



# Provisioning SPVCs (PXM1E/PXM45) on FRSM and MPSM Cards

This chapter describes how to provision Frame Relay Soft Permanent Virtual Circuits (SPVCs) on the physical ports of the FRSM-8T1, FRSM-8T1-C, FRSM-8E1, FRSM-8E1-C, MPSM-8T1-FRM, MPSM-8E1-FRM, FRSM-2CT3, FRSM-2T3E3, and FRSM-HS2/B cards by using the command-line interface (CLI).

These topics describe how to provision Frame Relay SPVCs on FRSM and MPSM cards:

- [Preparing for Provisioning](#)
- [Quickstart Provisioning Procedures](#)
- [General FRSM and MPSM SPVC Provisioning Procedures](#)



**Note**

The easiest way to add connections is by using the Cisco WAN Manager (CWM) application. For full details on how to set up a connection with CWM, refer to the *Cisco WAN Manager User's Guide, Release 15.1*.

This chapter explains how to provision the SPVC connection types described in [Table 3-1](#).

**Table 3-1 SPVC Connection Types Applicable to FRSM and MPSM Cards**

FRSM and MPSM SPVC Connection Type	Description
FRSM/MPSM-to-FRSM/MPSM SPVCs	Soft permanent virtual circuits (SPVCs) are permanent connections that can be rerouted in the event of a link failure. A FRSM/MPSM-to-FRSM/MPSM SPVC establishes a connection between two FRSM/MPSM ports. Such ports can be on the same card, on different cards in the same switch, or on different cards in different switches.
FRSM/MPSM-to-Non-FRSM/MPSM SPVCs	A FRSM/MPSM-to-non-FRSM/MPSM SPVC establishes a connection between a FRSM or MPSM port and a port on a non-FRSM/MPSM card such as an AUSM, RPM, or AXSM card. Such ports can be on different cards in the same switch or on different cards in different switches.

To eliminate redundancy and help experienced users complete configuration tasks efficiently, this chapter provides configuration quickstart procedures.

The first time you configure a connection type, use the applicable quickstart procedure to get an overview of the tasks to be performed. For more detailed instructions, consult the appropriate section(s) elsewhere in the document that are called out in the quickstart procedure. As you gain experience in configuring FRSM and MPSM card connections, referring to a quickstart procedure may suffice for performing a particular configuration task.

**Tip**

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You can get information about most CLI commands by entering the command without parameters. Ordinarily, experienced users can configure FRSM and MPSM card connections using just the quickstart procedures and the online help facilities.

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**Note**

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For a detailed description of the commands used in this chapter, refer to [Chapter 6, “FRSM and MPSM Command Reference.”](#)

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## Preparing for Provisioning

Before you can begin provisioning Frame Relay SPVCs on FRSM and MPSM cards, you need to bring up the physical lines and add logical ports on the service modules. For instructions on bringing up physical lines and adding logical ports, see [Chapter 2, “Preparing FRSM and MPSM Lines and Ports for Communications.”](#)

## Quickstart Provisioning Procedures

These quickstart tasks contain abbreviated procedures for provisioning SPVCs on FRSM and MPSM cards installed in Cisco MGX 8850 (PXM1E/PXM45) and Cisco MGX 8830 Release 5.1 switches:

- [FRSM/MPSM-to-FRSM/MPSM SPVC Configuration Quickstart](#)
- [FRSM/MPSM-to-Non-FRSM/MPSM SPVC Configuration Quickstart](#)

These procedures provide a high level overview and serve as a procedural reminder for users already experienced in configuring MGX switches.

## FRSM/MPSM-to-FRSM/MPSM SPVC Configuration Quickstart

To configure an SPVC between two FRSM/MPSM card ports (on the same card in a switch, on different cards in the same switch, or on cards in different switches), perform the following steps:

	Command	Purpose
Step 1	<code>username</code> <code>&lt;password&gt;</code>	Start a configuration session.  <b>Note</b> To perform all the steps in this quickstart procedure, you must log in as a user with GROUP1 privileges or higher.
Step 2	Refer to the software configuration guides for the switches between the two FRSM/MPSM cards to be connected. See the <i>Cisco MGX 8850 (PXM1E/PXM45)</i> , <i>Cisco MGX 8950</i> , and <i>Cisco MGX 8830 Configuration Guide, Release 5.1</i> .	Configure the trunks that link the switch(es) that host(s) the FRSM or MPSM card ports.  Verify PNNI connectivity between the nodes that host the SPVC endpoints.
Step 3	See the “ <a href="#">FRSM-8T1, FRSM-8T1-C, FRSM-8E1, FRSM-8E1-C, MPSM-8T1-FRM, MPSM-8E1-FRM, and FRSM-HS2/B Line Configuration Quickstart</a> ” or the “ <a href="#">FRSM-2T3E3 and FRSM-2CT3 Line Configuration Quickstart</a> ” sections in Chapter 2, “ <a href="#">Preparing FRSM and MPSM Lines and Ports for Communications</a> .”	Bring up the physical lines at each end of the SPVC you are creating.
Step 4	See the “ <a href="#">Frame Relay Port Configuration Quickstart</a> ” section in Chapter 2, “ <a href="#">Preparing FRSM and MPSM Lines and Ports for Communications</a> .”	Configure the Frame Relay ports at each end of the SPVC you are creating.
Step 5	<code>addcon &lt;options&gt;</code>  Related commands: <code>dspscons</code> <code>dspcon &lt;port.DLCI&gt;</code> <code>cnfcon &lt;options&gt;</code>	Configure the slave side of the SPVC (if you are configuring a double-ended SPVC).  See the “ <a href="#">Configuring the Slave Side of SPVCs</a> ” section that appears later in this chapter.
Step 6	<code>addcon &lt;options&gt;</code>  Related commands: <code>dspscons</code> <code>dspcon &lt;port.DLCI&gt;</code> <code>cnfcon &lt;options&gt;</code>	Configure the master side of the SPVC.  <b>Note</b> In Cisco MGX Release 5.1, the FRSM and MPSM cards cannot host the master side of a single-ended SPVC.  See the “ <a href="#">Configuring the Master Side of SPVCs</a> ” section that appears later in this chapter.

## FRSM/MPSM-to-Non-FRSM/MPSM SPVC Configuration Quickstart

When creating an SPVC between a FRSM or MPSM card and a non-FRSM/MPSM card (such as an AUSM, RPM, or AXSM card), you must define both ends of the connection. This is just as you would for a FRSM/MPSM-to-FRSM/MPSM connection. You will need to refer to the documentation for the non-FRSM/MPSM product for information on configuring the connection endpoint.

To configure an SPVC between a FRSM/MPSM card and a non-FRSM/MPSM card, perform the following steps:

	Command	Purpose
Step 1	<code>username</code> <code>&lt;password&gt;</code>	Start a configuration session.  <b>Note</b> To perform all the steps in this quickstart procedure, you must log in as a user with GROUP1 privileges or higher.
Step 2	Refer to the software configuration guides for the switches between the two FRSM/MPSM cards to be connected. See the <i>Cisco MGX 8850 (PXM1E/PXM45)</i> , <i>Cisco MGX 8950</i> , and <i>Cisco MGX 8830 Configuration Guide, Release 5.1</i> .	Configure the trunks that link the switch(es) that host(s) the FRSM or MPSM card ports.  Verify PNNI connectivity between the nodes that host the SPVC endpoints.
Step 3	See the “ <a href="#">FRSM-8T1</a> , <a href="#">FRSM-8T1-C</a> , <a href="#">FRSM-8E1</a> , <a href="#">FRSM-8E1-C</a> , <a href="#">MPSM-8T1-FRM</a> , <a href="#">MPSM-8E1-FRM</a> , and <a href="#">FRSM-HS2/B Line Configuration Quickstart</a> ” or the “ <a href="#">FRSM-2T3E3</a> and <a href="#">FRSM-2CT3 Line Configuration Quickstart</a> ” sections in Chapter 2, “Preparing FRSM and MPSM Lines and Ports for Communications.”	Bring up the physical line at the FRSM/MPSM end of the SPVC you are creating.
Step 4	See the “ <a href="#">Frame Relay Port Configuration Quickstart</a> ” section in Chapter 2, “Preparing FRSM and MPSM Lines and Ports for Communications.”	Configure the Frame Relay port at the FRSM/MPSM end of the SPVC you are creating.

	Command	Purpose
Step 5	<b>addcon</b> <options> Related commands: <b>dspscons</b> <b>dspscon</b> <port.DLCI> <b>cnfcon</b> <options>	Configure the slave side of the SPVC (if you are configuring a double-ended SPVC).  If the slave side of the connection is on the FRSM or MPSM card, see the “ <a href="#">Configuring the Slave Side of SPVCs</a> ” section that appears later in this chapter.  If the slave side of the connection is on a non-FRSM/MPSM card, refer to the documentation for that card.
Step 6	<b>addcon</b> <options> Related commands: <b>dspscons</b> <b>dspscon</b> <port.DLCI> <b>cnfcon</b> <options>	Configure the master side of the SPVC.  <b>Note</b> In Cisco MGX Release 5.1, the FRSM and MPSM cards cannot host the master side of a single-ended SPVC.  If the master side of the connection is on the FRSM or MPSM card, see the “ <a href="#">Configuring the Master Side of SPVCs</a> ” section that appears later in this chapter.  If the master side of the connection is on a non-FRSM/MPSM card, refer to the documentation for that card.

## General FRSM and MPSM SPVC Provisioning Procedures

These procedures and topics describe configuring SPVCs on FRSM and MPSM cards:

- [Configuring SPVCs on FRSM and MPSM Cards](#)
- [Configuring the Slave Side of SPVCs](#)
- [Configuring the Master Side of SPVCs](#)

## Configuring SPVCs on FRSM and MPSM Cards

FRSM and MPSM SPVCs are created between one Frame Relay port and another Frame Relay port. Soft permanent virtual circuits (SPVCs) are permanent connections that can be rerouted in the event of a link failure. An SPVC, a variant of a permanent virtual circuit (PVC), can be rerouted using the Private Network-to-Network Interface (PNNI) Version 1.0 protocol.

Both PVCs and SPVCs are full-time connections. However, a PVC uses a predefined circuit path that fails altogether if that path is interrupted for any reason. Conversely, if a link along an SPVC path fails or that link cannot provide the required bandwidth to support the connection, the PNNI protocol reroutes that link to maintain the connection and to supply the necessary bandwidth.

Each SPVC has two endpoints. The master endpoint is responsible for routing and rerouting functions. The slave endpoint is responsible for responding to requests from the master during connection setup and rerouting. Both endpoints are configured on the switch or switches to which the Frame Relay CPE connects. Such endpoints can be on the same switch or on different switches.

The master/slave relationship exists for each SPVC and applies only to that SPVC connection. For example, you can have one SPVC with a master on Node A and a slave on Node B, and then create another SPVC with the master on Node B and the slave on Node A. It is good practice to distribute the master side of SPVCs among network nodes so that route processing functions can be distributed.

You can create two types of SPVCs on FRSM and MPSM cards in PXM45/PXM1E platforms:

- Single-ended SPVCs.
- Double-ended SPVCs.

Single-ended SPVCs are defined at the master endpoint and do not require configuration of a slave endpoint. The primary benefit of single-ended SPVCs is that they are easier to configure. After configuration, the master endpoint configures and brings up the slave endpoint. In order for this feature to work correctly, the destination endpoint must support single-ended SPVCs.



#### Note

In Cisco MGX Release 5.1, the FRSM-8T1, FRSM-8T1-C, FRSM-8E1, FRSM-8E1-C, MPSM-8T1-FRM, MPSM-8E1-FRM, FRSM-2T3E3, FRSM-2CT3, and FRSM-HS2/B cards support only the slave side of single-ended SPVCs. This means that you can configure master endpoints for single-ended SPVCs on other devices that support this feature, but you cannot create a single-ended SPVC by defining a master endpoint on a FRSM or MPSM card. If both SPVC endpoints must terminate on FRSM or MPSM cards, you must create a double-ended SPVC.

Double-ended SPVCs require separate configuration of the master and slave endpoints. The slave endpoint must be configured first because this step generates a slave address that must be entered during master endpoint configuration.

## Configuring the Slave Side of SPVCs

If you wish to configure a double-ended SPVC connection, you must first configure the slave endpoint for the connection. If you are configuring a single-ended SPVC, you need not configure a slave endpoint.

To configure the slave side of a double-ended SPVC, perform the following steps:

- Step 1** Establish a configuration session using a user name with GROUP1 privileges or higher.
- Step 2** Define the slave side of the SPVC by entering the following **addcon** command:

```
PXM1E_SJ.VHSHS2B.a > addcon <port_number> <DLCI> <CIR> [-cntp <ChanIntworkingType>]
[-contp <ControllerType>] [-sertp <ServiceClassTtype>] [-master <MasterShip>]
[-pcr <localPCR>] [-scr <localSCR>] [-abrpcr <ABRPCR>] [-abrmcr <ABRMCR>]
[-ingut <IngrPercentUtil>] [-ovrid <OvrSubOvrRide>] [-egrat <EgrSrvRate>]
[-egut <EgrPercentUtil>] [-bc <BurstCommit>] [-be <BurstExcess>]
[-detag <DETaggingEnable>] [-demap <DEtoCLPmap>] [-clpmap <CLPtoDEmap>]
[-iqdet <IngressDEThresh>] [-iqecn <IngressQECNthresh>] [-iqdep <IngressQDepth>]
[-eqdet <EgressDEThresh>] [-eqdep <EgressQDepth>] [-eqecn <EgressQECNthresh>]
[-cos <ATMConnServiceType>] [-maxcost <MaxCost>] [-type <restrictedType>]
[-rtngprio <RoutingPriority>] [-prefrte <PreferredRouteID>]
[-directrte <DirectedRoute>] [-rpcr <RemotePCR>] [-rscr <RemoteSCR>] [-rmcr <RemoteMCR>]
[-rcbs <RemoteMaxBurstSize>] [-admin <ConnAdminStatus>]
```

**Note**

- If the **addcon** command fails and displays the “Failed to update disk” message, it could be that the PNNI controller has not been added on the PXM1E or PXM45 card. For information on adding the PNNI controller, refer to the *Cisco MGX 8850 (PXM1E/PXM45), Cisco MGX 8950, and Cisco MGX 8830 Configuration Guide, Release 5.1*.
- If the **addcon** command fails and displays the “InvalidTrafficParm: check conformance or local/remote param mismatch” message, it could be that the local connection parameters on the slave/master endpoint do not match the remote connection parameters on the master/slave endpoint. To successfully add a connection both the local and remote connection parameters must match.

Table 3-2 lists and describes the parameters for the **addcon** command. The local and remote terms used in this table refer to settings for the local port you are configuring and the remote port at the other end of the connection. If you omit an option, a default value for that option is used for SPVC configuration. To override the default value for a given option, enter the option with a desired value.

**Caution**

Once you create an SPVC connection, you cannot change the SPVC prefix until all SPVC connections have been deleted. The procedure for changing the SPVC prefix is described in the *Cisco MGX 8850 (PXM1E/PXM45), Cisco MGX 8950, and Cisco MGX 8830 Configuration Guide, Release 5.1*.

**Table 3-2 Parameters for the addcon Command**

Parameter	Description
<i>port_number</i>	Enter the port number to which you will add the connection. To display a list of configured ports, enter the <b>dsports</b> command. The port number is found in the <i>Port</i> column in the format <i>Slot.Line.Port</i> . The port number range varies with the card type: <ul style="list-style-type: none"> <li>• FRSM-8T1, FRSM-8T1-C, MPSM-8T1-FRM = 1–192</li> <li>• FRSM-8E1, FRSM-8E1-C, MPSM-8E1-FRM = 1–248</li> <li>• FRSM-2T3E3 = 1 to 2</li> <li>• FRSM-2CT3 = 1 to 256</li> <li>• FRSM-HS2/B = 1–2 (HSSI back card)</li> <li>• FRSM-HS2/B = 1–8 (12IN1-8S back card)</li> </ul>
<i>DLCI</i>	Data-link connection identifier (DLCI) value. Range: 16–1023

Table 3-2 Parameters for the `addcon` Command (continued)

Parameter	Description
<code>CIR</code>	<p>Committed information rate (CIR) bps value. The CIR should be less than the configured port speed. Range by card types:</p> <ul style="list-style-type: none"> <li>• FRSM-8T1, FRSM-8T1-C, MPSM-8T1-FRM = 0–1536000</li> <li>• FRSM-8E1, FRSM-8E1-C, MPSM-8E1-FRM = 0–2048000</li> <li>• FRSM-2T3 = 0–44210000</li> <li>• FRSM-2E3 = 0–34010000</li> <li>• FRSM-2CT3 = 0–1536000</li> <li>• FRSM-HS2/B = 0–51840000 (HSSI back card)</li> <li>• FRSM-HS2/B = 0–8192000 (12IN1-8S back card)</li> </ul> <p>To calculate the CIR (bps) from cells per second (cps) use the following formula: <math>((cps * 38400) / 144) + 1</math> or use the <code>cpstobps</code> command where:</p> <ul style="list-style-type: none"> <li>• cps = remote PCR for High Priority (CBR) or UBR</li> <li>• cps = remote SCR for rtVBR or nrtVBR</li> <li>• cps = remote MCR for stdABR.</li> </ul>
<code>-cntp</code>	<p>Channel interworking type. Set this option to one of the following:</p> <ul style="list-style-type: none"> <li>• On MPSM-8T1-FRM, MPSM-8E1-FRM: <ul style="list-style-type: none"> <li>– 1 = Frame Relay to ATM Network Interworking (NIW, FRF.5—default)</li> <li>– 2 = Frame Relay to ATM service interworking (SIW) transparent (FRF.8.1, no protocol ID translation)</li> <li>– 3 = Frame Relay to ATM service interworking (SIW) translational (FRF.8.1, protocol ID translation)</li> <li>– 4 = ATM Forum FUNI (Frame Relay UNI) mode 1A</li> <li>– 5 = Frame Forwarding (no translation or mapping of header contents, CRC evaluated)</li> </ul> </li> <li>• On FRSM-8T1, FRSM-8T1-C, FRSM-8E1, FRSM-8E1-C, FRSM-2T3E3, FRSM-2CT3, FRSM-HS2/B: <ul style="list-style-type: none"> <li>– 1 = Frame Relay to ATM Network Interworking (NIW, FRF.5—default)</li> <li>– 2 = Frame Relay to ATM service interworking (SIW) transparent (FRF.8, no protocol ID translation)</li> <li>– 3 = Frame Relay to ATM service interworking (SIW) translational (FRF.8, protocol ID translation)</li> <li>– 4 = ATM Forum FUNI (Frame Relay UNI) mode 1A</li> <li>– 5 = Frame Forwarding (no translation or mapping of header contents, CRC evaluated)</li> </ul> </li> </ul>



**Table 3-2 Parameters for the addcon Command (continued)**

Parameter	Description
-contp	The Virtual Switch Interface (VSI) controller type that manages the connection. Select one of the following: <ul style="list-style-type: none"> <li>• 1 = PAR</li> <li>• 2 = PNNI (default)</li> <li>• 3 = MPLS</li> </ul>
-sertp	Service class type. This parameter determines which class of service (CoS) queue is used by the connection. Select one of the following service types: <ul style="list-style-type: none"> <li>• 1 = High Priority (CBR—default)</li> <li>• 2 = rtVBR</li> <li>• 3 = nrtVBR</li> <li>• 5 = UBR</li> <li>• 9 = stdABR</li> </ul>
-master	Mastership role of connection. Select from the following options: <ul style="list-style-type: none"> <li>• 1 = master</li> <li>• 2 = slave (default)</li> </ul>
-rmc	Remote connection ID. This option is used when defining the master end of a connection. After issuing the <b>addcon</b> command to create the slave side of a double-ended SPVC connection, use the generated slave connection ID with this option. The format is: <i>RemoteNsapAddress.VPI.VCI</i> .
-pcr	Local peak cell rate (PCR) in cells per second (cps). The VSI controller uses the local PCR when it routes the connection. If you do not define this value, the default setting is the same as the configured CIR or the configured ABR PCR (if it is different than the CIR). <ul style="list-style-type: none"> <li>• FRSM-8T1, FRSM-8T1-C, MPSM-8T1-FRM = 10–10000 cps</li> <li>• FRSM-8E1, FRSM-8E1-C, MPSM-8E1-FRM = 10–10000 cps</li> <li>• FRSM-2CT3, FRSM-2T3E3, FRSM-HS2/B = 10–198412 cps</li> </ul> <p><b>Note</b> The local PCR must match the remote PCR of the connection. The connection will fail if there is a mismatch in the local and remote PCR values.</p>
-scr	Local sustainable cell rate (SCR). The VSI controller uses the local SCR when it routes VBR connections. If you do not define this value, it is the same as the configured CIR. <ul style="list-style-type: none"> <li>• FRSM-8T1, FRSM-8T1-C, MPSM-8T1-FRM = 10–10000 cps</li> <li>• FRSM-8E1, FRSM-8E1-C, MPSM-8E1-FRM = 10–10000 cps</li> <li>• FRSM-2CT3, FRSM-2T3E3, FRSM-HS2/B = 10–198412 cps</li> </ul> <p><b>Note</b> The local SCR must match the remote SCR of the connection. The connection will fail if there is a mismatch in the local and remote SCR values.</p>

Table 3-2 Parameters for the `addcon` Command (continued)

Parameter	Description
-abrpcr	<p>Peak cell rate (PCR) for ABR traffic shaping. This parameter only applies to ABR connections. The PCR and the MCR define the Allowable Cell Rate (ACR) range. The PCR shall include bandwidth occupied by both data cells and the inrate RM cells. If you do not define this value, the default value is the same as the configured CIR.</p> <ul style="list-style-type: none"> <li>FRSM-8T1, FRSM-8T1-C, MPSM-8T1-FRM = 10–10000 cps</li> <li>FRSM-8E1, FRSM-8E1-C, MPSM-8E1-FRM = 10–10000 cps</li> <li>FRSM-2CT3, FRSM-2T3E3, FRSM-HS2/B = 10–198412 cps</li> </ul>
-abrmcrcr	<p>Minimum cell rate (MCR) for ABR traffic shaping. This parameter only applies to ABR connections. The VSI controller uses the MCR to route ABR connections in the network. The PCR and the MCR define the Allowable Cell Rate (ACR) range. The MCR is the rate at which the source is always allowed to send. The MCR includes bandwidth occupied by both data cells and the inrate RM cells. If you do not define this value, the default value is the same as the configured CIR.</p> <ul style="list-style-type: none"> <li>FRSM-8T1, FRSM-8T1-C, MPSM-8T1-FRM = 10–10000 cps</li> <li>FRSM-8E1, FRSM-8E1-C, MPSM-8E1-FRM = 10–10000 cps</li> <li>FRSM-2CT3, FRSM-2T3E3, FRSM-HS2/B = 10–198412 cps</li> </ul> <p><b>Note</b> The local MCR must match the remote MCR of the connection. The connection will fail if there is a mismatch in the local and remote MCR values.</p>
-ingut	Ingress percent utilization. This value is used to scale the required bandwidth required to route the connection and allows you to oversubscribe the network resources. Range is 1 to 100 percent. Default setting is 100 percent.
-ovrid	<p>Over subscription override. This parameter enables or disables the ability to override port oversubscription.</p> <ul style="list-style-type: none"> <li>1 = Disable: To apply CAC</li> <li>2 = Enable: Do not apply CAC (Default)</li> </ul>
-egrat	<p>Egress queue service rate. This value is used for CAC to determine if the port can support the connection. You can oversubscribe the port by configuring the <i>egress percent utilization</i> as a scaling factor. If you do not define this value, the default value is the same as the configured CIR.</p> <ul style="list-style-type: none"> <li>FRSM-8T1, FRSM-8T1-C, MPSM-8T1-FRM = 2400–1,536,000 bps</li> <li>FRSM-8E1, FRSM-8E1-C, MPSM-8E1-FRM = 2400–2,048,000 bps</li> <li>FRSM-2CT3, FRSM-2T3E3 and FRSM-HS2/B = 2400–52,000,000 bps</li> </ul>
-egut	Egress percent utilization. This value is used to scale the required bandwidth required for the connection and allows you to oversubscribe the egress port. Range is 1 to 100 percent. Default setting is 100 percent.

Table 3-2 Parameters for the addcon Command (continued)

Parameter	Description
-bc	Committed burst size: <ul style="list-style-type: none"> <li>FRSM-8T1, FRSM-8T1-C, MPSM-8T1-FRM = 0–65,535 bytes</li> <li>FRSM-8E1, FRSM-8E1-C, MPSM-8E1-FRM = 0–65,535 bytes</li> <li>FRSM-2CT3, FRSM-2T3E3, FRSM-HS2/B = 0–2,097,151 bytes</li> </ul> Default setting is 5100 bytes.
-be	Excess burst size: <ul style="list-style-type: none"> <li>FRSM-8T1, FRSM-8T1-C, MPSM-8T1-FRM = 0–65,535 bytes</li> <li>FRSM-8E1, FRSM-8E1-C, MPSM-8E1-FRM = 0–65,535 bytes</li> <li>FRSM-2CT3, FRSM-2T3E3, FRSM-HS2/B = 0–2,097,151 bytes</li> </ul> The default setting is calculated based on the CIR value entered. <p><b>Note</b> Setting the excess burst rate to the maximum value supported by each individual card type will disable ingress policing. For example, setting Be = 65535 on the FRSM-8T1 will disable ingress policing.</p>
-detag	Discard Eligible (DE) tagging. This parameter enables or disables tagging of the DE bit on ingress frames as the result of the policing mechanism. <ul style="list-style-type: none"> <li>1 = To enable DE tagging</li> <li>2 = To disable DE tagging (Default)</li> </ul>
-demap	DE to Cell Loss Priority (CLP) mapping. Set this option as follows: <ul style="list-style-type: none"> <li>1 = CLP mapped to DE (default)</li> <li>2 = CLP mapped to 0</li> <li>3 = CLP mapped to 1</li> </ul>
-clpmap	CLP to DE mapping. Set this option as follows: <ul style="list-style-type: none"> <li>1 = DE mapped to CLP (default)</li> <li>2 = DE mapped to 0</li> <li>3 = DE mapped to 1</li> <li>4 = Ignore CLP</li> </ul>
-iqdet	Ingress queue DE threshold. This parameter defines the depth required on the ingress queue to begin dropping DE frames. <ul style="list-style-type: none"> <li>FRSM-8T1, FRSM-8T1-C, MPSM-8T1-FRM = 0–65,535 bytes</li> <li>FRSM-8E1, FRSM-8E1-C, MPSM-8E1-FRM = 0–65,535 bytes</li> <li>FRSM-2CT3, FRSM-2T3E3, FRSM-HS2/B = 0–2,097,151 bytes</li> </ul> Default setting is 32767.

Table 3-2 Parameters for the `addcon` Command (continued)

Parameter	Description
-iqecn	<p>Ingress queue Explicit Congestion Notification (ECN) threshold. This parameter defines the depth required on the ingress queue to begin marking congestion.</p> <ul style="list-style-type: none"> <li>FRSM-8T1, FRSM-8T1-C, MPSM-8T1-FRM = 0–65,535 bytes</li> <li>FRSM-8E1, FRSM-8E1-C, MPSM-8E1-FRM = 0–65,535 bytes</li> <li>FRSM-2CT3, FRSM-2T3E3, FRSM-HS2/B = 0–2,097,151 bytes</li> </ul> <p>Default setting is 6553.</p>
-iqdep	<p>Ingress queue depth:</p> <ul style="list-style-type: none"> <li>FRSM-8T1, FRSM-8T1-C, MPSM-8T1-FRM = 4510–65,535 bytes</li> <li>FRSM-8E1, FRSM-8E1-C, MPSM-8E1-FRM = 4510–65,535 bytes</li> <li>FRSM-2CT3, FRSM-2T3E3, FRSM-HS2/B = 4510–2,097,151 bytes</li> </ul> <p>Default setting is 65535.</p>
-eqdet	<p>Egress queue DE threshold. This parameter defines the depth required on the egress queue to begin dropping DE frames.</p> <ul style="list-style-type: none"> <li>FRSM-8T1, FRSM-8T1-C, MPSM-8T1-FRM = 0–65,535 bytes</li> <li>FRSM-8E1, FRSM-8E1-C, MPSM-8E1-FRM = 0–65,535 bytes</li> <li>FRSM-2CT3, FRSM-2T3E3, FRSM-HS2/B = 0–2,097,151 bytes</li> </ul> <p>Default setting is 32767.</p>
-eqdep	<p>Egress queue depth:</p> <ul style="list-style-type: none"> <li>FRSM-8T1, FRSM-8T1-C, MPSM-8T1-FRM = 0–65,535 bytes</li> <li>FRSM-8E1, FRSM-8E1-C, MPSM-8E1-FRM = 0–65,535 bytes</li> <li>FRSM-2CT3, FRSM-2T3E3, FRSM-HS2/B = 0–2,097,151 bytes</li> </ul> <p>Default setting is 65535.</p>
-eqecn	<p>Egress queue ECN threshold. This parameter defines the depth required on the ingress queue to begin marking congestion.</p> <ul style="list-style-type: none"> <li>FRSM-8T1, FRSM-8T1-C, MPSM-8T1-FRM = 0–65,535 bytes</li> <li>FRSM-8E1, FRSM-8E1-C, MPSM-8E1-FRM = 0–65,535 bytes</li> <li>FRSM-2CT3, FRSM-2T3E3, FRSM-HS2/B = 0–2,097,151 bytes</li> </ul> <p>Default setting is 6553.</p>

**Table 3-2 Parameters for the addcon Command (continued)**

Parameter	Description
-cos	ATM connection service type. Select from the following: <ul style="list-style-type: none"> <li>• CBR1 = 21 (default)</li> <li>• rtVBR1 = 22</li> <li>• rtVBR2 = 23</li> <li>• rtVBR3 = 24</li> <li>• nrtVBR1 = 25</li> <li>• nrtVBR2 = 26</li> <li>• nrtVBR3 = 27</li> <li>• UBR1 = 28</li> <li>• UBR2 = 29</li> <li>• stdABR = 30</li> </ul>
-maxcost	Maximum end-to-end cost for the connection. The VSI controller uses the maximum cost to determine which network routes are available to the connection. The maximum cost is the calculated sum of the administrative weights (AWs) in both directions on every hop in a selected route. Range is 1 to 2,147,483,647. Default setting is 2147483647.
-type	Trunk restriction option. <ul style="list-style-type: none"> <li>• 1 = Enable connection routing without trunk restrictions (Default)</li> <li>• 2 = Restrict the connection routing to terrestrial trunks</li> <li>• 3 = Restrict the connection routing to satellite trunks</li> </ul>
-rtngprio	Routing priority for this connection. This parameter defines the rerouting and derouting priority of the connection. Range is 1 to 15. Default setting is 8.
-prefrte	Preferred Route ID for this connection. The preferred route feature is applicable only to the master end of an SPVC. This option assigns a unique identifier for the preferred route to which this connection is associated. When the route ID is set to 0, the connection is not associated with any preferred routes. Range is 0 to 65,535. Default is 0.
-directrte	Directed Route option. When this option is yes, the associated preferred route is the only permissible route for the connection to take. Should the directed preferred route be unavailable, the connection is failed. When the option is no, the connection is allowed to try another alternate route should the preferred route be unavailable. <ul style="list-style-type: none"> <li>• 1 = Yes</li> <li>• 2 = No (default)</li> </ul>

**Table 3-2 Parameters for the addcon Command (continued)**

Parameter	Description
-rpcr	Remote peak cell rate (PCR) in cells per second (cps). The remote PCR value must match the local PCR value of the connection. <ul style="list-style-type: none"> <li>FRSM-8T1, FRSM-8T1-C, MPSM-8T1-FRM = 10–10000 cps</li> <li>FRSM-8E1, FRSM-8E1-C, MPSM-8E1-FRM = 10–10000 cps</li> <li>FRSM-2CT3, FRSM-2T3E3, FRSM-HS2/B = 10–198412 cps</li> </ul> The default setting is calculated based on the CIR value entered.
-rscr	Remote sustainable cell rate (SCR). The remote SCR value must match the local SCR value of the connection. <ul style="list-style-type: none"> <li>FRSM-8T1, FRSM-8T1-C, MPSM-8T1-FRM = 10–10000 cps</li> <li>FRSM-8E1, FRSM-8E1-C, MPSM-8E1-FRM = 10–10000 cps</li> <li>FRSM-2CT3, FRSM-2T3E3, FRSM-HS2/B = 10–198412 cps</li> </ul> The default setting is calculated based on the CIR value entered.
-rmcr	Remote minimum cell rate (MCR). This parameter is for ABR connections only. The remote MCR value must match the local MCR value of the connection. <ul style="list-style-type: none"> <li>FRSM-8T1, FRSM-8T1-C, MPSM-8T1-FRM = 10–10000 cps</li> <li>FRSM-8E1, FRSM-8E1-C, MPSM-8E1-FRM = 10–10000 cps</li> <li>FRSM-2CT3, FRSM-2T3E3, FRSM-HS2/B = 10–198412 cps</li> </ul> The default setting is calculated based on the CIR value entered.
-rcbs	Remote maximum burst size (MBS). This parameter is for Frame Relay-ATM interworking connections only. The remote MBS must match the configured MBS at the ATM end of the connection. Range is 1 to 5,000,000.
-admin	Connection administration status. This option applies only to the FRSM-2T3E3, FRSM2CT3, and FRSM-HS2/B cards.  To define the new connection as administratively up, enter <b>-admin 1</b> or just omit this option. To define a new connection that is administratively down, enter <b>-admin 2</b> .



**Note** You can configure additional ABR parameters with the **cnfchanabrparams**, **cnfchanabbrates**, and **cnfchanstdabr** commands. You can view ABR parameters with the **dspchanstdabr** command. For more information about these commands, refer to [Chapter 6, “FRSM and MPSM Command Reference.”](#)

The following **addcon** command defines a FRSM port as the slave side of an SPVC connection. Note the slave Local Connection ID shown at the end of the display.

```
PXM1E_SJ.VHSHS2B.a > addcon 1 16 4000
```

```
Local Connection ID is : 4700918100000000052190a4e000001075b0100.11.35
```

```
PXM1E_SJ.VHSHS2B.a >
```

- Step 3** Write down the NSAP address displayed when the **addcon** command output is completed. You will need the NSAP address to configure the master side of the SPVC connection.

**Tip**

When you set up the master side of the SPVC, you will need to enter the slave ATM address reported by the **addcon** command. If you maintain the current session or use the session Copy command to copy the ATM address now, you can use the session Paste command to complete the **addcon** command on the switch that hosts the master side of the SPVC.

- Step 4** Verify the addition of the slave side of the SPVC connection by entering the following command, which displays all configured SPVCs:

```
PXM1E_SJ.1.30.FRSM.a > dspcons
```

```
LCN  Port.DLCI VPI.VCI Class  Type  M/S CIR      DE  EgrQ Admin Alarm
-----
0016 001.0100 30.0119 CBR   NIW   S   4800    Dis Hi  Up   CTRLR-ABIT
0017 001.0103 30.0122 CBR   NIW   S  45000    Dis Hi  Up   CTRLR-ABIT
0018 001.1023 30.1042 CBR   NIW   S  45000    Dis Hi  Up   CTRLR-ABIT
0019 001.0032 30.0051 CBR   NIW   M  32000    Dis Hi  Up    OK
```

```
Number of channels:      4
```

```
ChanNumNextAvailable:  20
```

```
PXM1E_SJ.1.30.FRSM.a >
```

- Step 5** If you add the master side of the SPVC at a later date, you can display the slave connection ID with the **dspon** command as shown in the following example. The connection number is specified by entering the port number and DLCI number in the format *port.DLCI*. The complete slave ID must be entered at the master endpoint in the format *ChanLocalNSAP.ChanLocalVpi.ChanLocalVci*. These values correspond to **dspon** parameters shown in this example:

```
PXM1E_SJ.1.30.FRSM.a > dspon 1.100
```

```
-----
ChanNum:      20          RowStatus: Mod
AdmnState: Up    ChanState: Failed
-----
PORT-ALARM CTRLR-ABIT E-AIS/RDI  LMI-ABIT  RAS FAIL
-----
          NO          YES          NO          NO          NO
-----
```

```
ChanNum:      20
ChanRowStatus: Mod
ConnAdminStatus: Up
ChanPortNum:  1
ChanDLCI:     100
EgressQSelect: Hi
ChanServType: CBR
IngressQDepth: 65535
IngressQDEThresh: 32767
IngressQECNThresh: 6553
EgressQDepth: 65535
EgressQDEThresh: 32767
EgressQECNThresh: 6553
DETaggingEnable: Disabled
CIR:          48000
Bc:           5100
Be:           5100
```

```

IBS:                100
ICR:                0
MCR:                0
PCR:                0
RIF:                64
RDF:                16
Nrm:                64
Trm:                255 ms
TBE:                16777215 Cells
FRTT:               0 ms
ADTF:               500 ms
CDF:                16
ChanLocalRemoteLpbkState: Disabled
ChanTestType:       TestOff
ChanTestState:      NotInProgress
ChanRTDresult:      65535 ms
ChanType:           NIW
ChanFECNmap:        setEFCIzero
ChanDEtoCLPmap:    mapCLP
ChanCLPtoDEmap:    mapDE
ChanFrConnType:     SPVC
ChanIngrPercentUtil: 100
ChanEgrPercentUtil: 100
ChanEgrSrvRate:     48000
ChanOvrSubOvrRide: Do not apply CAC
ChanLocalVpi:       30
ChanLocalVci:       119
ChanLocalNSAP:      4700918100000000052190a4e00000107f30100
ChanRemoteVpi:      0
ChanRemoteVci:      0
ChanRemoteNSAP:     NULL NSAP
ChanMastership:     Slave
ChanVpcFlag:        Vcc
ChanConnServiceType: CBR1
ChanRoutingPriority: 8
ChanPreferredRouteId: 0
ChanDirectedRoute:  No
ChanMaxCost:        2147483647
ChanRestrictTrunkType: No Restriction
ChanConnPCR:        180
ChanConnSCR:        180
ChanConnMCR:        10
ChanConnPercentUtil: 100
ChanConnRemotePCR:  180 cps
ChanConnRemoteSCR:  10 cps
ChanConnRemoteMCR:  10 cps
ChanConnRemotePercentUtil: 100
ChanServiceTypeOverride: disabled
ChanServiceRate:    2000 xps
ChanZeroCirEir:     0 bps
ChanReRoute:        False
RemoteConnMBS:      1024 cells

ChanNumNextAvailable: 22

```

---



## Configuring the Master Side of SPVCs

To configure the master side of an SPVC, perform the following steps:

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



**Tip**

During this procedure, you will have to enter the ATM address for the slave end of the connection. If you establish this session from the same workstation you used to create the slave connection, you can do a copy and paste sequence to avoid data entry errors.

**Step 2** To define the master side of the SPVC connection, enter the following command:

```
PXM1E_SJ.VHSHS2B.a > addcon <port_number> <DLCI> <CIR> [-cntp <ChanIntworkingType>]
[-contp <ControllerType>] [-sertp <ServiceClassType>] [-master <MasterShip>]
[-rmc <RemoteConnId>] [-pcr <localPCR>] [-scr <localSCR>] [-abrpcr <ABRPCR>]
[-abrmcr <ABRMCR>] [-ingut <IngrPercentUtil>] [-ovrid <OvrSubOvrRide>]
[-egrat <EgrSrvRate>] [-egut <EgrPercentUtil>] [-bc <BurstCommit>] [-be <BurstExcess>]
[-detag <DETaggingEnable>] [-demap <DEtoCLPmap>] [-clpmap <CLPtoDEmap>]
[-iqdet <IngressDEThresh>] [-iqecn <IngressQECNthresh>] [-iqdep <IngressQDepth>]
[-eqdet <EgressDEThresh>] [-eqdep <EgressQDepth>] [-eqecn <EgressQECNthresh>]
[-cos <ATMConnServiceType>] [-maxcost <MaxCost>] [-type <restrictedType>]
[-rtngprio <RoutingPriority>] [-prefrte <PreferredRouteID>]
[-directrte <DirectedRoute>] [-rpcr <RemotePCR>] [-rscr <RemoteSCR>] [-rmcr <RemoteMCR>]
[-rcbs <RemoteMaxBurstSize>] [-admin <ConnAdminStatus>]
```

Table 3-2 lists and describes the parameters for the **addcon** command. The local and remote terms used in this table refer to settings for the local port you are configuring and the remote port at the other end of the connection. If you omit an option, a default value for that option is used for SPVC configuration. To override the default value for a given option, enter the option with a desired value.



**Note**

If the **addcon** command fails and displays the “Failed to update disk” message, it could be that the PNNI controller has not been added on the PXM1E or PXM45 card. For information on adding the PNNI controller, refer to the *Cisco MGX 8850 (PXM1E/PXM45), Cisco MGX 8950, and Cisco MGX 8830 Configuration Guide, Release 5.1*.

- If the **addcon** command fails and displays the “InvalidTrafficParm: check conformance or local/remote param mismatch” message, it could be that the local connection parameters on the slave/master endpoint do not match the remote connection parameters on the master/slave endpoint. To successfully add a connection both the local and remote connection parameters must match.

The following **addcon** command defines a FRSM port as the master side of a double-ended SPVC.

```
PXM1E_SJ.1.30.FRSM.a > addcon 7 111 32000 -master 1 -rmc
47009181000000000052190a4e00000107f30200.30.129
```

**Step 3** To view the master-side of the new SPVC connection in the connection list, enter the **dspscons** command:

```
PXM1E_SJ.1.30.FRSM.a > dspscons
```

```
LCN  Port.DLCI  VPI.VCI  Class  Type  M/S  CIR      DE  EgrQ  Admin  Alarm
-----
0020 001.0100   30.0119  CBR    NIW   S    48000    Dis Hi  Up     CTRLR-ABIT
0021 001.0101   30.0120  CBR    NIW   M    48000    Dis Hi  Down   ADMIN-DOWN
0022 002.0110   30.0129  CBR    NIW   S    32000    Dis Hi  Up     OK
0023 007.0111   30.0130  CBR    NIW   M    32000    Dis Hi  Up     OK
```

```
Number of channels: 4
```

```
ChanNumNextAvailable: 24
```

This command displays all the connections for the FRSM or MPSM card.

**Step 4** To display the configuration information for a specific SPVC endpoint, enter the following command:

```
PXM1E_SJ.1.30.FRSM.a > dspcon port.DLCI
```

Replace the *port.DLCI* parameter with the port number and DLCI number for the connection you want to display. These numbers are listed in the **dspscons** command display.

The following is sample output from the **dspcon** command for the connection created in the previous example. Notice that this report shows the NSAP IDs for both ends of the connection.

```
PXM1E_SJ.1.30.FRSM.a > dspcon 7.111
```

```
-----
ChanNum: 23          RowStatus: Add
AdmnState: Up       ChanState: Ok
-----
PORT-ALARM CTRLR-ABIT E-AIS/RDI  LMI-ABIT  RAS FAIL
-----
NO          NO          NO          NO          NO
-----
ChanNum: 23
ChanRowStatus: Add
ConnAdminStatus: Up
ChanPortNum: 7
ChanDLCI: 111
EgressQSelect: Hi
ChanServType: CBR
IngressQDepth: 65535
IngressQDEThresh: 32767
IngressQECNThresh: 6553
EgressQDepth: 65535
EgressQDEThresh: 32767
EgressQECNThresh: 6553
DETaggingEnable: Disabled
CIR: 32000
Bc: 5100
Be: 5100
IBS: 100
ICR: 0
MCR: 0
PCR: 0
RIF: 64
RDF: 16
Nrm: 64
Trm: 255 ms
TBE: 16777215 Cells
FRTT: 0 ms
ADTF: 500 ms
```

```

CDF: 16
ChanLocalRemoteLpbkState: Disabled
ChanTestType: TestOff
ChanTestState: NotInProgress
ChanRTDresult: 65535 ms
ChanType: NIW
ChanFECNmap: setEFCIzero
ChanDEtoCLPmap: mapCLP
ChanCLPtoDEmap: mapDE
ChanFrConnType: SPVC
ChanIngrPercentUtil: 100
ChanEgrPercentUtil: 100
ChanEgrSrvRate: 32000
ChanOvrSubOvrRide: Do not apply CAC
ChanLocalVpi: 30
ChanLocalVci: 130
ChanLocalNSAP: 47009181000000000052190a4e00000107f30700
ChanRemoteVpi: 30
ChanRemoteVci: 129
ChanRemoteNSAP: 47009181000000000052190a4e00000107f30200
ChanMastership: Master
ChanVpcFlag: Vcc
ChanConnServiceType: CBR1
ChanRoutingPriority: 8
ChanPreferredRouteId: 0
ChanDirectedRoute: No
ChanMaxCost: 2147483647
ChanRestrictTrunkType: No Restriction
ChanConnPCR: 120
ChanConnSCR: 120
ChanConnMCR: 10
ChanConnPercentUtil: 100
ChanConnRemotePCR: 120 cps
ChanConnRemoteSCR: 10 cps
ChanConnRemoteMCR: 10 cps
ChanConnRemotePercentUtil:100
ChanServiceTypeOverride: disabled
ChanServiceRate: 1334 xps
ChanZeroCirEir: 0 bps
ChanReRoute: False
RemoteConnMBS: 1024 cells

ChanNumNextAvailable: 24

```

**Note**

After FRSM and MPSM SPVCs have been created between one Frame Relay port and another Frame Relay port, you can modify the SPVC connection parameters using the **cnfchan**, **cnfchanabrparams**, **cnfchanabrrates**, **cnfchanegressq**, **cnfchaneir**, **cnfchaningressq**, **cnfchanmap**, **cnfchanpol**, **cnfchansrvrate**, **cnfchanstdabr**, **cnfcon**, **xcnfchan**, and **xcnfchanstdabr** commands. To delete a connection use the **delcon** command. For more information about these commands, refer to [Chapter 6, “FRSM and MPSM Command Reference.”](#)

