IBM

Release Notes
IBM Nways Multiprotocol Switched Services (MSS) Family Client
Version 2.1

IBM Corporation
Part Number 30L5947, EC E49549
June 30, 1998

This document is for use with the IBM Nways Multiprotocol Switched Services (MSS) Client and the IBM Multiprotocol Switched Services Domain Client. In this document, the term MSS Family Client is used to refer to both. Where there are differences between the two, they will be uniquely identified.

The purpose of this document is to provide the reader with information that may not be in the documentation shipped with MSS Family Client. This document is not to be used as a replacement for that documentation, but as an addition which may add details that were not available at the time of that documentation's production. This document details restrictions, limitations, and procedures that may be needed to operate the IBM MSS Family Client. It is strongly recommended that this document be read completely before the use of the MSS Family Client.

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Chapter 1. Overview

MSS Family Client

The MSS Family Client is a Universal Feature Card (UFC) that may be installed into several different models of the 8272, 8270, and some LAN switch features of the IBM 826X switch. It contains a 133 Mhz 603e Processor, 32 MB of memory, 1 MB LAN switch packet memory and 8 MB of flash. The MSS Client also has a PCI attached ATM Fiber Interface with 8 MB of packet memory that can be used for ATM or FasTR communication.

The IBM MSS Domain Client is a UFC that provides for high speed routing between domains on the LAN Switch in Ethernet and Token-Ring LAN Switches. Protocols that it supports are IP, IPX, Banyan Vines, and Appletalk routing. In the Token-Ring LAN Switches, it also provides enhanced source route bridging support. The MSS Domain Client can enhance bridge performance by processing the All Route Explorer (ARE) and Spanning Tree Explorer (STE) packets using the MSS Domain Client's processor. This permits the LAN switch processor to be more available for use on layer 2 switching and management tasks. The enhanced bridging support also supports LAN Network Manager (LNM) agents, Virtual LANs (VLANs), and other Source Route Bridge (SRB) features not currently available on the Token-Ring LAN switch without the MSS Domain Client.

The IBM MSS Client in a Token-Ring LAN Switch provides all of the functions of the IBM MSS Domain Client, plus additional ATM functions. It provides for enhanced routing to Classical IP over ATM, Next Hop Routing Protocol (NHRP), and Multiprotocol Over ATM (MPOA). Its bridging support is capable of bridging to Token-Ring Emulated LANs (ELANs) using a high performance hardware path that allows steady state packets to be bridged from the LAN switch Token-Ring interface to the ATM ELAN entirely in hardware. The MSS Client also supports FasTR for use in communicating to other FasTR devices that may be directly attached to the MSS Client.

MPOA and FasTR are **beta** functions in the June 30, 1998 release.

Please see the *Multiprotocol Switched Services Family Clients Interface Configuration and Software User's Guide* for more details on the functions available.

Attention!!!

The operational image and firmware that is preloaded on the MSS Family Client may not be latest available. Please check for fixes (PTFs) to the MSS Family Client operational code and firmware at **http://www.networking.ibm.com/nes/neshome**.

Chapter 2. General Information, Procedures, and Restrictions

Getting the Latest Information, Code and Fixes

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

http://www.networking.ibm.com/nes/neshome

It is highly recommended that the user check this site prior to installation of the MSS Family Client into a user production network for later versions of software that may be available. The current level of the operational image may be determined by accessing the MSS Family Client console, entering **talk 5** and then **config**.

The following is an example of displaying the operational software version. The software version is highlighted.

```
Please press the space bar once to obtain the console.
Console granted to this interface.
Please type "return" at the MOS Operator Control
prompt ( ) or enter Ctrl-b to exit console.

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MSS Client
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Use, duplication or disclosure restricted
by GSA ADP Schedule Contract with IBM Corp.
MOS Operator Control
 talk 5
+config

IBM MSS Client
Host name: 8272#1
Version: MSSC Feature   V2.1 Mod   PTF 1 RPQ       cc22_27c


Num Name    Protocol
     IP         DOD-IP
3     ARP        Address  Resolution
7     IPX        NetWare  IPX
11    SNMP       Simple Network Management Protocol
12    OSPF       Open SPF-Based Routing Protocol
23    ASRT       Adaptive Source Routing Transparent Enhanced Bridge
29    MPOA       Multi-Protocol Over ATM

Num Name    Feature
2     MCF        MAC  Filtering
6     QOS        Quality of Service
```

Publication Corrections

1. In the *MSS Domain Client UFC Planning and Installation Guide* and the *MSS Client UFC Planning and Installation Guide* the **LED Indicators** section omits the following LED indication: **Yellow-On, Green-Blinking** indicates that the image is being saved to flash memory.
2. The ATM Port LED status indicators do not currently function as stated in the *MSS Client UFC Planning and Installation Guide*.
3. In chapter 12, on page 125 of the *Multiprotocol Switched Services Family Clients Interface Configuration and Software User's Guide*, the description of the **enable** command in the **switch-interface** submenu incorrectly states that the **enable** command should be used to disable hardware bridging. The **enable** command should be used to enable hardware bridging.
4. In chapter 1, on page 4 of the *Multiprotocol Switched Services Family Clients Interface Configuration and Software User's Guide*, **Figure 1** and **Figure 2** have the MSS Family Client placed in an incorrect slot of what may be perceived as a LAN Switch Blade. Please read the *MSS Domain Client UFC Planning and Installation Guide* for accurate information on the correct placement of the MSS Family Client in the different models of the LAN Switches.
5. In chapter 1, on page 7 of the *Multiprotocol Switched Services Family Clients Interface Configuration and Software User's Guide*, under the **Multiple MSS Family Clients** section, it states the possible combinations of MSS Clients, MSS Domain Clients, and ATM UFCs. These combinations are valid, only if the LAN Switch that they are to be put in, does not have slot restrictions that do not allow the physical placement of the adapters. For example, in the 8272 LAN Switch Module, FN 6308, the MSS Family Clients and ATM UFC are only supported in slots 2 and 4. If the MSS Client is placed in slot 2, it will also occupy slot 4, since it is 2 slots wide. This will prevent an MSS Domain Client or an ATM UFC from being placed in the 8272 LAN Switch Module when the MSS Client is inserted.
6. In chapter 17, on page 177 of the *Multiprotocol Switched Services Family Clients Interface Configuration and Software User's Guide*, the example shown for the **list lnm ports** does not accurately show the LNM settings. Below is a more accurate example:

```
ASRT>list lnm ports
Port 1
LNM Agents Enabled: RPS CRS REM
Reporting  Link              State              LNM  Station  Address
                              AVAILABLE
        1                      AVAILABLE
        2                      AVAILABLE
        3                      AVAILABLE
MAC Addresses to use when configuring LNM Manager:
         : 4:AC:C4: 2:4
         : 4:AC:C4: 2:41
Port 2
LNM Agents Enabled: RPS CRS REM
Reporting  Link              State              LNM  Station  Address
                              AVAILABLE
        1                      AVAILABLE
        2                      AVAILABLE
        3                      AVAILABLE
MAC Addresses to use when configuring LNM Manager:
         : 4:AC:C4: 2:41
         : 4:AC:C4: 2:4
```

MSS Family Client CD-ROM

The MSS Family Client CD-ROM contains all of the MSS Family Client publications and the Configuration Program. Please read the readme files that are on the CD for details about installing and accessing the MSS Family Client publications and the Configuration Program.

The *MSS Client and Domain Client Version 2.1 Microcode, Configuration Tool, and Softcopy Library* book incorrectly states that the MSS Family Client operational image is contained on the CD. The image is not on the CD, but can be obtained from the **http://www.networking.ibm.com/nes/neshome** web site. Although the operational image is not contained on the CD, the operational image has been preloaded on the MSS Family Client itself. It is recommended that once the MSS Family Client is functioning in the network, the operational image contained on the MSS Family Client should be copied to a workstation on the network. This backup copy should be stored for later use, if needed.

Please see Appendix A, "Backing Up the MSS Family Client Image" on page A-1 for instructions about creating the backup image.

LAN Switch Image Compatibility

Before installing the MSS Family Client into a LAN Switch, it may be necessary to update the LAN Switch with an image that supports the MSS Family Client. Depending on the LAN Switch, and the features that it contains, one or more files may need to be obtained from the **http://www.networking.ibm.com/nes/neshome** web site. The minimum version of each image that can be used are listed. If later versions are available, they should be used instead of the listed versions.

8272 Model 216 & 8260 FC 6208/6308
Version 4.0

8270-800 TR LAN Switch
Version 4.0

Token-Ring Port Solo Code
Version: KS30
This code is included with the LAN switch images.

8271 8260 FC 6212 & 6312 Ethernet LAN Switch
Version 4.0

ATM UFC for 8270-800, 8272, 8271 LAN Switches
Version 1.14.0

Please read the associated documentation that is included with the LAN Switch images. They contain important instructions, that if not followed, may prevent the MSS Family Client from functioning properly. In particular, please follow the instructions on updating the boot code on the ATM UFC.

Configuration Program

The configuration program installation instructions are contained in the README file in the **config** subdirectory of the CD-ROM. Please read this information before installing the IBM MSS Client Configuration Program.

Default Configurations

The MSS Family Client is preloaded with default configurations that facilitate the use of the IBM MSS Client Configuration Program. In order to have the IBM MSS Client Configuration Program communicate through the network with the MSS Family Client, it will be necessary to configure a workstation with compatible network parameters.

MSS Domain Client Default Configuration

The MSS Domain Client has two preloaded configurations. The first, and default, is for use in a Token-Ring LAN switch. The second is for use in an Ethernet LAN Switch. If the MSS Domain Client is to be used in an Ethernet LAN Switch, the active configuration of the MSS Client will need to be changed to the second configuration. Please see Appendix C, “Setting the Config to the Secondary Config” on page C-1 for details.

The default configurations for the MSS Domain Client have a Token-Ring or Ethernet interface preconfigured on domain 0 (default). The interface has an IP address of 10.1.1.5 with a subnet mask of 255.255.255.0. The default gateway is set to 10.1.1.1. SNMP is enabled to read/write for a community string "public". Three spare interfaces are also provided for the user, if dynamic reconfiguration is desired.

MSS Client Default Configuration

The MSS Client has two preloaded configurations. The first, and default, is for use in a Token-Ring LAN switch with the MSS Client to attach to an ATM network. The second is for use in a Token-Ring LAN Switch with the MSS Client to be used for FasTR attachment. The MSS Client is not supported on Ethernet LAN Switches. If the user wishes to use the MSS Client for FasTR attachment, the active configuration of the MSS Client will need to be changed to the second configuration. Please see Appendix C, “Setting the Config to the Secondary Config” on page C-1 for details.

The default configuration for the MSS Client has the same configuration as the MSS Domain Client, with several additions. If the MSS Client is to be used for ATM attachment, then there are two LAN Emulation Clients (LECs) predefined, one Token-Ring, and one Ethernet. Both are configured to obtain operating parameters from the LAN Emulation Configuration Server (LECS) using the well known ATM address. The policy to join will be on media type. The Token-Ring LEC is preconfigured to use an IP address of 10.1.2.5 with a subnet of 255.255.255.0. The Ethernet LEC is preconfigured to use an IP address of 10.1.3.5 with a subnet mask of 255.255.255.0. If the MSS Client is to be used for FasTR, the FasTR interface is preconfigured with an IP address of 10.1.2.5 with a subnet mask of 255.255.255.0.

Updating the MSS Family Client Operational Image and Firmware

There are several methods for updating the MSS Family Client with newer versions of code.

Updating the MSS Family Client Using the Download UFC Option From the LAN Switch Console

Please see Appendix D, “Updating the MSS Family Client Images” on page D-1 for detailed instructions.

The advantages of this method are:

1. Both operational image and Firmware may be updated.

2. Both TFTP and XMODEM are supported.
3. Relatively fast. Download of the operational image should take approximately three minutes through TFTP, with another minute to load the new image.

The disadvantage of this method is:

1. The MSS Family Client will be reset and will not be able to participate in the network operations until the update is complete.

Updating the Image While the MSS Family Client Is Operational

Please see the *Multiprotocol Switched Services Family Clients Interface Configuration and Software User's Guide* for details on how to use this method.

The advantages of this method are:

1. The act of downloading the image is not destructive to the operation of the MSS Family Client in the network.
2. Using the TIMEDLOAD option, the MSS Family Client can be scheduled to be reloaded at a later time.

   For example: The user may wish to update the image at 4:00 PM, but schedule the system to reload at 2:00 AM where there is a maintenance window.

The disadvantages of this are:

1. TFTP is the only supported method of loading the image.
2. MSS Family Client Firmware cannot be updated using this method.
3. Relatively slow. This method may take up to 16 minutes, during which the MSS Family Client is still operating. It is possible that during this time, the TFTP may encounter network problems that prevent the successful update.

Updating the Image Using the MSS Family Client Firmware

Please see the *Multiprotocol Switched Services Family Clients Interface Configuration and Software User's Guide* for details on how to use this method.

The advantages of this method are:

1. Both operational image and Firmware may be updated.
2. Allows for update of the firmware recovery block.

   Note: This should only be done if instructed to do so by IBM Service.
3. Relatively fast. Download of the operational image should take approximately two minutes through TFTP, with another minute to IPL the new image.

The disadvantages of this are:

1. TFTP is the only supported method of loading the image.
2. Interface accesses domain 0 (default) only.
3. The MSS Family Client will be reset and will not be able to participate in the network operations until the update is complete.

Chapter 3. Restrictions and Common Mistakes

Restrictions

1. The MSS Domain Client on Ethernet LAN Switches may be used only for routing. No bridge functions are supported on Ethernet.
2. There are specific HW requirements for activating the SRB function (whether in the base 8270 or 8272, or within the MSS Client/Domain Client UFCs) CONCURRENTLY with the IBM ATM 155Mbps MMF/Token-Ring UFC. These requirements are detailed in a technical tip documented on the 8270 or 8272 support pages on the Web:
   a. http://www.networking.ibm.com/support/8270
   b. http://www.networking.ibm.com/support/8272

   Your ATM UFC must be at a certain HW level to support source-route bridging function concurrently. The technical tip documents show how to determine whether your particular ATM UFC is at the correct HW level to support concurrent SRB as well as the procedures for remedying the situation if not.
3. If LAN Network Manager (LNM) support is to be used, only one Token-Ring physical port may be in a domain that is to be managed. A domain may contain more than one port, and still be bridged, but an LNM agent cannot be initialized for that ring segment.
4. The MSS Family Client's LNM support requires the Token-Ring physical ports be at MPC 3.1. The ARI/FCI Bit Options setting must be set to "Always Set." Please see Appendix B, “Determining the Level of MPC Hardware and Setting the ARI/FCI Bit Options” on page B-1 about how to determine hardware levels and set the ARI/FCI Bit Options. Also, the LNM support will only work on those Token-Ring physical ports which are operating in Half Duplex mode. Full Duplex mode is not supported.
5. LNM can not manage any Emulated LANs. This does not restrict the use of an ELAN to connect to the LNM Agent in the MSS Family Client. If LNM is configured on a domain that has an ATM UFC LEC interface, the agent may show it enabled on that segment, but querying status will report an error.
6. A maximum combination of 2 MSS Clients, MSS Domain Clients, or ATM UFCs can be installed in one LAN switch. If there are 2 MSS Clients or MSS Domain Clients in the LAN switch, only one may do the SRB function. This does not prevent a second MSS Client from being used for routing.
7. In the 8270-800, the MSS Family Client should be placed in a slot number lower than the Token-Ring UFCs. Please see the *MSS Client UFC Planning and Installation Guide*, or *MSS Domain Client UFC Planning and Installation Guide* for more detailed restrictions on other platforms.
8. IP-Host on the MSS Family Client will only be active if no other IP interface has been configured on the MSS Family Client and bridging is enabled.
9. Although the MSS Family Client firmware is capable of accessing a network through the LAN Switch, it is only able to communicate on the default domain (0).
10. The MSS Family Client has the ability to filter frames that are processed through software, but is not able to filter frames that are forwarded entirely by the hardware.
11. The MSS Family Client configuration tool and publications provide options and instructions for the configuration of IP Multicast Dynamic Protocol Filters (DPF) which are not currently available. This limitation will be addressed in a future PTF.
12. The MSS Family Client, when configured for SRB on a Token-Ring LAN Switch, will be responsible for processing of All Route Explorers and Spanning Tree Exploreres for the LAN Switch. Filters that may have been configured on the LAN Switch for these frames will not be active while the MSS Family Client is running.

13. The MSS Family Client, when configured for SRB on a Token-Ring LAN Switch, may require the configuration of a internal segment number. This internal segment number is used for network management only. The internal segment will not be added to the Routing Information Field (RIF) of frames that are passed through the bridge.

Common Mistakes

There are some common mistakes that may be encountered with the MSS Family Client configuration in the LAN Switch.

1. **Configuring Bridging and a Routed Protocol on the same interface in the MSS Family Client when the subnet of the Routed Protocol spans across the bridge.**

   By configuring the routed protocol and SRB on the same interface, the MSS Family Client will filter the protocol traffic, and prevent it from being SR bridged. If the subnet of the routed protocol spans the SR bridge, communication within the subnet will not be reliable. This can be resolved by having two network interfaces in a domain or ELAN that is to be SR bridged. One interface should be configured for SRB (without the routed protocol) and the other interface should be configured for the routed protocol.

2. **Configuring the LAN Switch IP address to the same IP address of the MSS Family Client.**

   Although the MSS Family Client and the LAN switch functions are closely integrated, they both have separate IP interfaces into the network. If this error is made, one or both interfaces may not be able to communicate with the network.

3. **Configuring SRB only through LAN switch configuration options without configuring the MSS Family Client.**

   To use the MSS Family Client's SRB function, it must be first configured on the MSS Client. When the MSS Family Client SRB function becomes active, its configuration will take precedence over any previous LAN Switch SRB Configuration.

4. **Using the ctrl-b key to exit a MSS Family Client console when in a telnet session.**

   A user may access the MSS Family Client's Console through the LAN Switch console. If the user is accessing the LAN Switch through the communication port located on the LAN Switch, the **ctrl-b** key sequence, or the **return** command, may be used to exit the MSS Family Client's console and return to the LAN Switch Console.

   If a user telnets to the LAN Switch, the **ctrl-b** key sequence will end the telnet session. When telneted to the LAN Switch, if the user wishes to exit the MSS Family Client's console, without terminating the telnet session, the **return** command should be used from the ***** prompt of the MSS Family Client.

5. **The MSS Family Client is configured for SRB in a LAN Switch with an ATM UFC not at the proper HW level.**

   If this is the case, the MSS Family Client console will show the SRB function to be operational, but there will be no SRB options from the LAN Switch Console. Please see the restrictions for more details.

6. **Configuring IP-Host in the MSS Family Client when IP is already configured.**

   This problem will result in the IP-Host being configured, but the user will not be able to get into the HST submenu of the "talk 5" console. This can occur even if there is no IP address configured. The solution is to enter the "clear ip" command from the "talk 6" menu, write the configuration, and then reset. This will remove IP from the configuration and allow the IP-Host support to work.

7. **Configuring SRB on two interfaces in the same domain.**

   This results in one of the two interfaces being disabled. Because a domain can represent one and only one ring number, having two interfaces bridged on one domain is incorrect.

8. **Configuring two or more LAN Emulation Clients (LECs) on the same MSS Client, to the same Emulated LAN (ELAN) without specifying a locally administered MAC address on one of them.**

   The default MAC address of the LEC is the burned-in address of the ATM interface of the MSS Client. If two LECs attempt to join into an ELAN with the same MAC address, the ELAN will reject the registration. The solution is to assign a locally administered MAC address on all but the first LEC.

9. **Attempting to access the MSS Family Client console by telneting to the LAN Switch, while a console to the MSS Client is active either from the LAN Switch com port or other telnet session.**

   Only one session is permitted through the LAN Switch to the MSS Family Client at a time.

10. **Attempting to place a port in a domain that is used for bridging to a MSS Client LEC or a FasTR interface.**

    The MSS Client supports SRB to LECs and the FasTR interface. It does NOT support transparent bridging to these interfaces. The MSS Client obtains a domain for each bridged FasTR or each bridged LEC. Domains will be reserved starting from the the maximum domain index (15) to the lowest domain index (0). Once these domains have been allocated, they cannot be used by other ports. This does not apply to LECs or FasTR interfaces that are not being bridged.

    Example: The MSS Client is configured for 3 bridged LECs, 2 routed LECs, and two Token-Ring interfaces on domain 0, one bridged, one routed.

    The 3 bridged LECs will reserve domain indexes 15, 14, and 13. The Token-Ring interfaces will be a member of domain 0, which may have other ports as members. The routed LECs are not associated with any domains.

11. **Attempting to configure more than one physical port in a domain that is to be managed by LNM.**

    Although the bridging function will continue to work, LNM will not be able to manage the ring. If a domain is currently being managed by LNM and the domain configuration is changed, then the MSS Family Client should be reset. Failure to do so may cause LNM information to be unreliable.

12. **Attempting to use the MSS Server Configuration Program to configure an MSS Family Client.**

    The MSS Family Client must be configured using its version of the IBM MSS Client Configuration Program that is included on the CD or obtained from the web. It is not compatible with the MSS Server version of the configuration program.

13. **Attempting to use SNMP to manage the LAN Switch and the MSS Family Client without enabling SNMP on both the LAN Switch and the MSS Family Client.**

    The LAN Switch and the MSS Family Client have separate SNMP agents. In order to manage the combined functions of the LAN Switch and the MSS Family Client, both agents must be configured.

Chapter 4. Hints/Recomendations

In order to take full advantage of the Source Route Bridge function of the MSS Family Client, specific configuration changes in the LAN Switch are strongly recomended. These settings will reduce the processing load on the LAN Switch CPU.

1. Configure the LAN Switch IP interface in **only** one Source Route Bridge domain.

   LAN Switch IP interfaces on each bridged domain are no longer required because the MSS Family Client SR Bridge function allows communication with a LAN Switch IP interface from any domain in the SR bridge.

2. Set the **IP State** to **IP Disabled** for domains that are not needed for IP communication. (This is not the default setting.)

   This will prevent unnecesary traffic from flooding the LAN Switch CPU.

Appendix A. Backing Up the MSS Family Client Image

Make sure that there exists a workstation that has a TFTP daemon running that the MSS Family Client can communicate with. At the MSS Family Client console, do the following:

1. At the prompt, type **talk 6**.
2. At the Config> prompt, type **boot**.
3. At the Boot config> prompt, type **tftp put load**.

Answer the questions to specify the server address, remote path and file name that the image is to be copied to, and the bank to copy from.

The following example shows the dialog when using this procedure to back up the MSS Family Client image.

```
 talk 6
Gateway user configuration
Config>boot
Boot configuration
Boot config>tftp put load
+------ BankF -----------+--------- Description ----------+------ Date -------+
| IMAGE - ACTIVE                |                                          | 23 Mar 1998 17: 9 |
| CONFIG 1 - ACTIVE          |   MSS Client ATM Config               |  1 May 1998 16:44 |
| CONFIG 2 - AVAL             |   MSS Client FasTR Config            |  1 May 1998 16:44 |
| CONFIG 3 - NONE             |                                          |                                |
| CONFIG 4 - NONE             |                                          |                                |
+-----------------------+-------------------------------+-------------------+
     - Last Used Config          L - Config File is Locked
Specify the server IP address (dotted decimal): : [1.2.3.4] 1 .1.1.1
Specify the remote file name: : (load.img) /local/MSSC21/msscopcd.ufc
Select the source bank:    (F): [F]
TFTP SW load image
  put:      /local/MSSC21/msscopcd.ufc
  to:   1 .1.1.1
  from:       bank  F.
TFTP transfer complete, status: OK

Operation completed successfully.
Config>
```

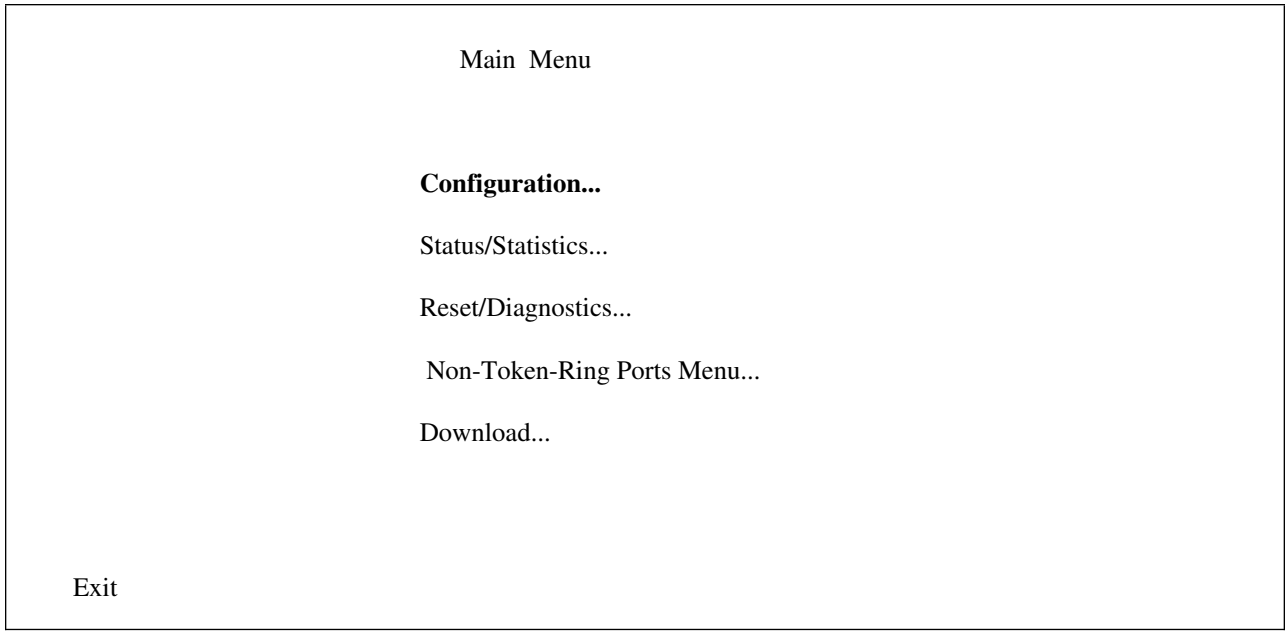
Appendix B. Determining the Level of MPC Hardware and Setting the ARI/FCI Bit Options

The MPC chips used on the Token-Ring ports must be at a certain level for the MSS Family Client LNM function to work. To check the level, do the following:

1. From the LAN switch console **Main Menu**, select **Configuration...**.
2. From the **Configuration Menu**, select **Token-Ring Port Configuration...**.
3. From **Token-Ring Port Configuration** menu, enter **<Ctrl-f>**.

On the **ARI/FCI Bit Options** screen, the user should see the level of the MPC hardware, as well as the current setting. The user should modify the ARI/FCI Bit Options setting if they are not set to "Always set".

The following panels show an example of the dialog when following this procedure. The selections are in bold.



Configuration Menu

Switch Information...	TokenPipe...
Domain Configuration...	MAC Filter & Port Security...
IP Configuration...	Address Aging...
SNMP Configuration...	Switching Mode Threshold...
Spanning Tree...	Password...
Token-Ring Port Configuration...	Console Configuration...
TokenProbe Configuration...	Source Route Configuration...

Return

Token-Ring Port Configuration

Port	Switching Mode	Type	State	Link	Config Type	Speed	Mode	Duplex	Config Loss
5-1	Adaptive	RJ45	Enabled	Up	Auto	RSA16	Adpt	Half	8
5-2	Adaptive	RJ45	Enabled	Down	Auto	RSA16	----	----	8
5-3	Adaptive	RJ45	Enabled	Down	Auto	RSA16	----	----	8
5-4	Adaptive	RJ45	Enabled	Down	Auto	RSA16	----	----	8
6-1	Adaptive	RJ45	Enabled	Down	Auto	RSA16	----	----	8
6-2	Adaptive	RJ45	Enabled	Down	Auto	RSA16	----	----	8
6-3	Adaptive	RJ45	Enabled	Down	Auto	RSA16	----	----	8
6-4	Adaptive	RJ45	Enabled	Up	Auto	RSA16	Port	Half	8
7-1	Adaptive	RJ45	Enabled	Up	Auto	RSA16	Port	Full	8
7-2	Adaptive	RJ45	Enabled	Up	Auto	RSA16	Port	Full	8
7-3	Adaptive	RJ45	Enabled	Up	Auto	RSA16	Port	Full	8
7-4	Adaptive	RJ45	Enabled	Down	Auto	RSA16	----	----	8

Return More Change

When the previous panel is displayed, enter **<Ctrl-f>** to display the **ARI/FCI Bit Options** panel.

ARI/FCI Bit Options

Port	MPC Chip Level	Current Setting	Default Setting
5-1	3.1	Always set	Always set
5-2	3.1	Always set	Always set
5-3	3.1	Always set	Always set
5-4	3.1	Always set	Always set
6-1	3.1	Always set	Always set
6-2	3.1	Always set	Always set
6-3	3.1	Always set	Always set
6-4	3.1	Always set	Always set
7-1	3.1	Always set	Always set
7-2	3.1	Always set	Always set
7-3	3.1	Always set	Always set
7-4	3.1	Always set	Always set

Return More Change Port Setting Change All Ports

Appendix C. Setting the Config to the Secondary Config

At the MSS Family Client console, do the following:

1. At the prompt, type **talk 6**.
2. At the Config> prompt, type **boot**.
3. At the Boot config> prompt, type **set**.
4. When prompted for source bank, press **Enter** which will accept the default of **F**.
5. When prompted for source configuration, type **2**.
6. When prompted for duration, press **Enter**, which will accept the default of **always**.
7. Reset the MSS Family Client.

The following example shows the dialog when using this procedure to setup the MSS Family Client to use the secondary configuration.

```
 talk 6
Gateway user configuration
Config>boot
Boot configuration
Boot config>set
+------ BankF -----------+--------- Description ----------+------ Date -------+
| IMAGE - ACTIVE          |                                  | 23 Mar 1998 17: 9 |
| CONFIG 1 - ACTIVE       |  MSS Client ATM Config           | 1 May 1998 16:44  |
| CONFIG 2 - AVAL         |  MSS Client FasTR Config         | 1 May 1998 16:44  |
| CONFIG 3 - NONE         |                                  |                   |
| CONFIG 4 - NONE         |                                  |                   |
+-------------------------+----------------------------------+-------------------+
    - Last Used Config          L - Config File is Locked

Select the source bank:    (F): [F]
Select the source configuration:    (1, 2, 3, 4): [1] 2
Select the duration to use for booting:    (once, always): [always]
Set SW to boot using bank F and configuration 2, always.

Operation completed successfully.
Boot config>
```

Appendix D. Updating the MSS Family Client Images

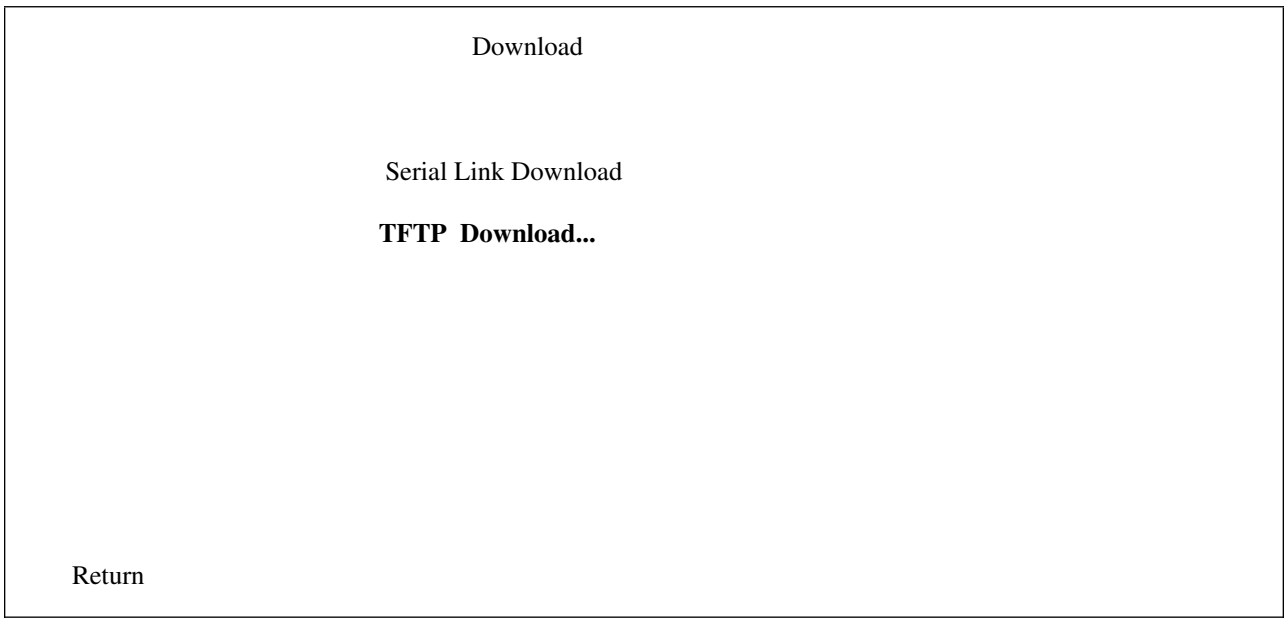
Before this procedure is attempted, the LAN Switch should have its IP configured and enabled in the domain to be used.

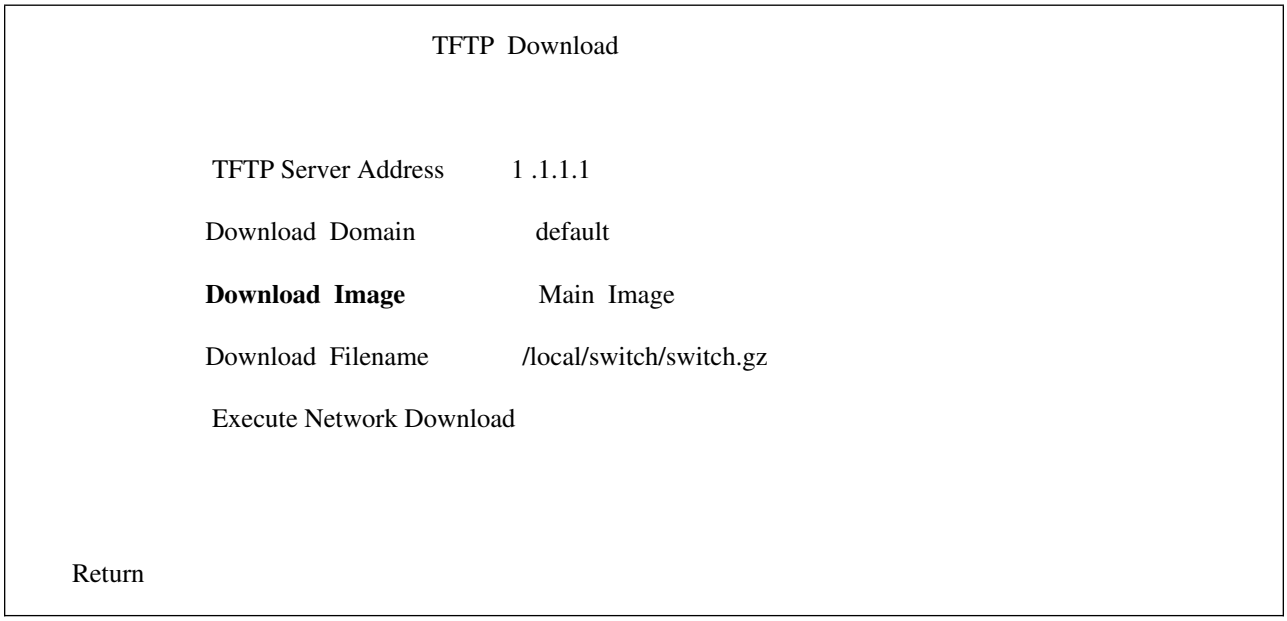
1. From the LAN switch console **Main Menu**, select **Download...**.
2. From the **Download** panel, select **TFTP Download...**.

   Note: It is highly recommended that the TFTP option be used if possible. The MSS Family Client's operational image for release 2.1 is almost 5 MB, and as a result will take a long time to download at serial port speeds.
3. From the **TFTP Download** menu, select **Download Image**. When prompted, select **UFC Image**.
4. The LAN Switch will then present a menu of all possible UFCs that are available for downloading. Select the one which needs to be updated. If the user presses the escape key from this menu, no UFCs will be selected, and the menu will exit.
5. Once you have selected the UFC you wish to download, the LAN switch will reset the card and bring it to its download state. This will stop the MSS Family Client from running in the network.
6. When prompted please select the server IP address, domain, and path and filename to be used to get the MSS Family Client's operational image or firmware. When these settings are made, select **Execute Network Download**.
7. Once the download is complete, the MSS Family Client will store the image to the flash of the MSS Family Client.
8. To activate the image just downloaded, the MSS Family Client will need to be reset.

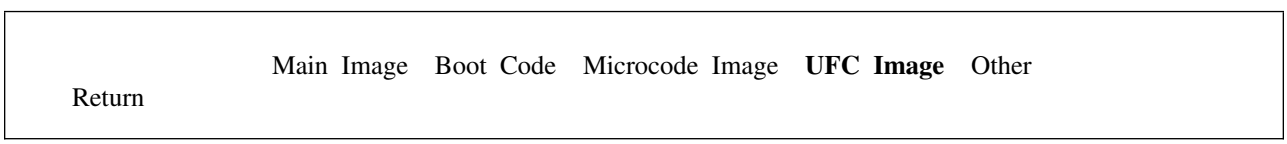
The following panels show an example of the dialog when following this procedure. The user options are in bold.

```
                        Main  Menu


                    Configuration...

                    Status/Statistics...

                    Reset/Diagnostics...

                     Non-Token-Ring Ports Menu...

                    Download...



  Exit
```





When the **Download Image** option is selected, the previous panel is updated with the selection list below. Select **UFC Image**.

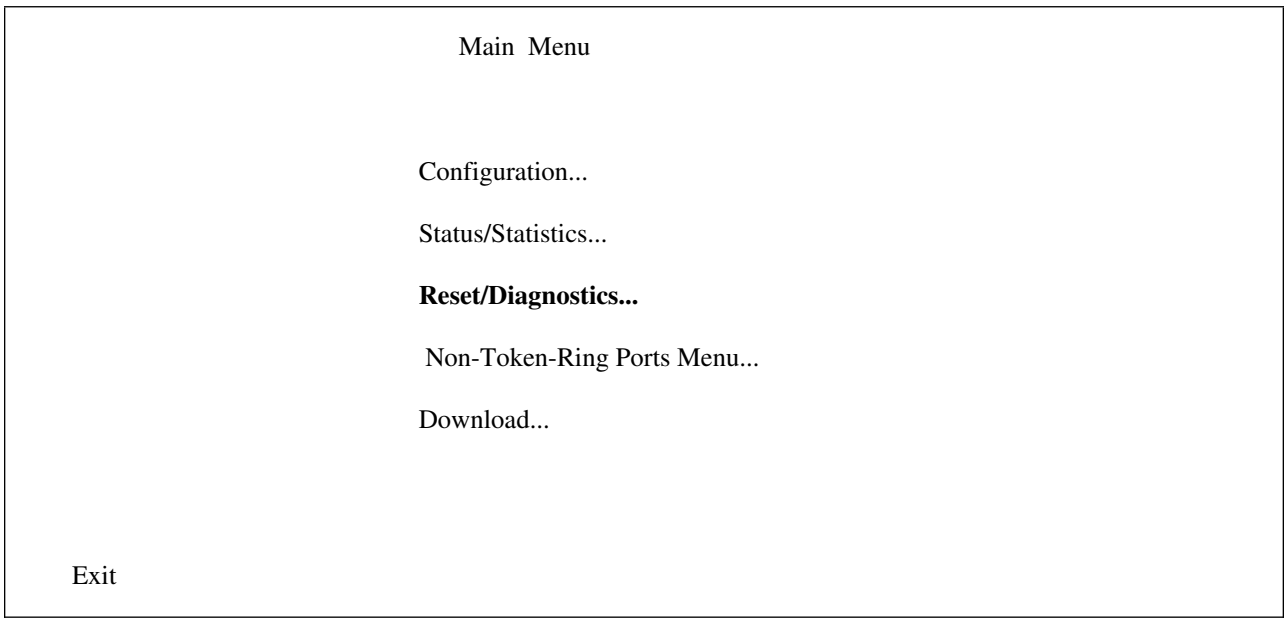


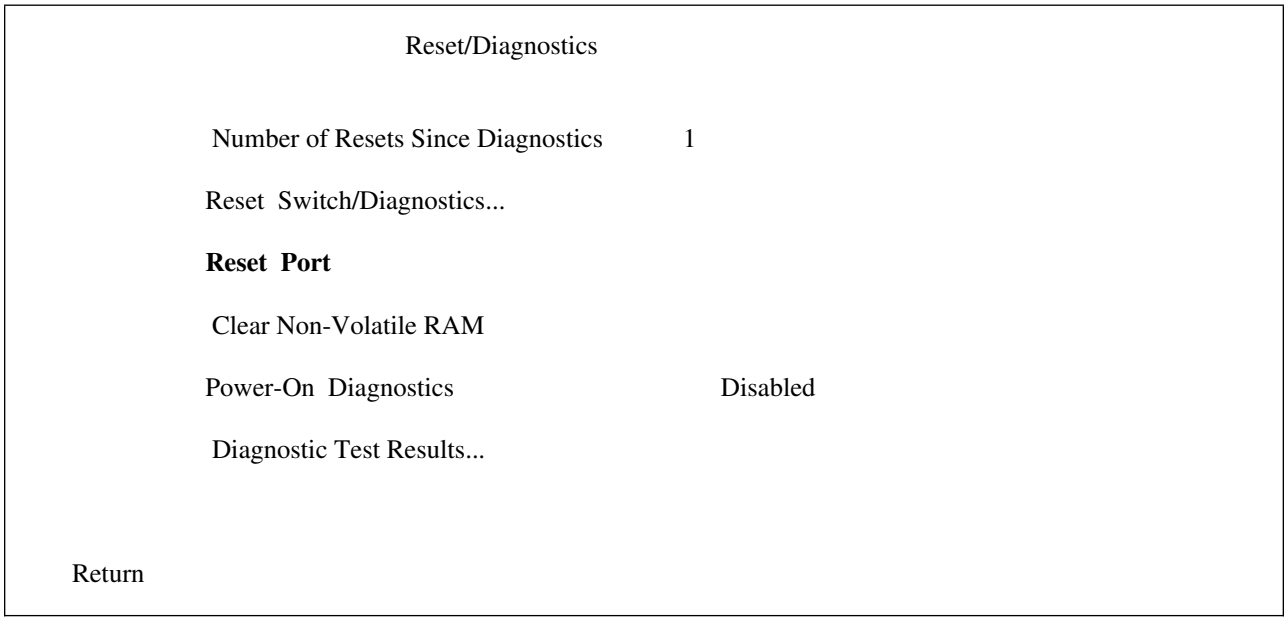
```
                    Make a selection

          1-1          MSS  Client
```

```
                    TFTP  Download


     TFTP Server Address        1 .1.1.1

    Download  Domain              default

    Download  Image               UFC  Image

    Download  Filename           /local/MSSC21/msscopcd.ufc

     Execute Network Download



Return
```

Note: The **Download Filename** must end with **.ufc**.

```
                    TFTP  Download


     TFTP Server Address        1 .1.1.1

    Download  Domain              default

    Download  Image               UFC  Image

    Download  Filename           /local/MSSC21/msscopcd.ufc

     Execute Network Download



Download complete - Reset port to activate new software.
Press <ENTER> to continue...
```


Main Menu
Configuration...
Status/Statistics...
Reset/Diagnostics...
Non-Token-Ring Ports Menu...
Download...
Exit


Reset/Diagnostics
Number of Resets Since Diagnostics 1
Reset Switch/Diagnostics...
Reset Port
Clear Non-Volatile RAM
Power-On Diagnostics Disabled
Diagnostic Test Results...
Return

Appendix E. Setting Up a Token-Ring LAN Switch To Dump the MSS Family Client

The dumping of the MSS Family Client can be useful in situations where IBM service needs to debug a problem. The dumping of an MSS Family Client should only be done if it has been requested by service personnel. It will require a workstation that is reachable from the LAN switch if the MSS Family Client is not operational, has a TFTP daemon running, and has at least 40 MB of free space.

Before this procedure is attempted, the LAN Switch should have its IP configured and enabled in the domain to be used.

The MSS Family Client in a Token-Ring LAN Switch can be enabled to initiate a dump on a fatal error. After a fatal error in which the MSS Family Client dumps its memory, the MSS Family Client will be reset so that it can can resume normal operations. The MSS Family Client can also be manually dumped if the automatic method was not successful.

To enable the MSS Family Client for dumping automatically, follow these steps:

1. At the prompt on the MSS Family Client console, type **talk 6**.
2. At the Config> prompt, type **enable reboot-system** and **enable dump-memory**.
3. Now the LAN Switch needs to be set up to TFTP the dump files to a file server on the LAN. At the login screen of the LAN switch, where prompted for password enter **diag**. At the **Diagnostics Menu** select **Miscellaneous...**.
4. At **TFTP Upload** menu set the server IP address, domain, and path to be used to hold the MSS Family Client's dump. After these settings are made, select the **Return** option. These settings will be used when a MSS Family Client initiates a dump.

If the MSS Family Client is not operating, and a console cannot be established, the user may select the **Execute Network Upload** option to initiate the dumping of the MSS Family Client. The user must set the file name first for the dump to take place. The file name must be in the following format: ufcXY, where X is the slot number, and Y is the dump image number. The MSS Family Client has 3 dump files, so if the card was in slot one, the file names would be "ufc11", "ufc12", and "ufc13".