Release Notes
IBM Nways Multiprotocol Switched Services (MSS) Server Release 2.0/2.0.1

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These release notes contain information available after October 1997 about the IBM MSS Server product. It supplements information formally published in the MSS Server 2.0 manuals in October 1997.

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Chapter 1. General Changes, Procedures, and Restrictions

MSS Server Hardware Platforms

There are two types of MSS Servers: the IBM 8210 Nways Multiprotocol Switched Services (MSS) Server (8210), which is a standalone product, and the IBM Multiprotocol Switched Services (MSS) Server Module (A-MSS Server Module).

Note: Unless explicitly stated, the term *MSS Server* applies to both the 8210 and the A-MSS Server Module.

At the time of publication of these notes, the A-MSS Server Module is a double-wide (2-slot) module (FC 5300), which is installed as a module in the IBM 8260 Nways Multiprotocol Switching Hub (8260). In the near future, this module will be replaced with a single-wide (1-slot) module (FC 5400), which is installed as a module in the 8260 or the IBM 8265 Nways ATM Switch (8265).

What's New in MSS Server 2.0/2.0.1?

MSS Server 2.0 is a new release of the MSS Server that was shipped in October 1997 and includes the following new functions:

- Zero-hop IP routing for LAN attached stations (Route Switching).
- APPN routing
- Banyan VINES routing
- IP Multicast over ATM
- Distributed Classical IP ARP Server
- RFC 1577+ support
- RIP v2 support
- Duplicate MAC address support in SR-TB networks
- Support for bridging on RFC 1483 SVCs
- LAN Emulation enhancements

  LAN Emulation enhancements include a bigger LE ARP cache, faster cache lookup and LES initiated pacing of LEC joins
- ATM LLC multiplexing

  ATM LLC multiplexing allows VCCs and ATM addresses to be shared by protocols
- Trouble-shooting enhancements

  Trouble-shooting enhancements include enhancements to IP TraceRoute, IPX Ping, IPX TraceRoute and IPX RecordRoute
- Dynamic Reconfiguration

  Dynamic Reconfiguration allows some configuration changes to be made without re-booting the MSS Server.
- Dynamic linking and loading of software modules

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Dynamic linking and loading allows selective loading of functions into memory

- Time activated re-boot
- Updated Configuration Program to support MSS Server 2.0
- Updated firmware (v3.0) to support MSS Server 2.0

MSS Server 2.0.1 replaces MSS Server 2.0 and includes the following additional new functions:

- SuperELAN II

  SuperELAN II function includes SuperELAN bridging support for source-route Token-Ring networks. It also includes support for multiple instances of SuperELAN bridges, Bridge Broadcast Manager (BBCM) and DPF VLANs within the same MSS Server.

- New DPF VLAN policies

  New VLAN policies support creation of VLANs by MAC address and user-defined sliding-window filters.

- Display VLAN membership by MAC address
- BCM/BBCM support for NetBIOS name sharing
- Data Link Switching (DLSw)

  The DLSw function in MSS Server 2.0.1 is a **Beta** function (see "Data Link Switching (DLSw)" on page 3-5 for details).

- Support for the single-wide A-MSS Server Module

  The single-wide A-MSS Server Module occupies a single IBM 8260/8265 slot, has a 66% faster processor (166 MHz), 64-MB memory, built-in Ethernet port for box access, built-in hard disk, 155M ATM backplane connection and 2 PCMCIA slots.

- Updated configuration program to support MSS Server 2.0.1
- Updated firmware (v3.1) to support single-wide A-MSS Server Module

The MSS Server 2.0.1 operational code and the corresponding firmware and configuration program can be obtained as explained in "Getting the Latest Information, Code and Fixes" on page 1-2.

Most MSS Server 2.0.1 functions are already documented in the publications shipped with MSS Server 2.0 in October 1997. These release notes include additional information available since MSS Server 2.0 publications were shipped.

Getting the Latest Information, Code and Fixes

You can get the latest MSS Server information, operational code, firmware, configuration program and fixes on the World Wide Web at the following URL:

http://www.networking.ibm.com/nes/nesswitc.htm

To access the MSS Server 2.0.1 operational code on the World Wide Web, a valid userid and password is required. A userid and password is included with the MSS Server 2.0/2.0.1 CD-ROM.

MSS Server Books

The CD-ROM shipped with MSS Server 2.0/2.0.1 contains books for both MSS Server 1.1 and MSS Server 2.0/2.0.1. Please refer to the *Multiprotocol Switched Services (MSS) Server: Read This First* (PN 02L1849) document included with the MSS Server 2.0/2.0.1 package for an explanation of how to use the books.

Compatibility between MSS Server Hardware, Firmware and Software

Table 1-1 on page 1-3 shows the versions of MSS Server firmware, operational code, and configuration program that are compatible with the different MSS Server hardware platforms.

Table 1-1. MSS Server Hardware, Firmware and Operational Code Compatibility

MSS Hardware	MSS Operational Code			
	1.0	**1.1**	**2.0**	**2.0.1**
8210-001				
32 MB	FW 1.0+ CP 1.0	FW 2.0+ CP 1.1	X X	X X
64 MB	X X	FW 3.0+ CP 1.1	FW 3.0+ CP 2.0	FW 3.0+ CP 2.0.1
2-Slot Blade				
32 MB	FW 1.0+ CP 1.0	FW 2.0+ CP 1.1	X X	X X
64 MB	X X	FW 3.0+ CP 1.1	FW 3.0+ CP 2.0	FW 3.0+ CP 2.0.1
1-Slot Blade				
64 MB	X X	X X	X X	FW 3.1+ CP 2.0.1

FW = Firmware Level **CP** = Configuration Program Level **X** = Not Supported

Upgrading to MSS Server 2.0.1

Upgrade to MSS Server 2.0.1 as follows:

1. Ensure that the MSS Server has 64 MB of memory.

   64 MB of memory is required for MSS Server 2.0/2.0.1. To determine the amount of memory installed in the MSS Server:

   a. Access the firmware console.

The instructions to access the firmware console are included in the section "Using MSS Server Firmware" in the *MSS Server Service and Maintenance Manual*.

b. Select **Manage Configuration** and note the memory installed in the MSS Server.

c. If the MSS Server has less than 64 MB of memory, upgrade to 64 MB of memory. See "Upgrading MSS Server Memory to 64 MB" on page 1-6 for details. Do not proceed further unless 64 MB of memory is installed in the MSS Server.

d. If the MSS has 64 MB of memory, proceed to the next step.

2. Upgrade MSS Server firmware to 3.x.

Older versions of the firmware (1.x and 2.x) will not work with MSS Server 2.0.1. This is because MSS Server 2.0.1 requires support for dynamic linking and loading of software modules, which is provided in version 3.0 or higher of the MSS Server firmware. Also, the single-wide A-MSS Server Module has new hardware (described in "What's New in MSS Server 2.0/2.0.1?" on page 1-1) that is only supported by firmware 3.1.

a. To determine the firmware version of the MSS Server,

1) Access the firmware console.

The instructions to access the firmware console are included in the section "Using MSS Server Firmware" in the *MSS Server Service and Maintenance Manual*.

2) The firmware version is displayed in the upper left corner of the console.

b. If the firmware version is 1.x, upgrade the firmware to version 2.0 before proceeding to the next step. See "Upgrading MSS Server firmware" on page 1-8. for details on upgrading the firmware.

Note: Firmware 2.0 is required as an intermediate step in migrating to firmware 3.x because the old firmware (1.x) will not recognize the format of the new firmware (3.x). Firmware 3.x is required for MSS Server 2.0/2.0.1.

c. If the firmware version is 2.0, upgrade the firmware to 3.1. See "Upgrading MSS Server firmware" on page 1-8. for details on upgrading the firmware.

d. If the firmware version is 3.0 and the MSS Server is a single-wide A-MSS Server Module, upgrade the firmware to 3.1. See "Upgrading MSS Server firmware" on page 1-8. for details on upgrading the firmware.

e. If the firmware version is 3.0 and the MSS Server is not a single-wide A-MSS Server Module, you may upgrade the firmware to 3.1, but it is not required. See "Upgrading MSS Server firmware" on page 1-8. for details on upgrading the firmware.

3. Upgrade MSS Server operational code to 2.0.1.

a. To determine the operational code version of the MSS Server:

1) Access the MSS Server console. This is described in the *MSS Server Interface Configuration and Software User's Guide*.

2) At the * prompt, type **talk 6**.

3) At the `Config>` prompt, type **boot**.

4) At the `Boot Config>` prompt, type **list**. Note the bank that contains the active image.

5) At the `Boot Config>` prompt, type **describe**. Note the version and PTF level of the bank that contains the active image.

b. If the operational code version is less than 1.1 PTF 4, upgrade the operational code to version 1.1 (PTF 4 or higher) before proceeding to the next step. See “Upgrading MSS Server Operational Code” on page 1-9. for details on upgrading the operational code.

Note: MSS Server operational code 1.1 (PTF 4 or higher) is required as an intermediate step to upgrading to MSS Server 2.0/2.0.1. This is so that the new MSS Server operational code (2.0/2.0.1) can be loaded using the current operational code. Without MSS Server operational code 1.1 (PTF 4 or higher), the new MSS Server operational code (2.0 or 2.0.1) files could only be loaded one at a time via Xmodem, which is slow.

c. If the operational code version is 1.1 (PTF 4 or higher), upgrade the operational code to version 2.0.1. See “Upgrading MSS Server Operational Code” on page 1-9. for details on upgrading the operational code.

d. If the operational code version is 2.0, upgrade the operational code to version 2.0.1. See “Upgrading MSS Server Operational Code” on page 1-9. for details on upgrading the operational code.

4. Upgrade MSS Server Configuration Program to 2.0.1.

   If you plan to use the Configuration Program to create configurations for the MSS Server, then you need to upgrade your existing Configuration Program to the level that supports the MSS Server 2.0.1. See “Getting the Latest Information, Code and Fixes” on page 1-2 for instructions to obtain the Configuration Program for MSS Server 2.0.1. See “Installation” on page 4-1 for instructions to install the new Configuration Program.

5. Upgrade MSS Server configuration files.

   If you plan to use the Configuration Program to manage MSS Server configurations, then you should migrate the existing configuration database (cdb) file to the new release format. See “Migrating Downlevel Configuration Files” on page 4-2 for instructions to migrate configuration files created with a previous version of the configuration program.

6. Transfer the updated configuration file to the MSS Server.

   There are three ways to transfer the updated configuration file to the MSS Server:

   a. Using the configuration program.

      The configuration program can establish IP communication with the MSS Server and transfer the file to it. The instructions to do this are included in *Configuration Program User's Guide*.

   b. Using the MSS Server operational code.

      The MSS Server operational code can be used to transfer a configuration file from a TFTP server to one of the MSS Server storage banks using **tftp get config** from the Change Management menu. The instructions to do this are included in the section “Performing Change Management

Operations" in the *MSS Server Interface Configuration and Software User's Guide*.

c. Using the MSS Server firmware.

The MSS Server firmware can be used to transfer a configuration file from a TFTP server to one of the MSS Server storage banks. The instructions to do this are included in the section "Change Management" in the *MSS Server Service and Maintenance Manual*, *Chapter 4*.

Upgrading MSS Server Memory to 64 MB

To upgrade MSS Server memory to 64 MB:

1. Order 64-MB MSS Server memory (feature code 5301).
2. Ensure that the current level of firmware is 3.0 or higher.
   a. To determine the firmware version of the MSS Server,
      1) Access the firmware console.

      The instructions to access the firmware console are included in the section "Using MSS Server Firmware" in the *MSS Server Service and Maintenance Manual*.

      2) The firmware version is displayed in the upper left corner of the console.

   b. If the firmware version is 1.x, upgrade the firmware to version 2.0 before proceeding to the next step. See "Upgrading MSS Server firmware" on page 1-8. for details on upgrading the firmware.

      Note: Firmware 2.0 is required as an intermediate step to upgrading the firmware to version 3.x because the older firmware (1.x) will not recognize the format of the new firmware (3.x). Firmware 3.x is required to support 64-MB memory.

   c. If the firmware version is 2.0, upgrade the firmware to 3.1. See "Upgrading MSS Server firmware" on page 1-8. for details on upgrading the firmware.

   d. If the firmware version is 3.0 and the MSS Server is a single-wide A-MSS Server Module, upgrade the firmware to 3.1. See "Upgrading MSS Server firmware" on page 1-8. for details on upgrading the firmware.

   e. If the firmware version is 3.0 and the MSS Server is not a single-wide A-MSS Server Module, you may upgrade the firmware to 3.1, but it is not required. See "Upgrading MSS Server firmware" on page 1-8. for details on upgrading the firmware.
3. Once the 64-MB memory modules are physically installed, you **may** have to re-format the PCMCIA hard drive. You should re-format the PCMCIA hard drive if ***any*** of the following conditions apply:
   - The PCMCIA hard drive part number is 85H6367.
   - The PCMCIA hard drive part number is 85H8713.
   - The PCMCIA hard drive part number is 86H2261.
   - The label on the PCMCIA hard drive is "Version 1 R1.0."
   - The label on the PCMCIA hard drive is "Version 1 R1.0 PTF 1."

If the above conditions do not apply, then the memory upgrade procedure is complete and you should skip the remaining steps.

Attention

The PCMCIA hard drive has a reserved area where the MSS Server can dump its memory if it crashes. These dumps are used by IBM Service Personnel to diagnose problems. Based on when the PCMCIA hard drive was manufactured, it may have to be re-formatted to accommodate a 64-MB memory dump.

If the PCMCIA hard drive is not capable of storing a 64-MB memory dump and a MSS Server with 64 MB of memory dumps its memory to the hard drive, operational code and configuration on the hard drive will be destroyed.

If you have determined that you need to re-format the PCMCIA hard drive, then use the following guidelines to re-format it:

a. Ensure that backup copies of the operational code images and configuration files are available. You can get the operational code from the World Wide Web as described in "Getting the Latest Information, Code and Fixes" on page 1-2. You can save the configuration files using the Configuration Program as described in the *Configuration Program User's Guide*.

   If there are any operational code images and configuration files in bank A or B, they will be destroyed when the PCMCIA hard drive is re-formatted. Bank F is in flash memory and will remain unaffected. It is recommended that you have backups of the operational code images and configuration files for all the banks (A, B and F) before proceeding to the next step.

b. If the MSS Server is configured to use the code and configuration in bank A or B, then you can use Bank F as a temporary holding area while the PCMCIA hard drive is being re-formatted.

   Once the re-formatting is complete, bank F can be copied back into bank A or B instead of loading over the network or serial port. Copying code and configurations between banks is much faster than reloading over the network or serial port.

   If the MSS Server is configured to use the code and configuration in bank A or B, then use the following procedure:

   1) Access the firmware console.

      The instructions to access the firmware console are included in the section "Using MSS Server Firmware" in the *MSS Server Service and Maintenance Manual*.
   2) Copy the contents of the `PENDING` bank (assume bank A) to bank F.

      The instructions for copying between banks are included in the section "Change Management Functions" in the *MSS Server Service and Maintenance Manual*, *Chapter 4*.
   3) Re-format the PCMCIA hard drive.

      The instructions for re-formatting the hard drive are included in the section "Preparing the Hard Disk" in the *MSS Server Service and Maintenance Manual*, *Chapter 4*.

4) Copy the contents of Bank F to the bank you want the MSS Server to load from (assume bank A).

   The instructions for copying between banks are included in the section "Change Management" in the *MSS Server Service and Maintenance Manual*, *Chapter 4*.
5) Re-start the MSS Server.
6) Restore the contents of the other banks (B and F).

   The instructions for loading operational code images and configuration files are in the section "Change Management" in the *MSS Server Interface Configuration and Software User's Guide*.

c. If the MSS Server is configured to use the code and configuration in bank F, then use the following procedure:

1) Access the firmware console.

   The instructions to access the firmware console are included in the section "Using MSS Server Firmware" in the *MSS Server Service and Maintenance Manual*.
2) Re-format the PCMCIA hard drive.

   The instructions for re-formatting the hard drive are included in the section "Preparing the Hard Disk" in the *MSS Server Service and Maintenance Manual*, *Chapter 4*.
3) Re-start the MSS Server.
4) Restore the contents of banks A and B.

   The instructions for loading operational code images and configuration files are in the section "Change Management" in the *MSS Server Interface Configuration and Software User's Guide*.

Upgrading MSS Server firmware

To upgrade the MSS Server firmware,

1. Get the appropriate level of MSS Server firmware as explained in "Getting the Latest Information, Code and Fixes" on page 1-2.
2. Update the firmware.

   The new firmware can be loaded using TFTP, Xmodem, or a Local File Copy from the current firmware console. This procedure is described in the section "Updating System Firmware" in the *MSS Server Service and Maintenance Manual*, *Chapter 4*.

Attention

1. If the current firmware version is 1.x, and you plan to dial into the MSS Server over the modem interface, then you must do the following before dialing into the MSS Server's modem interface:
   a. Disconnect the serial cable.
   b. Reboot the MSS Server.
   c. Wait approximately 2 minutes.

   If the above steps are not followed, the console screen will not be displayed.
2. If the current firmware version is 2.0 or less, and you plan to use the Local File Copy method to update the firmware to version 3.x, then the firmware should be placed on the hard drive in the root directory with a filename of *.IMG (eg. FIRM.IMG).
3. If the current firmware version is 3.0, and you plan to use the Local File Copy method to update the firmware to version 3.1, then the firmware can be placed on the hard drive in the root directory with any filename.

Upgrading MSS Server Operational Code

To upgrade the MSS Server operational code,

1. Get the appropriate version of MSS Server operational code as explained in "Getting the Latest Information, Code and Fixes" on page 1-2.
2. Update the operational code.

   There are two ways to update the operational code:

   a. It can be done in-band using the operational code as described in the section "Performing Change Management Operations" in the *MSS Server Interface Configuration and Software User's Guide*.

      Note: If you are updating the MSS Server operational code to 2.0/2.0.1 in-band using the current operational code, then the current operational code must be at version 1.1 PTF 4 or higher. MSS Server 2.0/2.0.1 operational code is shipped as multiple files. These files get automatically loaded when the `tftp get load modules` command is used from the Change Management menu.

   b. It can also be done from firmware using Change Management as described in the section "Using MSS Server Firmware" in the *MSS Server Service and Maintenance Manual*.

      Note: If you are updating the MSS Server operational code to 2.0/2.0.1 using the current firmware, then the current firmware must be at version 3.0 or higher. Older versions of the firmware (1.x and 2.x) will not work with MSS Server 2.0/2.0.1. This is because MSS Server 2.0/2.0.1 operational code is shipped as multiple files and requires support for dynamic linking and loading of software modules. This support is provided in firmware version 3.0 and higher. Alternatively, the operational code could be loaded from firmware using Xmodem one file at a time, but that is very slow.

Migration Considerations for the Single-wide A-MSS Server Module

The 8210-001 and the double-wide A-MSS Server Module have internal flash storage and a plug-in PCMCIA hard drive. The flash and the hard drive can be used to store MSS Server operational code images and configurations. The new single-wide A-MSS Server Module has an internal hard drive and an optional plug-in PCMCIA flash card.

Transferring Configurations from a PCMCIA Hard Drive to the Internal Hard Drive

To transfer a configuration from the PCMCIA hard drive of a 8210-001 or double-wide A-MSS Server Module to a single-wide A-MSS Server Module's internal hard drive, use the following procedure:

1. Make sure the single-wide A-MSS Server Module operational code is up and running. When the operational code is running, you will see the * prompt on the MSS Server console.

   Attention

   DO NOT insert the old PCMCIA hard drive into the single-wide A-MSS Server Module unless the operational code is up and running.

   Inserting the PCMCIA hard drive into the single-wide A-MSS Server Module and then starting the MSS Server can corrupt the operational code images and configuration files on the internal hard drive.

2. Insert the PCMCIA hard drive into the right PCMCIA slot.
3. At the * prompt, type **talk 6**.
4. At the `Config>` prompt, type **boot**.
5. At the `Boot Config>` prompt, select **IMPORT/EXPORT from PCMCIA hardfile**.

   Note:

   The **IMPORT/EXPORT from PCMCIA hardfile** option is displayed on the `Boot Config>` menu only when the PCMCIA hardfile is actually inserted into the single-wide A-MSS Server Module.

6. At the `Import/Export config>` prompt, select **IMPORT Config File**.
7. Select desired Bank and Config to import from PCMCIA Hardfile.
8. Select desired Bank and Config on internal hardfile as destination.

   The configuration will be copied to the internal hardfile.

9. At the `Import/Export config>` prompt, type **exit**.
10. Remove the PCMCIA hard drive from the PCMCIA slot.

Transferring Configurations from a PCMCIA Hard Drive to the PCMCIA Flash Card

To transfer a configuration from the PCMCIA hard drive of a 8210-001 or a double-wide A-MSS Server Module to a single-wide A-MSS Server Module's PCMCIA flash card:

1. Follow the procedure described in “Transferring Configurations from a PCMCIA Hard Drive to the Internal Hard Drive” on page 1-10 to first transfer the configuration from the PCMCIA hard drive to the internal hard drive.
2. Insert the PCMCIA flash card into the left PCMCIA slot.
3. Format the PCMCIA flash card as described in “Preparing the PCMCIA Flash Card” on page 1-11.
4. At the MSS Server console * prompt, type **talk 6**.
5. At the `Config>` prompt, type **boot**.
6. At the `Boot Config>` prompt, type **copy config**.
7. Select appropriate bank and config on the internal hard file to copy from.
8. Select bank F (Flash Card) as the destination.

   The configuration will be copied to the flash card.

Preparing the PCMCIA Flash Card

Before the PCMCIA flash card can be used to store the operational code or configuration images, it must be prepared as follows:

1. Insert the PCMCIA Flash Card into the left PCMCIA slot.
2. Access the firmware console.

   The instructions to access the firmware console are included in the section “Using MSS Server Firmware” in the *MSS Server Service and Maintenance Manual*.
3. Select **Utilities**.
4. Select **Prepare Hard Disk**.
5. Select **20 MB disk ID 0, Controller 1**.
6. Select **Yes** when prompted to confirm.
7. Once the flash is ready, the MSS Server will restart.

Checking Current Memory in the MSS Server

To determine the amount of memory installed in the MSS Server:

1. Access the firmware console.

   The instructions to access the firmware console are included in the section “Using MSS Server Firmware” in the *MSS Server Service and Maintenance Manual*.
2. Select **Manage Configuration** and note the memory installed in the MSS Server.

Checking Current Version of the MSS Server Firmware

To determine the current firmware version of the MSS Server:

1. Access the firmware console.

The instructions to access the firmware console are included in the section "Using MSS Server Firmware" in the *MSS Server Service and Maintenance Manual*.

2. The firmware version is displayed in the upper left corner of the console.

Checking Current Version of the MSS Server Operational Code

To determine the current version of the operational code in the MSS Server:

1. Access the MSS Server console. This is described in the *MSS Server Interface Configuration and Software User's Guide*.
2. At the * prompt, type **talk 6**.
3. At the `Config>` prompt, type **boot**.
4. At the `Boot Config>` prompt, type **list**. Note the bank that contains the active image.
5. At the `Boot Config>` prompt, type **describe**. Note the version and PTF level of the bank that contains the active image.

Changes to MSS Server Default Configuration

The MSS Server is shipped with a default configuration that allows it to be initially accessed through the ATM interface via an Ethernet ELAN, Token-Ring ELAN, or Classical IP subnet.

In addition to the default configuration parameters documented in the manual, the MSS Server default configuration also includes a LECS (LAN Emulation Configuration Server). The LECS allows LECs (LAN Emulation Clients) to automatically connect to the correct ELAN. The default LECS configuration parameters are:

LECS - General Parameters

LECS ATM Device	0
LECS ESI	400082100001
LECS Selector (hex)	00

LECS - Assignment Policies

Priority	10
Policy	By LAN Type

Chapter 2. MSS Server Firmware

Firmware version 3.0 or higher is required to support the MSS Server 2.0.1 operational code. The following notes are applicable to all versions of the MSS Server firmware.

Using MSS Server Firmware

The following notes are applicable to using firmware in A-MSS Server Modules.

If XMODEM is used to load operational code, configuration file or firmware in A-MSS Server Modules, then you should:

1. Disable the ATM port that the A-MSS Server Module is plugged into.
2. Load the appropriate files.
3. Re-enable the ATM port.

The ATM port can be enabled and disabled from the 8260/8265 CPSW console.

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Chapter 3. MSS Server Operational Code

Using and Configuring NHRP

Route Switching

Guidelines for Setting Mode_for_Route_Switching

The *Mode_for_Route_Switching* parameter can be set to **bridged** or **routed**. If the ingress and egress ELANs are inter-connected with a transparent bridge (but not SuperELAN bridge), then Route Switching cannot be done and it must be disabled. If the ingress and egress ELANs are inter-connected with a SuperELAN bridge, then the Mode_for_Route_Switching must be set to bridged. If the ingress and egress ELANs are inter-connected with an IP router or a source-route bridge, then the Mode_for_Route_Switching must be set to routed.

Restrictions in VCC-Splice mode

Route Switching is not supported in **routed** mode when the LES/BUS **bus-mode** is set to **VCC-Splice**

Interoperability with IBM 8281 in Source Route Bridge Networks

When Token-Ring Route Switching Clients are connected to ATM via IBM 8281s configured as source route bridges, the operational code in the IBM 8281 must be V2.4 or higher.

Using and Configuring APPN

APPN user-defined COS is not configurable from the command line interface. The Configuration Program is the only means to configure user-defined COS.

SuperELAN II

TCP/IP Host Services

TCP/IP Host Services can be used to configure and monitor the MSS Server ASRT Bridge using TCP/IP even when IP routing is not enabled in the MSS Server. However, TCP/IP Host Services are not supported by the SuperELAN II bridge.

To configure and monitor a SuperELAN II bridge using TCP/IP when IP routing is not enabled in the MSS Server:

1. Create an additional LEC that is not a SuperELAN bridge port.
2. Configure the LEC to join any one of the ELANs in the SuperELAN.
3. Assign an IP address to this LEC interface.

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SuperELAN II Spanning Tree

SuperELAN II uses a modified 802.1d Spanning Tree frame to maintain SuperELAN topology. Unlike the 802.1d Spanning Tree Protocol (STP) frames, the destination MAC address of the SuperELAN II STP frames is the all 1's broadcast address instead of the bridge functional address. Therefore, other non-SuperELAN bridges connected to the SuperELAN will forward these STP frames onto other LANs and ELANs. Although harmless, it may be useful to reduce this extraneous traffic by filtering these SuperELAN II STP frames in the other bridges. This can be accomplished by adding a SNAP filter for SNAP header `10005A-80D7` in the other bridges.

Configuring Routing Protocols on SuperELAN II Interfaces

The following routing protocols are supported on the SuperELAN II interfaces:

- IP
- IPX
- AppleTalk
- Banyan Vines

Layer-2 protocols like APPN and ASRT bridging, are not supported on SuperELAN II interfaces. If connectivity to a SuperELAN using Layer 2 protocols is needed, these protocols should be configured on non-SuperELAN II LECs and the LECs should be configured to "join" the SuperELAN (any ELAN in the SuperELAN).

Migration considerations for SuperELAN II

The previously available SuperELAN I was based on the MSS Server ASRT bridge. The new SuperELAN II runs independently of the MSS Server ASRT bridge. MSS Server 2.0.1 supports SuperELAN I as well as SuperELAN II. However, the MSS Server can be configured as SuperELAN I or SuperELAN II, but not both. A migration utility is provided from the MSS Server console to migrate a SuperELAN I configuration to SuperELAN II.

Attention

The **migrate** utility is only available from the MSS Server console and the web interface. It is not available from the MSS Server Configuration Program. If you plan to use the Configuration Program to manage MSS Server configurations:

1. Migrate the SuperELAN I configuration using the **migrate** command as described in this section.
2. Retrieve the updated configuration from the MSS Server using the Configuration Program and save it as a `cdb` file.

Migration to SuperELAN II is provided via the **migrate** command under the SuperELAN configuration menu. The **migrate** command will scan the ASRT bridge configuration records and migrate any ports which are enabled for SuperELAN I. You will be prompted to enter additional SuperELAN information for each ASRT port that can be migrated to SuperELAN II. Prior to invoking the **migrate** command, you should:

1. Backup the original configuration.

2. Have the following information available for each current ASRT port enabled for SuperELAN I:
   a. The ELAN which the ASRT port LEC joins
   b. The location of the ELAN relative to this MSS Server, i.e. the ELAN's LES/BUS is in this MSS Server (`local`) or in another MSS Server (`Remote`).
3. At the * prompt, type **talk 6**.
4. At the `Config>` prompt, type **net 0** (if 0 is the ATM interface).
5. At the `ATM Config>` prompt, type **se-services**.
6. At the `SE Services Config>` prompt, type **migrate**.

After migration is complete, the migrated ASRT configuration records are updated and new SuperELAN records are added. Migrated changes will become effective after the new configuration is saved and the MSS Server is restarted.

The following example shows the migration of a three-port SuperELAN I ASRT bridge to SuperELAN II.

```
* talk 6
Config> net 0
ATM Config> se-services
SE Services Config> migrate
SuperELAN ID:22     SuperELAN Name: []? star backbone
SuperELAN will be added to ATM Interface Number [0]?
  ASRT Port:1    Ifc:1     Is Port's LEC joined to Remote ELAN? [No]: no
  ELAN Name (if Local must match LES/BUS Name): []? chicago
  ASRT Port:2    Ifc:2     Is Port's LEC joined to Remote ELAN? [No]: no
  ELAN Name (if Local must match LES/BUS Name): [] tulsa
  ASRT Port:3    Ifc:3     Is Port's LEC joined to Remote ELAN? [No]: yes
  ELAN Name (if Local must match LES/BUS Name): []? baltimore

Migrate ASRT SuperELAN ID 22 to SuperELAN II 'star backbone'
  ASRT Port: 1    Interface: 1    Remote ELAN: No   ELAN Name: chicago
  ASRT Port: 2    Interface: 2    Remote ELAN: No   ELAN Name: tulsa
  ASRT Port: 3    Interface: 3    Remote ELAN: Yes  ELAN Name: baltimore

The above ASRT ports will be migrated, do you want to continue? [Yes]:
Adding SuperELAN star backbone, ID=22
SuperELAN 'star backbone' added.
ELAN 'chicago' added to SuperELAN 'star backbone'
ELAN 'tulsa' added to SuperELAN 'star backbone'
ELAN 'baltimore' added to SuperELAN 'star backbone'
Migration complete.
Please write config and reboot for migration to take effect.

SE Services Config>list
Number of configured SuperELANS: 1

Mode E=Enabled/D=Disabled                                        BCM
| ATM Interface Net Number                                      IP
|  | Type E=Ethernet/T=Token Ring            Proxy LE ARP      | NetBIOS
|  |  |                                       |                 | |
v  v  v SuperELAN Name                  ID    v #ELANs #VLANs v v
- --- - ------------------------------ ----- - ------ ------ - -
E   0 E                   star backbone    22 N      3      0 N N
SE Services Config> w
  (  1) star backbone
  (  2) << Exit (no selection) >>
SuperELAN Name [1]? 1
SuperELAN 'star backbone' selected for detailed configuration.

SuperELAN 'star backbone' Config> elan
SuperELAN Name:          star backbone

Mode E=Enabled/D=Disabled
| SuperELAN Port Number
|   |   MSS Server Interface Number
|   |     |  ELAN Services Location
|   |     |     |    Spanning Tree Priority
|   |     |     |      |  Spanning Tree Path Cost
|   |     |     |      |    |
v   v     v     v      v    v    ELAN Name
- ----- ----- ------  --- -----  ------------------------------
E     1     1  Local  128 32768  chicago
E     2     2  Local  128 32768  tulsa
E     3     3 Remote  128 32768  baltimore
```

BCM and BBCM

NetBIOS NameSharing

The OS/2 LAN Server has a feature called NameSharing, which allows the same NetBIOS name (file server name) to be used on multiple LAN interfaces of the server. NameSharing is used to overcome the NetBIOS limitation of 254 sessions per LAN interface. Without this technique, a file server could not be accessed by more than 254 clients at one time. Another benefit of NameSharing is that it allows a LAN Server's clients to be distributed across multiple LAN interfaces of the server, thus balancing network traffic across the server's interfaces.

In previous releases of the MSS Server, if Broadcast Manager (BCM) or Bridging Broadcast Manager (BBCM) was enabled for NetBIOS, it associated each learned NetBIOS name with a single unicast MAC address. Subsequently, if BCM/BBCM transformed a NetBIOS broadcast, it always directed the packet to the associated unicast MAC address. However, this defeated the purpose of NameSharing. With MSS Server 2.0.1, BCM/BBCM can support networks with NameSharing servers.

BBCM support for NameSharing servers is available with the ASRT bridge as well as the SuperELAN II bridge. No user configuration is required to enable NetBIOS NameSharing, it is automatically enabled.

Data Link Switching (DLSw)

DLSw is a forwarding mechanism for the LLC2, SDLC, and QLLC (SNA over X.25) protocols. It relies on the bridging function of the router, the Switch-to-Switch protocol (SSP), and TCP/IP to provide a reliable transport of SNA traffic over an internet. DLSw does not provide full routing capabilities, but it provides switching at the data link layer. Rather than bridging LLC2 frames, DLSw encapsulates their data in TCP frames and forwards the resulting messages over the WAN link to a peer DLSw router for delivery to their intended end-station addresses.

DLSw has been added to the MSS server to provide SNA facilities through ATM networks. An application that this specifically addresses is the Frame Relay to ATM interworking environment where the Frame Relay connection is typically operating at T1 speeds (1.5 Mbps) versus ATM that is typically operating at 25 Mbps to OC-3 speeds (155 Mbps).

The LAN connections for DLSw will be provided through the emulated token-ring or Ethernet LANs typically bridged to physical LANs via an 8281 or similar device. The IP partner connections can be established through any of the ATM IP connections. The MSS server can receive routed IP traffic over emulated LAN interfaces or through classical IP (native ATM interfaces) which will run RFC 1577 and RFC 1483 protocols. The IP multicast functions used by DLSw may also be used over either emulated LANs or over the classical IP MARS (Multicast Address Resolution Server (RFC 2022)) interface.

The DLSw function in V2.0.1 is a Beta function, and must be configured and monitored using talk 5 and talk 6 of the native MSS Server console (see "Data Link Switching (DLSw) Configuration" on page 4-4 for details). For more information, you can access the IBM NWAYS Multiprotocol Routing Services Protocol

Configuration and Monitoring Reference Volume 1 on the World Wide Web at the following URL:

http://www.networking.ibm.com/220/220lib.html

Refer to *Chapter 27. Using and Configuring DLSw* and *Chapter 28 - Monitoring DLSw*. These chapters should be used as they apply to LAN emulation for "LAN interfaces" and to either LAN Emulation or Classical IP for "IP interfaces". Any references to QLLC, SDLC, or BAN should be omitted as there are no such interfaces or functions supported by the MSS Server.

Chapter 4. MSS Server Configuration Program

Installation

Installing from CD-ROM

To install the MSS Server Configuration Program from a CD-ROM, follow the instructions below, based on your operating system. In the examples below, 'e:' refers to your CD-ROM drive.

AIX

1. Change to the directory on the CD-ROM where the configuration program files are kept (e:/config).
2. Type **INSTALL.AIX**.

OS/2

1. Change to the directory on the CD-ROM where the configuration program files are kept (E:\CONFIG).
2. Type **os2inst**.

Attention

OS/2 Warp Version 4 is not supported.

WINDOWS 95

1. From the Start Menu, select **Run**.
2. Type **E:\CONFIG\INSTALL**.

WINDOWS

1. Change to the directory on the CD-ROM where the configuration program files are kept (E:\CONFIG).
2. Type **Install**.

Attention

If you do not have WIN32 support, you will need to do the following:

1. Copy diskettes 1 and 2 from E:\CONFIG\WIN32 onto diskettes.
2. Insert diskette 1 into your diskette drive.
3. Type **A:\SETUP**.

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Installing from Diskettes

The MSS Server Configuration Program diskettes are not included with the MSS Server. If you prefer to install the configuration program from diskettes, diskette images are available for downloading from the Internet (see “Getting the Latest Information, Code and Fixes” on page 1-2). To install the configuration program using diskettes, follow the instructions in the *Configuration Program User's Guide*.

Migrating from a Previous Version of the Configuration Program

If you are migrating from an older version of the configuration program, you should consider the following:

- ELAN TLV definitions are written to the file `cfg.tlv` in the configuration program installation directory. Do NOT delete this file if you are re-installing the configuration program. In order to successfully use existing configurations stored in a `cdb` file that have user-defined TLVs configured in an ELAN definition, the `cfg.tlv` file containing these TLV definitions is required. If you are installing the configuration program in a new directory, copy the `cfg.tlv` file to the new directory before starting the configuration program. To verify that no TLV information is missing, review entries on the TLV Definitions page for each ELAN.

Migrating Downlevel Configuration Files

When you use the new Configuration Program with configuration database (`cdb`) files created by earlier versions of the Configuration Program, you will be prompted to migrate the `cdb` file to the new format.

1. Start the current version of the configuration program.
2. Select **OPEN CONFIGURATION** from the File menu. Select the old configuration from within the `.cdb` file. The configuration program will then ask if you wish to convert the configuration to the new format.
3. Select **SAVE CONFIGURATION AS** to save the configuration to a new file with a new name. Using the “Save configuration as” function allows you to keep the existing configuration file for future use.

If the only copy of the configuration is either in the MSS or in binary format, you must use the version of the configuration program that is compatible with the existing configuration to create a configuration database (`cdb`) file. Then, the new configuration program should be used to migrate this `cdb` file to the new format as explained above. To create a `cdb` file for the binary configuration file:

1. Start the previous version of the configuration program.
2. Select **READ CONFIGURATION** to read the existing configuration into the configuration program. Another way to load an existing configuration into the program is to select **COMMUNICATION**, **SINGLE**, and then **RETRIEVE** from the Configuration menu.
3. Select **SAVE CONFIGURATION** from the File menu.
4. Save the configuration into a file with file extension `.CDB`.

Using the Command Line Facility

The Command Line facility provides the capability to automate configuration operations by allowing the user to perform configuration operations using commands instead of the graphical user interface.

If you use the Command Line Facility, you cannot use the "*" character in a command.

What's New in the Configuration Program

In addition to supporting the new functions of the MSS Server (described in "What's New in MSS Server 2.0/2.0.1?" on page 1-1), CDB file locking has been added to prevent multiple users from writing to the same file.

Restrictions

This section discusses some important configuration program restrictions that you should be aware of:

Windows Environment:

If TCP/IP is not installed and running before using the "Send Single" or "Send Multiple" functions, the Configuration Program will hang.

OS/2 environment:

A selection of 65535 colors when using OS/2 WARP will prevent the program bitmap from being displayed.

OS/2 Warp Version 4 is not supported.

ELS (Event Logging System) Configuration

The Configuration Program does not support ELS configurations. To configure ELS, you must use the command line or web browser interface on the MSS Server. If ELS configurations are included in a configuration file that you retrieve from a MSS Server, the ELS configurations will be preserved when you send the configuration back to the MSS Server. Any changes to the ELS configurations made on the server after retrieving the configuration and before sending it back will be lost.

MARS (IP Multicast over ATM) Configuration

Currently, MARS is not configurable using the configuration program. It can be configured using the command line interface or the web browser interface on the MSS Server. If MARS is configured, care must be taken if the Configuration Program is used to delete, add or change interfaces. The Configuration Program currently does not update the MARS configuration data to be consistent with the reassigned interface numbers.

Data Link Switching (DLSw) Configuration

Currently, DLSw is not configurable using the configuration program. It can be configured using the talk 6 interface of the MSS Server console. If DLSw is configured using talk 6 and the configuration program is later used with this configuration, it will not preserve the DLSw configuration parameters.