is chosen, the change does not become effective. User must reboot the switch to make a change in UNI take effect.

Work-around: Reboot the switch when UNI version or vci/vpi bits are changed.

15.2. Known Router Problems

Problem Report 549/551 [previously PR 699]
Configuration of a Group without assigning any ports to the Group will result in the routing tables displaying the Group's IP network as being available.

Work-around: If the IP network appears in the routing table and is causing a problem with IP routing, the user can reboot the switch. When a reboot is performed, the correct configuration will be displayed in the routing tables.

Problem Report 3982
Token Ring IP Client looses connection when ip vrouter port is set to ethsnap(8)

Work-around: Do not use Ethernet snap encaps for ip vrouter port.

Problem Report 4122
ips stats are incorrect.

Work-around: NONE

Problem Report 6259
IPXPING does not operate correctly.
Work-around: NONE

Problem Report 6609
Networking IP routing table displays incorrect Group number.
Work-Around: Interpret the “Group No.” as the “Interface No.”

Problem Report 6613
Xlat command ipfind displays vogus MAC address for Frame Relay interface.
Work-Around: NONE

Problem Report 6669
atTable returns one extra byte which is erroneous.
Work-Around: NONE

Problem Report 6943
Clients unable to connect to FDDI (llc & snap) IPX servers with SR TR (llc & snap) router port encapsulation.
Work-Around: Do not set router port encapsulation to either SR_TR_LLC or SR_TR_SNAP if source routing is not configured on the bridge ports.

Problem Report 6947
IPX clients were unable to connect to any IPX server when the router port encapsulation was set to SR_FDDI_LLC or SR_FDDI_SNAP
Work-Around: NONE

Problem Report 6975
Deleting an active xlat entry causes errno 0X2 to be output.
Work-Around: NONE

Problem Report 7063
IPXPING does not work over FDDI trunking with TR_SNAP & TR_LLC router port encapsulation.
Work-Around: NONE

15.3. Known Bridging Problems

Problem Report 1969
Misleading statistics for source routing token ring. Duplicate LAN ID’s and duplicate segments are identified.
Work-around: NONE

Problem Report 3157
Macinfo may report more number of MACs than actual.
Work-around: NONE

Problem Report 5854
Forwarding table does not get flushed properly when spanning tree is recalculated.
Work-around: NONE

15.4. Known Ethernet Problems

Problem Report 5042
SNMP shows 100BaseT ports as regular Ethernet.
Work-around: NONE

15.5. Known ATM / LANE Problems

Problem Report 2332
When configuring an IPX router port for source routing, the IPX ping across a trunk port will not work.
Work-around: Disable source routing on router port

Problem Report 4335
No mib support for atmAddArpEntry for CIP services.
Work-around: NONE

Problem Report 4579
If one value on a DS3/E3 configuration set is invalid, no other values are set
Work-around: NONE

Problem Report 4665
vseOpen: cammpmInsertMac fail on Loopback Config change.
Work-around: NONE

Problem Report 4730
Peak cell rates do not get initialized on an ATM-DS3 module if ATM-OC3 module was previously in the same slot.
Work-around: NONE

Problem Report 6865
Once the ASM port is reset via the map command, Qsaal may take up to 30 seconds to come up.
Work-Around: NONE

Problem Report 6872
The vap command displays extra string if transmission type is E3 or media type is UTP.
Work-Around: NONE

Problem Report 6893
Specific routed frame does not get to FDDI trunks or ATM trunks when coming from TR LANE side.
Work-Around: Put an extra hop between Token Ring ELAN and the trunk.

Problem Report 6902
SNMP agent returns NO_SUCH_NAME error when any dsx3ConfigTable objects were set.
Work-Around: NONE

Problem Report 7034
When a user defined LECs address is specified using the LANE configuration parameters, after a period of time the Well Known Address (WKA) may be respecified and not used until the switch is rebooted.

Work-Around: 1. Reboot the switch or
2. Delete the service and create a new service.

Problem Report 7138
When LANE is in intermediate state and administratively is disabled, VCs are still displayed.
Work-Around: NONE

Problem Report 7185
Services may get corrupted on invalid SNMP modify attempts.
Work-Around: NONE

Problem Report 7364
When a LANE 802.5 source route service is created with the type = SR and a mas is created on the same service the type is reset to SRT.
Work-Around: Reset the type to SR using the src command.

15.6. Known SNMP Problems

Problem Report 4068
Setting FR Phys Ports Adm Status = Disabled has no effect on VPs.
Work-around: NONE

15.7. Known Token Ring Problems

Problem Report 4292
SNMP not supported for 85H7088 port modes and ring speed auto-detect.
Work-around: NONE

Problem Report 4944
Hot swapping of the dual mode token ring card will cause "Changed ring speed detection" messages to be displayed.
Work-around: NONE

Problem Report 6489
Token Ring modules with 2K CAM come up as 1K.
Work-around: Use ‘camcfg’ command and set it to 2048.

Problem Report 6261
Packet discards due to insufficient buffer are not properly displayed in vs.
Work-Around: Use vlrs/vlts command from the atm submenu.

15.8. Known IBM Nways RouteTracker Manager Problems

Problem Report 5660
When creating IBM Nways RouteTracker Manager VLANs from the Network Management System VLANs and rules cannot be created with the admin status set to disabled.

Work-around: The admin status must be in an enabled state to create VLANs and rules. Once the VLANs and rules are created, the admin state can be set to disabled, if desired.

15.9. Known MPM Redundancy Problems

Problem Report 6521
There is a problem that occurs when Version 3.0 is used in the primary MPM and secondary MPM is running a pre-3.0.2 version of software, and the user wants to transition the secondary MPM over to Version 3.0. When this overlay occurs some image or images may be corrupted. Version 3.0.1 compacts the configuration when it boots. If reset in the middle of compacting the boot files may be lost.

Work-around: Do not use version 3.0.1 in secondary MPM, use version 3.0.2 on secondary MPM. Version 3.0.2 is preferred in both the primary and secondary MPM.

Problem Report 7013
Primary MPM issued 'Secondary MPM.cmd has different contents: Bring down Secondary?' message after doing MPMreplace for mpm.cmd file. It was verified that the mpm.cmd files were the same on the primary and secondary MPMs.

Work-Around: Ensure the mpm.cmd files are identical and only reply "y" to the query and reboot will continue as requested.

15.10. Known PNNI Problems

Problem Report 6243
An unconfigured static route with a prefix length of 0 may cause PNNI to generate an exception.

Work-around: A static route of length 0 bits is equivalent to 2 static routes of length 1 bit each, where one route has a leading 0 and another route has a leading 1 bit. Instead of configuring a 0 length prefix, construct to 1 bit prefixes which point to addresses 00 and 80.

Problem Report 6355
Admin weights are not considered on PNNI IISP static route decisions. Routes are selected based on the order the user configures them.

Work-around: NONE

Problem Report 6596
Entries occasionally show up in the route address table under the proutea command multiple times.

Work-Around: None required. When encountered, PNNI will still forward correctly to the node advertising the reachability.

Problem Report 6840
PNNI SNMP MIB loses knowledge of existing static route. Adding a new route property to an interface with

an existing route property (where there are no metrics and the new property has metrics) results in PNNI not generating a new IREACH ptse. The old one disappears and consequently, SNMP loses all knowledge of existing static routes.

Work-Around: Use UI command: prpadd and pradd instead.

Problem Report 6863
Static Route entries created by SNMP are not fedback to the PNNI layer manager even though PTSEs are received by remote systems showing this route.

Work-Around: None required. When encountered, PNNI still forwards correctly to the node advertising the reachability

Problem Report 7021
PNNI local hlinks are being indicated with lifetime 0.
Route-Cell (A) + two neighbors (B and C) with links to everyone, 2 links between A and B.
Local node A is indicating it's own HLINK PTSEs to PNNI-mgr, thus causing the map table to be misleading and the hlink is ignored.

Work-Around: NONE, this problem does not cause incorrect routing, only a misperception of the appearance of the PNNI's map table.

Problem Report 7022
When PNNI is shutdown, an occasional PnMsgRet error message is generated.

Work-Around: NONE

Problem Report 7205
During period of extremely high call activity, PNNI links may go into states Exchanging or Negotiating. This causes the links to become unstable causing PNNI routing to cease over those links.

Work-around: 1. Augment the topology by adding more redundant paths for PNNI to distribute the network load. This cannot be accomplished by adding more switches between source and destination. 2. Control the traffic by either multi-homing destinations or limiting bandwidth in end-system session layers.

Problem Report 7206
PNNI does not flush the port from its port table after changed to uni.

Work-around: NONE

15.11. Known ROUTE-LANE Problems

Problem Report 5891
Cannot move a station from one switch to another.

Work-around: Wait until the MAC address has aged out before attaching station to the second IBM Nways RouteSwitch.

15.12. Known Advanced Routing Problems

Problem Report 5611
Using mask with exact or refines as parameters in route filter do not work together. When the gated.conf file contains:
import proto rip interface xxxx {192.206.184.0 mask 255.255.255.192 exact;};
It should match only the network and not the subnet or hosts of the network. But the network address is not accepted. Replacing exact with refines should match all subnets and hosts but only matches hosts. None of the subnet addresses are accepted. This is explained in section 4.25.2 of gated conf. Guide. The route filters do not work correctly. A class C address with the mask of 255.255.255.240 only accepts subnet 0 and its hosts. It does not accept subnets 16, 32, etc.

Work-around: NONE

Problem Report 6060
OSPF does not pass on route tag if it is an external LS advertisement

Work-around: NONE

Problem Report 6248
OSPF Routes are displayed as RIP protocol routes by IBM Nways RouteSwitch Network Manager.

Work-around: NONE

Problem Report 6279
Invalid network parameter within the network statement of the Gated.conf may crash the switch.

Work-around: NONE

Problem Report 6534
Routes with wrong next hop over Frame Relay.
T86H0588e switches within the same network, running GateD routing environment, connected via Frame Relay. When the t86H0588e switches are connected without a loop via Frame Relay, the top switch(A) advertises the route from its neighbor(B) to the other neighbor(C) with the next hop being switch B. Since there is no physical connection between switch B and C, the advertised network becomes unreachable.

Work-Around: NONE

Problem Report 6793
No virtual link information within the UI.
If virtual links are configured, the user has no way of finding out information about the status, etc.

Work-Around: NONE

Problem Report 6900
RIPflush does not clear the RIP routes in GateD.

Work-Around: NONE

15.13. Known Route-Cell/86H0607 Problems

Problem Report 5640
Hot swap on 86H0607 or CSM boards does not function properly.

Work-around: NONE

Problem Report 6086/5952
The UI does not show the correct traffic descriptors for SVC calls. It shows UBR for all connectors (cosmetic

only, it is correct internally).

Work-around: NONE

Problem Report 6167

The Route-Cell does not perform a query for vpi/vci bits to a connected device.

Work-around: Manually configure vpi/vci bits with 'map' command only when there are no connections on that port, then reboot.

Problem Report 6721

Switch needs to be rebooted after changing the UNI version on CSM port(s).

Work-Around: NONE

Problem Report 6844

When a connection is created and multicast child, or when reverse connections are created, transmit bandwidth is not decremented.

Work-Around: NONE

Problem Report 6901

When selecting the max vci of 255, the vci is not included and system creates a vpc.

Work-Around: Do not select maximum vci of 255.

Problem Report 6936/6471

Enable/disable ILMI on Route-Cell ports does not take effect until the switch is rebooted. Changing the 86H0607/sar&iop side ILMI to false does not show up in vap/csm command.

Work-Around: Reboot the switch.

Problem Report 6968/6091

Under ptomp connections, if a party is removed, the reverse connection is not removed automatically. The user needs to remove the reverse connection in a 2 step process.

Work-Around:
Step 1. Modify the reverse connection so that it points to itself.
Step 2. Delete the reverse connection.

Problem Report 7002

A deleted service on 86H0607 shows up on vvc command as if it still exists in the system.

Work-Around: NONE

Problem Report 7126
ILMI and signalling do not go out CSM port when 86H0607 is in slot 1.
Work-Around: Install 86H0607 in any other slot.

Problem Report 7203
Switch may not reboot properly after primary 86H0586 is removed from slot 2.
Work-Around: NONE

Problem Report 7373
When the ATM cable is disconnected from Route-Cell, SSCOP may not come up after the connection.
Work-Around: NONE

Problem Report 7374
In a large LANE network (greater than 100 LECs) when LANE server is rebooted or disconnected, all LECs do not join.
Work-Around: Reboot Route-Cell switch.

15.14. Known 86H0588 Problems

Problem Report 6121
86H0588 is unable to route IP FDDI data through FDDI trunking.
Work-around: NONE

15.15. Known Port Monitoring Problems

Problem Report 5090
Change mirroring ports group disables mirroring.
Work-Around: Reboot the switch, or disable mirroring, change group and enable mirroring.

Problem Report 6211
Port Monitoring byte count displayed is not accurate.
Work-around: NONE

15.16. Known VAP Problems

Problem Report 7093
The command fwtvl shows all host addresses twice.
Work-Around: NONE

15.17. Known Multicast Problems

Problem Report 6427
IP Multicast works over Frame Relay if only 1 virtual circuit is configured.
Work-around: NONE

16. Hardware Compatibility Matrix

Below are matrices containing 1) IBM Nways RouteSwitch Network Manager, IBM Nways RouteSwitch, 8273 Series Compatibility, and 2) Hardware revision levels with IBM Nways RouteSwitch revision levels compatibility. It should be noted that all high-speed switching modules are comprised of an HSM motherboard and network interface daughter cards.

Network Management

	Software Release					
Product	2.0.5	2.1.1	2.1.2	2.1.3	3.0.1	3.0.2
IBM Nways RouteSwitch Network Manager						
Rev. 2.0	x	No	No	No	No	No
Rev. 2.0.3	x	No	No	No	No	No
Rev. 2.1	*Yes	No	No	x	x	x
Rev. 3.0	No	No	No	Yes*	x	x
IBM Nways RouteTracker Manager						
Rev. 2.0	No	No	No	No	No	No
Rev. 2.0.6	x	No	No	No	No	No
Rev. 2.1	No	No	No	x	x	Yes*
Rev. 3.0	No	No	No	Yes*	x	x
IBM Nways RouteMonitor						
Rev. 2.1	No	No	No	x	x	x
Rev. 3.0	No	No	No	Yes*	x	x
RouteDirector						
Rev. 3.0	No	No	No	No	No	x

*Yes. Using Revision 2.1 of IBM Nways RouteSwitch Network Manager/IBM Nways RouteTracker Manager/IBM Nways RouteMonitor with IBM Nways RouteSwitch software release 2.1.3 will function, however, it is preferable to use revision 3.0 of IBM Nways RouteSwitch Network Manager / IBM Nways RouteTracker Manager / IBM Nways RouteMonitor with IBM Nways RouteSwitch software 3.0.1, and 3.0.2.

IBM Nways RouteSwitch Hardware

	Software Release					
Product	2.0.5	2.1.1	2.1.2	2.1.3	3.0.1	3.0.2
MPM (P/N 05002600) Requires 16 Meg for 3.0	DISCONTINUED					
Rev. C (2.10)	x	x	x	x	x	x
Rev. D (2.11)	x	x	x	x	x	x
Rev. E (2.12)	x	x	x	x	x	x
Rev. F (2.13)	x	x	x	x	x	x
Rev. G (2.14)	x	x	x	x	x	x
Rev. H (2.15)	x	x	x	x	x	x
Rev. I (2.16)	x	x	x	x	x	x
Rev. J (2.17)	x	x	x	x	x	x
Rev. K (2.18)	x	x	x	x	x	x
Rev. L (2.19)	x**	x**	x**	x**	x**	x**
Rev. L1 (2.20)	x	x	x	x	x	x
Rev. L2 (2.21)	x	x	x	x	x	x
85H7112, 8503, 2850 (P/N 05002601) Requires 16 Meg for 3.0	NOT APPLICABLE					
Rev. C (2.10)	x	x	x	x	x	x
Rev. D (2.11)	x	x	x	x	x	x
Rev. E (2.12)	x	x	x	x	x	x
Rev. F (2.13)	x	x	x	x	x	x
Rev. G (2.14)	x	x	x	x	x	x
Rev. H (2.15)	x	x	x	x	x	x
Rev. I (2.16)	x	x	x	x	x	x
Rev. J (2.17)	x	x	x	x	x	x
Rev. K (2.18)	x	x	x	x	x	x
Rev. L (2.19)	x**	x**	x**	x**	x**	x**
Rev. L1 (2.20)	x	x	x	x	x	x
Rev. L2 (2.21)	x	x	x	x	x	x
Rev. L3 (2.22)	x	x	x	x	x	x
Rev. L4 (2.23)	x	x	x	x	x	x
MPM2-16 (P/N 050120-13)						
Rev. A (1.00)	x	x	x	x	x	x
Rev. A1 (1.01)	x	x	x	x	x	x
Rev. A2 (1.02)	x	x	x	x	x	x
Rev. A3 (1.03)	x	x	x	x	x	x
Rev. A4 (1.04)	x	x	x	x	x	x
Rev. A5 (1.05)	x	x	x	x	x	x
Rev. C11 (3.11)	x	x	x	x	x	x
Rev. C12 (3.12)	x	x	x	x	x	x

IBM Nways RouteSwitch Hardware (cont.)

	Software Release					
Product	2.0.5	2.1.1	2.1.2	2.1.3	3.0.1	3.0.2
86H0586 (P/N 050143-06)						
Rev. A1 (1.01)					x	x
Rev. A2 (1.02)					x	x
Rev. A3 (1.03)					x	x
Rev. A4 (1.04)					x	x
Rev. A5 (1.05)					x	x
Rev. A6 (1.06)					x	x
Rev. A7 (1.07)					x	x
7113, 8504 (P/N 05012006)						
Rev. C1 (2.02)	x**	x**	x**	x**	x**	x**
Rev. C2 (2.03)	x	x	x	x	x	x
Rev. C3 (2.04/3.04)	x	x	x	x	x	x
Rev. C4 (3.05)	x	x	x	x	x	x
Rev. C5 (3.06)	x	x	x	x	x	x
Rev. C6 (3.07)	x	x	x	x	x	x
Rev. C7(3.08)	x	x	x	x	x	x
Rev. C8 (3.09)	x	x	x	x	x	x
Rev. C9 (3.10)	x	x	x	x	x	x
Rev. C10 (3.11)	x	x	x	x	x	x
Rev. C11 (3.12)	x	x	x	x	x	x
Rev. C12 (3.13)	x	x	x	x	x	x
86H0588 Hardware Routing Engine (P/N 050125-06						
Rev. A (1.00)					x	x
Rev. A1 (1.01)					x	x
ESM-C-8 (P/N 05001400)	DISCONTINUED					
Rev. A (1.06)						
Rev. B (1.07)						
Rev. C (1.08)						
Rev. D (1.09)	x	x	x	x	x	x
Rev. E (1.10)	x	x	x	x	x	x
Rev. F (1.11)	x**	x**	x**	x**	x**	x**
Rev. F1 (1.12)	x	x	x	x	x	x
7105 (P/N 05006706)						
Rev. A (1.01)						
Rev. B (1.02)						
Rev. C (1.03)	x	x	x	x	x	x
Rev. D (1.04)	x**	x**	x**	x**	x**	x**
Rev. E (1.05)	x	x	x	x	x	x
Rev. F (2.0)	x	x	x	x	x	x
Rev. F1 (2.01)	x	x	x	x	x	x

Rev. F2 (2.02)	x	x	x	x	x	x

IBM Nways RouteSwitch Hardware (cont.)

	Software Release					
Product	2.0.5	2.1.1	2.1.2	2.1.3	3.0.1	3.0.2
85H7108 (P/N 05011206)						
Rev. A (never released)						
Rev. B. (never released)						
Rev. C. (never released)						
Rev. D (1.0)	x**	x**	x**	x**	x**	x**
Rev. D1 (4.01)	x	x	x	x	x	x
Rev. D2 (4.02)	x	x	x	x	x	x
Rev. D3 (4.03)	x	x	x	x	x	x
Rev. D4 (4.04)	x	x	x	x	x	x
Rev. E1 (5.01)	x	x	x	x	x	x
Rev. E2 (5.02)	x	x	x	x	x	x
85H7107 (P/N 050140-06)						
Rev. B (2.00)		x	x	x	x	x
Rev. B1 (2.01)		x	x	x	x	x
Rev. B2 (2.02)		x	x	x	x	x
Rev. B3 (2.03)		x	x	x	x	x
Rev. B4 (2.04)		x	x	x	x	x
85H7106 (P/N 05011806)						
Rev. A (1.00)	x**	x**	x**	x**	x**	x**
Rev. A1 (1.01)	x	x	x	x	x	x
Rev. A2 (1.02)	x	x	x	x	x	x
Rev. A3 (1.03)	x	x	x	x	x	x
Rev. A4 (1.04)	x	x	x	x	x	x
Rev. B (2.00)	x	x	x	x	x	x
Rev. B1 (2.01)	x	x	x	x	x	x
Rev. B2 (2.02)	x	x	x	x	x	x
Rev. B3 (2.03)	x	x	x	x	x	x
85H7099 (P/N 05014406)						
Rev. A (1.00)		x	x	x	x	x
Rev. A1 (1.01)		x	x	x	x	x
85H7103 (P/N 05008506)						
Rev. A						
Rev. B	x	x	x	x	x	x
Rev. C	x	x	x	x	x	x
Rev. D	x	x	x	x	x	x
Rev. E	x	x	x	x	x	x
85H7102 (P/N 05012306)						
Rev. A (1.00)	x	x	x	x	x	x

Rev. A1 (1.01)	x	x	x	x	x	x

IBM Nways RouteSwitch Hardware (cont.)

	Software Release					
Product	2.0.5	2.1.1	2.1.2	2.1.3	3.0.1	3.0.2
85H7101 (P/N 05009106)						
Rev. A	x	x	x	x	x	x
85H7100 (P/N 05009706)						
Rev. A (never released)						
Rev. B	x	x	x	x	x	x
Rev. C	x	x	x	x	x	x
85H7104 (P/N 05007906)						
Rev. A (never released)						
Rev. B	x	x	x	x	x	
HSM (P/N 05003106)	DISCONTINUED					
Rev. A (2.01) Rev. "B"						
Rev. B (2.02) " "						
Rev. C (2.03) " "						
Rev. D (2.04) " "						
Rev. E (2.05) " "	x	x	x	x	x	x
Rev. F (2.06) " "	x	x	x	x	x	x
Rev. G (2.07) " "	x	x	x	x	x	x
Rev. H (2.08) " "	x	x	x	x	x	x
Rev. J (2.09) " "	x	x	x	x	x	x
Rev. K (3.10)	x*	x*	x*	x*	x*	x*
Rev. L (3.11)	x**	x**	x**	x**	x**	x**
Rev. M (4.12)	x	x	x	x	x	x
Rev. M1 (4.13)	x	x	x	x	x	x
HSM2 (P/N 05011006)	NOT APPLICABLE					
Rev. B. Initial Release						
Rev. C (3.00)	x**	x**	x**	x**	x**	x**
Rev. C1 (3.01)	x	x	x	x	x	x
Rev. C2 (3.02)	x	x	x	x	x	x
Rev. C3 (3.03)	x	x	x	x	x	x
Rev. D (4.00)	x	x	x	x	x	x
Rev. D1 (4.01)	x	x	x	x	x	x
Rev. D2 (4.02)	x	x	x	x	x	x
Rev. D3 (4.03)	x	x	x	x	x	x
HSM2 4K (P/N 05016806)	NOT APPLICABLE					
Rev. A (1.00)					x	x
7090, 6874 Copper (P/N 05004906)						
Rev. A (1.01)	x	x	x	x	x	x
Rev. B (1.02)	x	x	x	x	x	x
Rev. C (1.03)	x	x	x	x	x	x
Rev. D (1.04)	x	x	x	x	x	x

Rev. D1 (4.01)	x	x	x	x	x	x

IBM Nways RouteSwitch Hardware (cont.)

	Software Release					
Product	2.0.5	2.1.1	2.1.2	2.1.3	3.0.1	3.0.2
Rev. D2 (4.02)	x	x	x	x	x	x
Rev. D3 (4.03)	x	x	x	x	x	x
Rev. D4 (4.04)	x	x	x	x	x	x
6875, 7089, 0603, 0604 Fiber (P/N 05011106)						
Rev. A (1.01)	x	x	x	x	x	x
Rev. B. (2.00)	x	x	x	x	x	x
Rev. B1 (2.01)	x	x	x	x	x	x
Rev. B2 (2.02)	x	x	x	x	x	x
Rev. B3 (2.03)	x	x	x	x	x	x
Rev. B4 (2.04)	x	x	x	x	x	x
7088, 6876, 0601, 0602 Dual Mode (P/N 05012106)						
Rev. A1 (1.01)		x	x	x	x	x
Rev. A2 (1.02)		x	x	x	x	x
ATM OC3 Daughter Card (P/N 05004400)	DISCONTINUED					
Rev. A (1.01)	x	x	x	x	x	x
Rev. B (2.00)	x	x	x	x	x	x
6877, 7087,0506, 7027, 0507, 6879, 0510, 0511 Daughter Card Multimode, ¨ö MB SRAM (P/N 05011626)						
Rev. A (1.01)	x	x	x	x	x	x
6878,7086, 0509.0505, 0504, 7084, 6880, 0508 Daughter Card Multimode, 2 MB SRAM (P/N 05011624)						
Rev. A (1.01)	x	x	x	x	x	x
7083, 6881, 0514, 0515, 7081, 0518, 0519 Daughter Card Singlemode, 2 MB SRAM (P/N 05011625)						
Rev. A (1.01)	x	x	x	x	x	x
7082, 6882, 0512, 0513, 7080, 6884, 0516, 0517 Daughter Card Singlemode, ¨ö MB SRAM (P/N 05011627)						

Rev. A (1.01)	x	x	x	x	x	x

IBM Nways RouteSwitch Hardware (cont.)

	Software Release					
Product	2.0.5	2.1.1	2.1.2	2.1.3	3.0.1	3.0.2
7051, 6889, 0520, 0521, 7052, 6890, 0522, 0523 Daughter Card (P/N 05010406)						
Rev. A1 (1.01)	x	x	x	x	x	x
Rev. B (2.00)	x	x	x	x	x	x
Rev. B1 (2.01)	x	x	x	x	x	x
7053, 6891, 0524, 0525, 7054, 6892, 0526, 0527 Daughter Card (P/N 05010413)						
Rev.A (1.00)		x	x	x	x	x
Rev. A1 (1.01)		x	x	x	x	x
Rev. A2 (1.02)		x	x	x	x	x
7078, 6886, 0500, 0501, 7076, 6888, 0502, 0503 Daughter Card one UTP (P/N 050115-06)						
Rev. B (2.00)	x	x	x	x	x	x
Rev. B1 (2.01)	x	x	x	x	x	x
Rev. B2 (2.02)	x	x	x	x	x	x
Rev. B3 (2.03)	x	x	x	x	x	x
3009, 3013 Multimode (P/N 050146-06)						
Rev. A (1.00)						x
Rev. A1 (1.01)						x
3017, 3021 Single Mode (P/N 050146-13)						
Rev. A (1.00)						x
Rev. A1 (1.01)						x
86H2995, 0531 P/N 050113-14						
Rev. F (6.00)					x	x
Rev. F1 (6.01)					x	x
Rev. F2 (6.02)					x	x
Rev. F3 (6.03)					x	x
Rev. G (7.00)					x	x
86H2995, 0531 P/N 050113-24						
Rev. G (7.00)					x	x

86H2997, 0530 P/N 050113-08						
Rev. F1 (6.01)					x	x

IBM Nways RouteSwitch Hardware (cont.)

	Software Release					
Product	2.0.5	2.1.1	2.1.2	2.1.3	3.0.1	3.0.2
86H0607-OC3 (P/N 050129-06						
Rev. A (1.00)					x	x
Rev. A1 (1.01)					x	x
Rev. A2 (1.02)					x	x
Rev. A3 (1.03)					x	x
Rev. B (2.00)					x	x
FSM Daughter Card (P/N 05003706)	DISCONTINUED					
Rev. A (1.01)						
Rev. B (1.02)						
Rev. C (1.03)	x	x	x	x	x	x
Rev. D (1.04)	x	x	x	x	x	x
Rev. E (1.05)	x***	x***	x***	x***	x***	x***
7055, 6893, 0572, 0573, 7056, 6894, 0574, 0575 Daughter Card MM (P/N 05010806)						
Rev. B. Initial release (2.02)						
Rev. C (2.03)	x***	x***	x***	x***	x***	x***
Rev. C1 (2.04)	x	x	x	x	x	x
7060, 6896, 0578, 0579, 7061, 6897, 0580, 0581 Daughter Card Singlemode (P/N 05010813)						
Rev. B Initial Release (2.00)	x	x	x	x	x	x
7028, 6895, 0576, 0577 Cat 2 Lazer P/N 050108-15						
Rev. A1 (1.01)					x	x
Rev. A2 (1.02)					x	x
100BaseT Daughter Card (P/N 05010906)	DISCONTINUED					
Rev. A (never released)						
Rev. B (never released)						
Rev. C2 (3.02)	x	x	x	x	x	x
Rev. C3 (3.03)	x	x	x	x	x	x
Rev. C4 (3.04)	x	x	x	x	x	x
Rev. C5 (3.05)	x	x	x	x	x	x
Rev. C6 (3.06)	x	x	x	x	x	x
Rev. C7 (3.07)	x	x	x	x	x	x

Rev. C8 (3.08)	x	x	x	x	x	x
Rev. C9 (3.09)	x	x	x	x	x	x
Rev. C10 (3.10)	x	x	x	x	x	x

IBM Nways RouteSwitch Hardware (cont.)

	Software Release					
Product	2.0.5	2.1.1	2.1.2	2.1.3	3.0.1	3.0.2
Rev. C11 (3.11)	x	x	x	x	x	x
Rev. C12 (3.12)	x	x	x	x	x	x
7094, 6871, 0551, 0552, 7093, 6872, 0553, 0554 (P/N 050122-13)						
Rev. B (2.00)		x	x	x	x	x
Rev. B1 (2.01)		x	x	x	x	x
Rev. B2 (2.02)		x	x	x	x	x
7096, 6869, 0543, 0544, 7095, 6870, 0545, 0546 P/N 050122-15	DISCONTINUED					
Rev. A (1.00)		x	x	x	x	x
7092, 6873, 0555, 0556, 7091, 7074, 0557, 0558 P/N 050122-16	DISCONTINUED					
Rev. A (1.00)		x	x	x	x	x
Rev. A1 (1.01)		x	x	x	x	x
7092, 6873, 0555, 0556, 7091, 7074, 0557, 0558 (P/N 050122-06)						
Rev. B (2.00)		x	x	x	x	x
Rev. B1 (2.01)		x	x	x	x	x
7092, 6873, 0555, 0556, 7091, 7074, 0557, 0558 (P/N 050122-14)						
Rev. B (2.00)		x	x	x	x	x
Rev. B1 (2.01)		x	x	x	x	x
Rev. B2 (2.02)		x	x	x	x	x
7092, 6873, 0555, 0556, 7091, 7074, 0557, 0558 (P/N 050122-17)						
Rev. A (1.00)		x	x	x	x	x
FESM AE Daughter card P/N 050109-13	DISCONTINUED					
Rev. A (1.00)				x****	x****	x****
Rev. A1 (1.01)				x****	x****	x****
7098, 6867, 0537, 0538, 7025, 6868, 0541, 0542 (P/N 050139-06)						
Rev. A (1.00)	x	x	x	x	x	x
Rev. A1 (1.01)	x	x	x	x	x	x
Rev. A2 (1.02)	x	x	x	x	x	x

Rev. A3 (1.03)	x	x	x	x	x	x
Rev. A4 (1.04)	x	x	x	x	x	x

IBM Nways RouteSwitch Hardware (cont.)

	Software Release					
Product	2.0.5	2.1.1	2.1.2	2.1.3	3.0.1	3.0.2
85H8728/85H8729 0605, 0606 WAN (P/N 050117-06)						
Rev. A2 (1.02)		x	x	x	x	x
Rev. A3 (1.03)		x	x	x	x	x
Rev. A4 (1.04)		x	x	x	x	x
Rev. A5 (1.05)		x	x	x	x	x
7057, 7075, 0568, 0569, 7058, 7026, 0570, 0571 Daughter Card (P/N 05007306)						
Rev. A (1.01)	x	x	x	x	x	x
Rev. B (1.02)	x	x	x	x	x	x
Rev. C (1.03)	x	x	x	x	x	x
Rev. D (1.04)	x	x	x	x	x	x
Rev. E (1.05)	x***	x***	x***	x***	x***	x***

*All FSM-M-2 modules require REV K or greater HSM or any released HSM2.
** This revision and above is required for MPM redundancy.
*** This revision and above is required for Hot Swap.
****Revision 2.1.3.F or above is required.

8273 Series Hardware

	8273 Series Software					
Product	2.0.5	2.1.1	2.1.2	2.1.3	3.0.1	3.0.2
7145, 7144 8273-100 / 8273-10E (P/N 05010306)						
Rev. C (never released)						
Rev. C1 (3.01)	x	x	x	x	x	x
Rev. C2 (3.02)	x	x	x	x	x	x
Rev. C3 (3.03)	x	x	x	x	x	x
Rev. C4 (3.04)	x	x	x	x	x	x
Rev. C5 (3.05)	x	x	x	x	x	x
Rev. C6 (3.06)	x	x	x	x	x	x
Rev. C7 (3.07)	x	x	x	x	x	x
P/N 05015206 Rev. D (4.00)	x	x	x	x	x	x
Rev. D1 (4.01)	x	x	x	x	x	x
Rev. D2 (4.02)	x	x	x	x	x	x
Rev. D3 (4.03)	x	x	x	x	x	x
Rev. D4 (4.04)	x	x	x	x	x	x
Rev. D5 (4.05)	x	x	x	x	x	x
7143, 8273-10U (P/N 05013006)						
Rev. A (1.00)	x	x	x	x	x	x
Rev. A1 (1.01)	x	x	x	x	x	x
Rev. A2 (1.02)	x	x	x	x	x	x
Rev. A3 (1.03)	x	x	x	x	x	x
Rev. A4 (1.04)	x	x	x	x	x	x
Rev. A5 (1.05)	x	x	x	x	x	x
Rev. A6 (1.06)	x	x	x	x	x	x
Rev. A7 (1.07)	x	x	x	x	x	x
Rev. A8 (1.08)	x	x	x	x	x	x
Rev. A9 (1.09)	x	x	x	x	x	x
8273-10UE (P/N 050130-08)						
Rev. A (1.00)					x	x
7144, 8273-10E (P/N 050152-08)						
Rev. A (1.00)					x	x
8273-85H7118 (P/N 05008506)						
Rev. A						
Rev. B	x	x	x	x	x	x
Rev. C	x	x	x	x	x	x
Rev. D	x	x	x	x	x	x
Rev. E	x	x	x	x	x	x

8273-85H7116 (P/N 05009106)						
Rev. A	x	x	x	x	x	x

	8273 Series Software					
Product	2.0.5	2.1.1	2.1.2	2.1.3	3.0.1	3.0.2
8273-85H7115 (P/N 05009706)						
Rev. A (never released)						
Rev. B	x	x	x	x	x	x
Rev. C	x	x	x	x	x	x
8273-85H7119 (P/N 05007906)						
Rev. A (never released)						
Rev. B	x	x	x	x	x	x
7128 Daughter Card P/N 05011626 (1/2 MB SRAM) MM						
Rev. A (1.01)	x	x	x	x	x	x
RASM Daughter Card P/N 05011627 (1/2 MB. SRAM) SM						
Rev. A (1.01)	x	x	x	x	x	x
RASM Daughter Card P/N 05011624 (2 MB SRAM) MM						
Rev. A (1.01)	x	x	x	x	x	x
RASM Daughter Card P/N 05011625 (2 MB SRAM) SM						
Rev. A (1.01)	x	x	x	x	x	x

FESM II 100BTX P/N 050139-06						
Rev. A2 (1.02)		x	x	x	x	x
Rev. A3 (1.03)		x	x	x	x	x
Rev. A4 (1.04)		x	x	x	x	x
85H7121 P/N 050122-13						
Rev. B (2.00)		x	x	x	x	x
Rev. B1 (2.01)		x	x	x	x	x
Rev. B2 (2.02)		x	x	x	x	x
85H7120 P/N 050122-06						
Rev. B (2.00)		x	x	x	x	x
Rev. 1 (2.01)		x	x	x	x	x
8273-85H7122 P/N 050122-14						
Rev. B (2.00)		x	x	x	x	x
Rev. B1 (2.01)		x	x	x	x	x
Rev. B2 (2.02)		x	x	x	x	x

	8273 Series Software					
Product	2.0.5	2.1.1	2.1.2	2.1.3	3.0.1	3.0.2
7131 Daughter Card P/N 05003706 (MM only)	**DISCONTINUED**					
Rev. A (1.01)	x		x	x	x	x
Rev. B (1.02)	x		x	x	x	x
Rev. C (1.03)	x		x	x	x	x
Rev. D (1.04)	x		x	x	x	x
Rev. E (1.05)	x		x	x	x	x
7131 Daughter Card P/N 05010806 (MM)						
Rev. B. Initial release (2.02)						
Rev. C (2.03)	x***		x***	x***	x***	x***
Rev. C1 (2.04)	x		x	x	x	x
7130 Daughter Card P/N 05010813 (SM)						
Rev. B Initial Release (2.00)	x		x	x	x	x
RFSM Daughter Card UTP P/N 05007306						
Rev. E (1.05)	x		x	x	x	x

17.

Appendix - ATM DS3/E3

New Features and Bugs Fixed

1. Fully support FEAC (Far-end Alarm and Control) code recognition and generation based on ANSI T1.107.
   - Recognize FEAC loopback activation/deactivation, and turn on/off line loopback accordingly. Current loopback status can be viewed from UI or SNMP.
   - Recognize FEAC alarm codes sent from far-end. These alarm codes can be viewed from UI or SNMP.
   - Transmit FEAC alarm code to far-end based on alarm detected/received at near-end.
2. Add some statistics counters: LCV (Line Code Violation), DS3 PERR (Parity Bit Error), DS3 PPERR (Path Parity Bit Error), DS3 FEBE (Far-end Block Error), and DS3 FERR (Framing Bit Error).
3. Recognize AIS alarm (or Blue alarm) correctly based on ANSI T1.107.
4. Transmit E3 G.832 frame with correct payload type field (ATM = 010).
5. Allow users to clear physical port interval statistics per port basis.
6. Allow configuring E3 line type (G.821, G.751) and sublayer (PLCP, ADM) independently.
7. Object dsx1LineStatus of RFC 1407 is now set correctly due do loopback configuration changes.
8. Add 50+ DS3 IBM proprietary objects to allow NMS fully managing DS3/E3 interfaces (release 3.1 only).

18. User Interface

The new UI screens due to above changes are captured and shown as follows:

18.1. 'vap' command

18.1.1. ATM E3 interface.

/Interface/ATM % vap 5/2

```
                        ATM Port Table

                                                Conn Tran   Media UNI Max  VCI
Slot Port      ATM Port Description             Type Type   Type  Typ VCC  bits
==== ==== ============================== ==== ====== ===== === ==== ====
5    2    ATM PORT                       PVC  E3     Coax  Pri 1023 10


Slot Port Loopback Cfg Tx Clk Source
==== ==== ============ =============
5    2    NoLoop       LocalTiming

                                      End System   Sig Sig  ILMI   ILMI
Slot Port     ATM Network Prefix      Identifier   Ver VCI  Enable VCI
==== ==== ==========================  ============ === ==== ====== ====
5    2            N/A                    N/A      N/A N/A   N/A   N/A


                                                          Status
                                                   ------------------
Slot Port Tx Seg Sz Rx Seg Sz Tx Buff Sz Rx Buff Sz   Oper   SSCOP ILMI
==== ==== ========= ========= ========== ========== ======== ===== ====
5    2        16384     16384       4600       4600 Dis(T/R) Down  Down


             E3 Configuration

Slot Port Line Type  Sublayer
==== ==== ========== ==========
5    2    G.751      PLCP
```

18.2. 'map' command

18.2.1. ATM E3 interface.

/Interface/ATM % map 5/2

```
                    Slot 5 Port 2 Configuration

1)  Description (30 chars max)                  : ATM PORT
2)  Conn Type { PVC(1), SVC(2) }                : PVC
3)  Max VCCs (1-1023)                           : 1023
4)  Max VCI bits (1..10)                        : 10
5)  UNI Type                                    : Private
6)  Tx SAR Buffer Size (4096-131072)            : 16384
7)  Rx SAR Buffer Size (4096-131072)            : 16384
8)  Tx Frame Buffer Size (1800-16384)           : 4600
9)  Rx Frame Buffer Size (1800-16384)           : 4600
10) Pl Scramble {(False(1),True(2)}             : True
11) Timing Mode {(Loop(1),Local(2)}             : Local
12) Loopback Config { NoLoop(1), DiagLoop(2),
                      LineLoop(3), CellLoop(4),
                      PayloadLoop(5) }          : NoLoop
13) Line Type { G.751(1), G.832(2) }            : G.751
14) Sublayer  { PLCP(1), ADM(2) }               : PLCP


Enter (option=value/save/cancel) :
```

Note: Since G.832 doesn't support PLCP, changing line type to G.832 will modify sublayer to ADM if current sublayer is not ADM. Similarly, modifying sublayer to PLCP is not allowed if current line type is G.832.

18.3. 'vps' command

New fields were added in this screen. These fields are defined as follows:

- Loopback Status: indicates current loopback status of the DS3/E3 port. It's worth noting that loopback can be activated by local management or far-end via FEAC code. The possible values are:
  - *LocalPayloadLoop* : DS3/E3 port is in payload loopback.
  - *LocalLineLoop* : DS3/E3 port is in line loopback.
  - *LocalOtherLoop* : DS3/E3 port is in diagnostics loopback.
  - *RemotePayloadLoop* : Far-end DS3/E3 port is in payload loopback.
  - *RemoteLineLoop* : Far-end DS3/E3 port is in line loopback.

Note: UI commands activating remote loopback will be added in the future release.

- FEAC Code Rx: indicates FEAC code being received at DS3 interface. This is only displayed if line type is CbitParity. The possible values are:
  - *No Code* : no code.
  - DS3 Eqpt. Failure (SA): Remote DS3 equipment is in failure state (service affecting) which requires immediate attention.
  - *DS3 LOS* : Remote DS3 is in loss of signal.
  - *DS3 OOF* : Remote DS3 is in out of frame.
  - *DS3 AIS Received* : Remote DS3 is receiving AIS.
  - *DS3 IDLE Received* : Remote DS3 is receiving Idle code.
  - *DS3 Eqpt. Failure (NSA)* : Remote DS3 equipment is in failure state (non-service affecting) such as suspended services, not activated, not available for use.
  - *Common Eqpt. Failure (NSA)*: Remote DS3 equipment is in failure state (non-service affecting).
  - *Loopback Received* : Remote DS3 is sending loopback activation code.
  - *Unsupported Code* : DS3 interface is receiving unsupported code such as DS1 loopback activation/deactivation code.
  - *Unknown Code* : DS3 interface is receiving an unknown code.
- LCV : line code violation. It's defined as a count of BPV (Bipolar violation) and EXZ (Excessive zeros).
- PERR: Parity Bit Errors. It represents the number of DS3 P-bit errors or E3 G.832 BIP-8 errors. This field is only displayed for DS-3 or E3 G.832.
- PPERR: Path Parity Bit Error. It represents the number of DS3 path parity errors (or C-bit parity errors). This field is only displayed for CbitParity DS3.
- FEBE : Far-end block error. It represents number of times that E3 G.832 frame received with bit 2 of MA octet set or DS3 frames with t86H0588e C-bits of M-frame 4 being different from 111.
- FERR : Framing Bit error. It represents number of DS3 F-bit and M-bit errors, or E3 framing pattern errors.
- Elapsed Time : indicate elapsed time that physical port interval statistics have been accumulated. It's displayed in following format ddd days, hh:mm:dd.tt . (e.g 0 days, 00:06:14.62).

18.3.1. ATM E3 Interface

18.3.1.1. Line type = G.751 & sublayer = PLCP.

/Interface/ATM % vps 5/2

```
                 E3 RX Line Status
Slot Port  LOS    OOF    AIS   Cell Loss Loopback Status
==== ==== ====== ====== ====== ========= ===============
5    2    Ok     Alarm  Ok     Alarm     NoLoopBack


             E3 RX Line Status

Slot Port   PLCP    PLCP    PLCP
            OOF     LOF     YEL
==== ==== ======= ======= =======
5    2    Alarm   Alarm   Ok


             E3 RX Line Status

Slot Port  RAI    Nat Use
==== ==== ====== =========
5    2    Ok     On


             E3 RX Line Statistics

Slot Port    LOS         OOF       FERR        LCV    Cell Loss
==== ==== ========== ========== ========== ========== ==========
5    2    0          142716244  142716243  11         1


             E3 RX Line Statistics

Slot Port    AIS        COFA        RAI
==== ==== ========== ========== ==========
5    2    0          0          0


             E3 RX Line Statistics

Slot Port    PLCP       PLCP       PLCP       PLCP       PLCP       PLCP
             OOF        LOF        YEL        FOE        BPE        FEBE
==== ==== ========== ========== ========== ========== ==========
==========
5    2    142716550  1          0          2          2          1

Physical layer statistics available only for DS3 and E3.
```

18.3.1.2. Line type = G.732 & sublayer = ADM

/Interface/ATM % vps 5/2

```
             E3 RX Line Status
Slot Port  LOS    OOF    AIS   Cell Loss Loopback Status
==== ==== ====== ====== ====== ========= ===============
5    2    Ok     Ok     Ok     Alarm     NoLoopBack


             E3 RX Line Status

Slot Port  RAI    Nat Use
==== ==== ====== =========
5    2    Ok     On


             E3 RX Line Statistics

Slot Port    LOS          OOF       FERR        LCV    Cell Loss
==== ==== ========== ========== ========== ========== ==========
5    2    0          299895115  299895113  11         1


             E3 RX Line Statistics

Slot Port    AIS        COFA        RAI
==== ==== ========== ========== ==========
5    2    0          2          1

Physical layer statistics available only for DS3 and E3.
```

18.3.1.3. Line type = G.821 & sublayer = ADM

/Interface/ATM % vps 5/2

```
E3 RX Line Status
Slot Port  LOS    OOF    AIS   Cell Loss Loopback Status
==== ==== ====== ====== ====== ========= ===============
5    2    Ok     Ok     Ok     Alarm     NoLoopBack


             E3 RX Line Status

Slot Port  FEBE   FERF    Time   Payload
                          Marker    Type
==== ==== ====== ====== ======== ========
5    2    Ok     Alarm  Off      0


             E3 RX Line Statistics

Slot Port    LOS          OOF        FERR         LCV    Cell Loss
==== ==== ========== ========== ========== ========== ==========
5    2    0          307744909  307744901  11         1


             E3 RX Line Statistics

Slot Port    AIS          COFA       FERF       FEBE       PERR
==== ==== ========== ========== ========== ========== ==========
5    2    0          3          2          8          9

Physical layer statistics available only for DS3 and E3.
```

18.3.2. ATM DS3 Interface

18.3.2.1. Type = CbitParity & Sublayer = PLCP

/Interface/ATM % vps 5/2

```
              DS3 RX Line Status
Slot Port  LOS    OOF    AIS    FERF   RED   Cell Loss Loopback Status
==== ==== ====== ====== ====== ====== ====== ========= ===============
5    1    Ok     Ok     Ok     Ok     Ok     Ok        NoLoopBack


              DS3 RX Line Status

Slot Port        FEAC Code Rx
==== ==== ============================
5    1    No Code


              DS3 RX Line Status

Slot Port    PLCP     PLCP     PLCP
             OOF      LOF      YEL
==== ==== ======== ======== ========
5    1    Ok       Ok       Ok


              DS3 RX Line Statistics

Slot Port    LOS         OOF       FERF       RED     Cell Loss
==== ==== ========== ========== ========== ========== ==========
5    1    0          2          0          0          0


              DS3 RX Line Statistics

Slot Port      AIS         COFA         LCV          PERR         FERR
==== ==== ============ ============ ============ ============ ============
5    1    0            1            3            7            96


              DS3 RX Line Statistics

Slot Port     FEBE          PPERR
==== ==== ============ ============
5    1    5            5


              DS3 RX Line Statistics

Slot Port    PLCP       PLCP       PLCP       PLCP       PLCP       PLCP
             OOF        LOF        YEL        FOE        BPE        FEBE
==== ==== ========== ========== ========== ========== ==========
==========
5    1    1          0          0          2          2          0
```

```
Physical layer statistics available only for DS3 and E3.
```

18.3.2.2. Line Type = CbitParity & Sublayer = ADM

/Interface/ATM % vps 5/2

```
             DS3 RX Line Status
Slot Port  LOS    OOF    AIS    FERF   RED   Cell Loss Loopback Status
==== ==== ====== ====== ====== ====== ====== ========= ===============
5    1    Ok     Ok     Ok     Ok     Ok     Ok        NoLoopBack


             DS3 RX Line Status

Slot Port        FEAC Code Rx
==== ==== ============================
5    1    No Code


             DS3 RX Line Statistics

Slot Port    LOS         OOF       FERF       RED     Cell Loss
==== ==== ========== ========== ========== ========== ==========
5    1    0          2          0          0          0


             DS3 RX Line Statistics

Slot Port      AIS         COFA         LCV          PERR         FERR
==== ==== ============ ============ ============ ============ ============
5    1    0            1            3            7            96


             DS3 RX Line Statistics

Slot Port     FEBE         PPERR
==== ==== ============ ============
5    1    5            5

Physical layer statistics available only for DS3 and E3.
```

18.3.2.3. Line Type = M23 and Sublayer = PLCP

/Interface/ATM % vps 5/2

```
          DS3 RX Line Status
Slot Port  LOS    OOF    AIS    FERF   RED   Cell Loss Loopback Status
==== ==== ====== ====== ====== ====== ====== ========= ===============
5    1    Ok     Ok     Ok     Ok     Ok     Ok        NoLoopBack


             DS3 RX Line Status

Slot Port    PLCP     PLCP     PLCP
             OOF      LOF      YEL
==== ==== ======== ======== ========
5    1    Ok       Ok       Ok


             DS3 RX Line Statistics

Slot Port    LOS         OOF       FERF       RED     Cell Loss
==== ==== ========== ========== ========== ========== ==========
5    1    0          2          0          0          1


             DS3 RX Line Statistics

Slot Port      AIS         COFA         LCV          PERR         FERR
==== ==== ============ ============ ============ ============ ============
5    1    0            1            3            7            96


             DS3 RX Line Statistics

Slot Port    PLCP       PLCP       PLCP       PLCP       PLCP       PLCP
             OOF        LOF        YEL        FOE        BPE        FEBE
==== ==== ========== ========== ========== ========== ==========
==========
5    1    36         1          0          37         10         6

Physical layer statistics available only for DS3 and E3.
```

18.3.2.4. Line Type = M23 & Sublayer = ADM

/Interface/ATM % vps 5/2

```
              DS3 RX Line Status
Slot Port  LOS    OOF    AIS    FERF   RED   Cell Loss Loopback Status
==== ==== ====== ====== ====== ====== ====== ========= ===============
5    1    Ok     Ok     Ok     Ok     Ok     Ok        NoLoopBack


              DS3 RX Line Statistics

Slot Port    LOS         OOF       FERF       RED     Cell Loss
==== ==== ========== ========== ========== ========== ==========
5    1    0          2          0          0          1


              DS3 RX Line Statistics

Slot Port      AIS         COFA         LCV          PERR         FERR
==== ==== ============ ============ ============ ============ ============
5    1    0            1            3            7            96

Physical layer statistics available only for DS3 and E3.
```

18.4. ‘vpis’ command

18.4.1. ATM E3 interface

18.4.1.1. Line Type = G.751 & Sublayer = PLCP.

/Interface/ATM % vpis 5/2

```
              E3 RX Line Statistics
Slot Port    LOS          OOF        FERR       LCV      Cell Loss
==== ==== ========== ========== ========== ========== ==========
5    2    0          308482135  308481990  0          0


              E3 RX Line Statistics

Slot Port    AIS         COFA         RAI
==== ==== ========== ========== ==========
5    2    0          0          0


              E3 RX Line Statistics

Slot Port    PLCP        PLCP        PLCP        PLCP        PLCP        PLCP
             OOF         LOF         YEL         FOE         BPE         FEBE
==== ==== ========== ========== ========== ========== ==========
==========
5    2    308482780  0          0          0          0          0

Slot Port     Elapsed Time
==== ==== ======================
5    2      0 days, 00:00:05.51
```

18.4.1.2. Line Type = G.751 & Sublayer = ADM

/Interface/ATM % vpis 5/2

```
             E3 RX Line Statistics
Slot Port    LOS          OOF        FERR       LCV      Cell Loss
==== ==== ========== ========== ========== ========== ==========
5    2    0          313545868  313545723  0          0

             E3 RX Line Statistics

Slot Port    AIS         COFA         RAI
==== ==== ========== ========== ==========
5    2    0          0          0

Slot Port     Elapsed Time
==== ==== =====================
5    2      0 days, 00:00:07.87

Physical layer statistics available only for DS3 and E3.
```

18.4.1.3. Line Type = CbitParity & Sublayer = PLCP

/Interface/ATM % vpis 5/1

```
             DS3 RX Line Statistics
Slot Port    LOS          OOF        FERF       RED      Cell Loss
==== ==== ========== ========== ========== ========== ==========
5    1    0          0          0          0          0


             DS3 RX Line Statistics

Slot Port      AIS          COFA         LCV            PERR           FERR
==== ==== ============ ============ ============ ============ ============
5    1    0            0            0            0            0


             DS3 RX Line Statistics

Slot Port     FEBE           PPERR
==== ==== ============ ============
5    1    0            0

             DS3 RX Line Statistics

Slot Port    PLCP         PLCP         PLCP         PLCP         PLCP         PLCP
             OOF          LOF          YEL          FOE          BPE          FEBE
==== ==== ========== ========== ========== ========== ==========
==========
```

```
5    1    0          0          0          0          0          0

Slot Port     Elapsed Time
==== ==== ======================
5    1      0 days, 00:00:01.63

Physical layer statistics available only for DS3 and E3.
```

18.4.1.4. Line Type = CbitParity & Sublayer = ADM

/Interface/ATM % vpis 5/1

```
             DS3 RX Line Statistics
Slot Port    LOS          OOF        FERF       RED      Cell Loss
==== ==== ========== ========== ========== ========== ==========
5    1    0          0          0          0          0


             DS3 RX Line Statistics

Slot Port      AIS         COFA        LCV           PERR          FERR
==== ==== ============ ============ ============ ============ ============
5    1    0            0            0            0            0


             DS3 RX Line Statistics

Slot Port     FEBE          PPERR
==== ==== ============ ============
5    1    0            0

Slot Port     Elapsed Time
==== ==== ======================
5    1      0 days, 00:00:03.55

Physical layer statistics available only for DS3 and E3.
```

18.4.1.5. Line Type = M23 & Sublayer = PLCP

/Interface/ATM % vpis 5/1

```
             DS3 RX Line Statistics
Slot Port    LOS         OOF       FERF       RED     Cell Loss
==== ==== ========== ========== ========== ========== ==========
5    1    0          0          0          0          0


             DS3 RX Line Statistics

Slot Port      AIS         COFA        LCV           PERR          FERR
==== ==== ============ ============ ============ ============ ============
5    1    0            0            0            0            0


             DS3 RX Line Statistics

Slot Port    PLCP        PLCP        PLCP        PLCP        PLCP        PLCP
             OOF         LOF         YEL         FOE         BPE         FEBE
==== ==== ========== ========== ========== ========== ==========
==========
5    1    0          0          0          0          0          0

Slot Port     Elapsed Time
==== ==== ======================
5    1      0 days, 00:00:02.43

Physical layer statistics available only for DS3 and E3.
```

18.4.1.6. Line Type = M23 & Sublayer = PLCP

/Interface/ATM % vpis 5/1

```
             DS3 RX Line Statistics
Slot Port    LOS         OOF       FERF       RED     Cell Loss
==== ==== ========== ========== ========== ========== ==========
5    1    0          0          0          0          0


             DS3 RX Line Statistics

Slot Port      AIS         COFA        LCV           PERR          FERR
==== ==== ============ ============ ============ ============ ============
5    1    0            0            0            0            0
```

```
Slot Port     Elapsed Time
==== ==== ====================
5    1      0 days, 00:00:02.99

Physical layer statistics available only for DS3 and E3.
```

18.5. ‘cpis’ command

Usage : cpis slot/port

‘cpis’ command is a new comand. This command allows users to clear physical port interval statistics per port basis.

For example,

/Interface/ATM % cpis 5/1

Physical layer interval statistics of port 5/1 has been cleared.

19. SNMP/MIB

- New object ***dsx3LoopbackStatus*** has been added to RFC 1407 to allow NMS to query current loopback state of an DS3/E3 port. Please refer to rfc1407.mib for more detailed.
- Object ***dsx3LineType*** in RFC 1407 is used as follows : *dsx3M23(2)* - M23, *dsx3CbitParity(4)* – CbitParity, *e3other(6)* – G.832, *e3framed(7)* – G.751.
- Newly defined IBM proprietary DS3/E3 objects are implemented only in release 3.1 and later. Please refer to IBM-ds3.mib for more detailed.