6

Preparing FRSM12 Cards for Communication

This chapter describes how to prepare FRSM12 cards for standalone or redundant operation in Cisco MGX Release 4 switches. The *Frame Relay Software Configuration Guide and Command Reference for the Cisco MGX 8850 FRSM12 Card* describes how to provision these cards for Frame Relay communications across an ATM network.

This chapter provides a quickstart procedure for configuring FRSM12 cards and lines and describes the following procedures:

- Managing Firmware Version Levels for FRSM12 Cards
- Establishing Redundancy Between Two FRSM12 Cards
- Selecting and Viewing Service Class Templates

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Note The procedures in this chapter do not apply to Cisco MGX 8850 (PXM1E) or Cisco MGX 8830 switches because these switches do not support FRSM12 cards. On Cisco MGX 8850 (PXM1E) and Cisco MGX 8830 switches, Frame Relay is supported on FRSM cards as described in the *Cisco Frame Relay Software Configuration Guide and Command Reference, Release 4*.

Configuration Quickstart

The quickstart procedure in this section provides a summary of the tasks required to prepare FRSM12 cards and lines to enable Frame Relay communications over an ATM network. This procedure is provided as an overview and as a quick reference for those who already have configured FRSM12 cards.

	Command	Purpose
Step 1	*username*	Start a configuration session.
	<password>	**Note** To perform all the procedures in this quickstart procedure, you must log in as a user with GROUP1 privileges or higher.
Step 2	**setrev** *<slot> <version>*	Initialize FRSM12 cards by setting the firmware version level for each FRSM12 card.
	Related commands:	See "Managing Firmware Version Levels for FRSM12 Cards," which appears later in this chapter.
	dspcds	

	Command	Purpose
Step 3	**addred** *<options>* Related commands: **dspred**	Define which FRSM12 cards are operating as redundant cards. See "Establishing Redundancy Between Two FRSM12 Cards," which appears later in this chapter.
Step 4	**cnfcdsct** *<sctid>* Related commands: **dspcd**	Applies communications parameters from a preconfigured Service Class Template (SCT) file to all communications between the card you are configuring and the other cards in the switch. For PNNI communications, use SCT ID 2 or 4 for policing applications and use SCT ID 3 or 5 for non-policing applications. If MPLS will be used on any card link, use SCT ID 4 for policing applications and use SCT ID 5 for non-policing applications. See "Selecting and Viewing Service Class Templates," which appears later in this chapter.

Managing Firmware Version Levels for FRSM12 Cards

The FRSM12 cards within the switch run two types of firmware: boot firmware and runtime firmware. The boot firmware provides the startup information the card needs. The boot firmware is installed on the board at the factory. The runtime firmware controls the operation of the card after startup. The runtime firmware file is stored on the PXM45 hard disk.

After the FRSM12 cards are installed in the switch, you must specify the correct runtime firmware version for each card before the switch can begin using the card. The following sections explain how to

- Locate the cards that need to have the firmware version level set
- Set the firmware version levels for cards in the switch
- Verify the firmware version levels being used by cards

Locating Cards that Need the Firmware Version Set

When an FRSM12 card is installed and the firmware version needs to be set, the System Status LED on the front of the card blinks red. The **dspcds** command shows that the card status is Failed. Other events can display these symptoms, but if the FRSM12 card is new, the problem is probably that the firmware version number has not been set. To locate the cards that need to have the firmware version set, use the following procedure.

Step 1 Establish a CLI management session at any access level.

Step 2 To display a list of all the cards in the switch, enter the **dspcds** command:

```
8850_NY.7.PXM.a > dspcds
```

The following example shows the display for this command. The card state for the card in slot 4 is listed as Failed/Active. This is how a card appears when the runtime firmware version has not been selected.

```
hsfrnd6.8.PXM.a > dspcds
hsfrnd6                          System Rev: 03.00   Feb. 15, 2002 06:10:03 GMT
Chassis Serial No:   SCA044304MV Chassis Rev: E0     GMT Offset: 0
                                                     Node Alarm: MAJOR
Card   Front/Back          Card           Alarm      Redundant   Redundancy
Slot   Card State          Type           Status     Slot        Type
---    ----------          --------       --------   -------     -----

01     Empty               ---            ---        ---         ---
02     Empty               ---            ---        ---         ---
03     Empty               ---            ---        ---         ---
04     Failed/Active       FRSM12_12T3E3  MAJOR      NA          NO REDUNDANCY
05     Empty               ---            ---        ---         ---
06     Empty               ---            ---        ---         ---
07     Empty Resvd/Empty   ---            NONE       08          PRIMARY SLOT
08     Active/Active       PXM45          NONE       07          SECONDARY SLOT
09     Empty               ---            ---        ---         ---
10     Empty               ---            ---        ---         ---
11     Active/Active       FRSM12_12T3E3  NONE       NA          NO REDUNDANCY
12     Empty               ---            ---        ---         ---
13     Empty Resvd/Empty   ---            MAJOR      NA          NO REDUNDANCY
14     Empty               ---            ---        ---         ---
17     Empty               ---            ---        ---         ---

Type <CR> to continue, Q<CR> to stop:
```

Note the slot number, card type, and redundancy type for each card that needs to have the firmware version set. You will need this information to activate these cards as described in the next section, "Initializing FRSM12 Cards."

Note   If any FRSM12 card displays the Active/Active card state, you do not have to set the runtime firmware version for that card.

Initializing FRSM12 Cards

Before a FRSM12 card can operate, it must be initialized in a switch slot. The initialization process defines the FRSM12 runtime software version that will run on the card and identifies the slot in which the card operates. To initialize an FRSM12 card, use the following procedure.

Note   The line count for all cards in a Cisco MGX 8850 (PXM45) switch must not exceed the maximum number of lines supported by the current PXM45. The PXM45/A supports 192 UNI/NNI lines. The PXM45/B and PXM45/C support up to 4,000 UNI/NNI interfaces. Keep this information in mind as you add FRSM12 cards to your switch.

Step 1   If you have not already done so, determine the software version number for the card by referring to the *Release Notes for Cisco MGX 8850 (PXM1E/PXM45), Cisco MGX 8950, and Cisco MGX 8830, Software Version 4.0.00*.

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Tip   If you have trouble locating the runtime firmware version level, use the filenames on the PXM45 hard disk to determine the level. For more information, see "Determining the Software Version Number from Filenames," in Chapter 13, "Switch Operating Procedures."

Step 2   Establish a configuration session using a user name with SERVICE_GP privileges or higher.

Step 3   To set the firmware revision level for a card, enter the **setrev** command:

```
mgx8850a.7.PXM.a > setrev <slot> <version>
```

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Note   Each card should be initialized only once with the **setrev** command. The only other time you should enter the **setrev** command is to initialize cards after the configuration has been cleared with the **clrallcnf**, **clrcnf**, or **clrsmcnf** commands.

Replace *<slot>* with the card slot number and replace *<version>* with the software version number. For example,

```
mgx8850a.7.PXM.a > setrev 4 3.0(0)
```

After you enter the **setrev** command, the system status LED blinks red until the firmware load is complete, and then it changes to non-blinking green.

Step 4   To verify the activation of a card for which the status was previously listed as Failed/Empty, enter the **dspcds** command. The status should change to Active/Active.

Verifying Card Firmware Version Levels

When you are having problems with your switch, or when you have taken delivery of a new switch but delayed installation, it is wise to verify the firmware versions installed on the switch. If newer versions of this firmware are available, installing the updated firmware can prevent switch problems.

To verify the firmware versions in use on your switch, use the following procedure.

Step 1   To display the software revision status of all the cards in a switch, enter the **dsprevs** command as follows:

```
hsfrnd6.8.PXM.a > dsprevs
hsfrnd6                          System Rev: 03.00    Feb. 15, 2002 06:19:35 GMT
MGX8850                                               Node Alarm: NONE
Physical   Logical   Inserted        Cur Sw          Boot FW
Slot       Slot      Card            Revision        Revision
--------   -------   --------        --------        --------

01         01        ---             ---             ---
02         02        ---             ---             ---
03         03        ---             ---             ---
04         04        FRSM12_12T3E3   3.0(0)          3.0(0)
05         05        ---             ---             ---
06         06        ---             ---             ---
07         07        ---             ---             ---
08         07        PXM45           3.0(0)          3.0(0)
09         09        ---             ---             ---
10         10        ---             ---             ---
11         11        FRSM12_12T3E3   3.0(0)          3.0(0)
12         12        ---             ---             ---
13         13        ---             ---             ---
14         14        ---             ---             ---
15         15        ---             ---             ---
16         15        ---             ---             ---

Type <CR> to continue, Q<CR> to stop:
```

Step 2   To see the software revision levels for a single card, enter the **dspversion** command as follows:

```
hsfrnd6.4.FRSM12.a > dspversion

   Image Type    Shelf Type    Card Type        Version    Built On
   ----------    ----------    ----------    -----------    ------------
      Runtime           MGX       FRSM12        3.0(0)      Feb 14 2002, 19:46:30
         Boot           MGX       FRSM12        3.0(0)      -
```

Step 3   Another way to see the software revision levels for a single card is to enter the **dspcd** command as follows:

```
hsfrnd6.4.FRSM12.a > dspcd
                    Front Card        Upper Card         Lower Card
                    ----------        ----------         ------------

Card Type:          FRSM12_12T3E3     SMB-6-T3           SMB-6-T3

State:              Active            Present            Present

Serial Number:      12345678901       12                 10101010101

Boot FW Rev:        3.0.(0)           ---                ---

SW Rev:             3.0.(0)           ---                ---

HW Rev:             0.0               0.0                0.0

Orderable Part#:    800-12345-03      800-12345-01       800-00100-23

PCA Part#:          73-5530-02        73-1234-01         73-1111-22

CLEI Code:          000000123         12                 1234567890

Reset Reason:Power ON Reset

Type <CR> to continue, Q<CR> to stop:

Card Alarm:

Card Summary:

Card SCT Id: 0 !DefaultSCT used!

#Lines #Ports #Partitions
------ ------ -----------
   11     10        10
 #SPVC  #MaxConns
------ ---------
    1     16000
```

Step 4   Using the **dsprevs** and **dspcd** commands, complete the hardware and software configuration worksheet in Table E-7 in Appendix E, "Hardware Survey and Software Configuration Worksheets."

Step 5   Compare the versions you noted in Table E-7 (in Appendix E, "Hardware Survey and Software Configuration Worksheets.") with the latest versions listed in the *Release Notes for Cisco MGX 8850 (PXM1E/PXM45), Cisco MGX 8950, and Cisco MGX 8830, Software Version 4.0.00*.

Step 6   If the switch requires software updates, upgrade the software using the instructions in Appendix A, "Downloading and Installing Software Upgrades."

Establishing Redundancy Between Two FRSM12 Cards

To establish redundancy between two FRSM12 cards, use the following procedure.

Step 1   Establish a configuration session using a user name with SUPER_GP privileges or higher.

Step 2   If you have not done so already, set the firmware version for both cards, as described earlier in "Initializing FRSM12 Cards."

Step 3   Enter the **dspcds** command to verify that both FRSM12 cards are in the "Active" state.

Step 4   Enter the **addred** command as follows:

```
pop20one.7.PXM.a > addred <redPrimarySlotNum> <redSecondarySlotNum> <redType>
```

Replace *<redPrimarySlotNum>* with the slot number of the FRSM12 card that will be the primary card, and replace *<redSecondarySlotNum>* with the slot number of the secondary FRSM12 card. Replace *<redType>* with the number 1, which selects 1:1 Y-cable redundancy. Although the online help lists other redundancy types, 1:1 Y-cable redundancy is the only type supported on FRSM12 cards in this release.

> **Note**   One of the two cards can be configured before redundancy is established. If this is the case, the configured card should be specified as the primary card. Redundancy cannot be established if the secondary card has active lines. If the secondary card has active lines, you must delete all ports and down all lines before it can be specified as a secondary card. You can also clear the configuration on a single service module with the **clrsmcnf** command.

> **Tip**   If the switch displays the message, `ERR: Secondary cd is already reserved`, then lines are already in use on the specified secondary card. Use the **dnln** command to bring down these lines before re-entering the **addred** command, or enter the **clrsmcnf** command for the secondary card.

Step 5   To verify that the redundancy relationship is established, enter the **dspred** command as shown in the following example:

```
pop20two.7.PXM.a > dspred
pop20two                          System Rev: 02.01    Feb. 06, 2001 11:24:53 PST
MGX8850                                                Node Alarm: NONE
Primary   Primary    Primary     Secondary  Secondary  Secondary   Redundancy
SlotNum    Type       State       SlotNum     Type       State        Type
-------   -------   ---------    ---------  ---------  ---------    ----------
   1      FRSM12    Active           2       FRSM12     Standby        1-1

   7      PXM45     Active           8       PXM45      Standby        1-1

  15      SRM-3T3   Empty Res       16       SRM-3T3    Empty Resvd    1-1

  31      SRM-3T3   Empty Res       32       SRM-3T3    Empty Resvd    1-1
```

The secondary state for the card in the secondary slot changes to *Standby* only when the secondary card is ready to take over as active card. After you enter the **addred** command, the switch resets the secondary card. When you first view the redundancy status, the state may be *Empty Resvd* or *Init*. The secondary card may require one or two minutes to transition to standby.

> **Note**   The **dspcds** command also shows the redundancy relationship between two cards.

For information on managing redundant cards, see the "Managing Redundant Cards" section in Chapter 13, "Switch Operating Procedures."

Selecting and Viewing Service Class Templates

The following sections describe how to select SCTs for cards and ports.

Selecting a Card SCT

A card SCT defines ATM parameters that apply to communications between the card you are configuring and the other service modules in the switch. You can use the same SCT for multiple FRSM12 cards. To select an SCT for a card, use the following procedure.

Step 1   Establish a configuration session using a user name with GROUP1 privileges or higher.

Step 2   Enter the following command:

```
pop20two.1.FRSM12.a > cnfcdsct <sctID>
```

> **Note**   When an FRSM12 card is powered up for the first time, the default card SCT file is used. You must run this command in order to use another SCT file. The default SCT file is 0.

Replace *sctID* with the number of the SCT that you want to assign to the card. For PNNI communications, use SCT ID 2 or 4 for policing applications and use SCT ID 3 or 5 for non-policing applications. If MPLS will be used on any card link, use SCT ID 4 for policing applications and use SCT ID 5 for non-policing applications.

> **Note**   For most applications, Cisco Systems recommends using non-policing card SCTs.

Step 3   To display the SCT assigned to a card, enter the following command:

```
pop20two.1.FRSM12.a > dspcd
```

The display card report displays a row labeled "Card SCT Id," which identifies the SCT assigned to the card.

Selecting a Port SCT

A port SCT defines ATM parameters that apply to communications through a single port. You can use the same port SCT for multiple ports. To select an SCT for a port, enter the **addport** command as described in *Frame Relay Software Configuration Guide and Command Reference for the Cisco MGX 8850 FRSM12 Card*.