

# Configuring Cards

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## SYSTEM ADMINISTRATOR GUIDE

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# 1 Overview

Line cards are the individual I/O cards available in a SmartEdge® chassis and an SM family chassis. Media interface cards (MICs) are available in the SmartEdge 100. The SmartEdge and SM family devices support many different types of line cards, and configuration and operations tasks for each card can vary.

This document describes how to configure all types of line cards and services cards in the SmartEdge 100, 400, 600, 800, 1200, and 1200H chassis, and line cards in the SM family of systems, and provides information about the capabilities of these cards. This document also describes setting up and using the SmartEdge 100 MICs and native ports.

The procedures described in this document are common to all card types, except where noted.

## 1.1 Card Types

*Table 1 Card Types for the SM Family Chassis*

Full Name of Card	CLI Name of Card
Fast Ethernet–Gigabit Ethernet (60-port FE, 2-port GE)	<code>fege-60-2-port-sm</code>
Gigabit Ethernet 1020 (GE1020) (10-port)	<code>ge-10-port-sm</code>
Gigabit Ethernet DDR (10-port)	<code>ge2-10-port-sm</code>
Gigabit Ethernet DDR (20-port)	<code>ge4-20-port-sm</code>
10 Gigabit Ethernet (10GE) (1-port)	<code>10ge-1-port-sm</code>
10 Gigabit Ethernet (10GE) DDR (4-port)	<code>10ge-4-port-sm</code>
10 Gigabit Ethernet (10GE) DDR (1-port)	<code>10ge2-1-port-sm</code>
SMRP Controller card	<code>smrp2</code>

*Table 2 SmartEdge 100 Card Types*

Full Name of Card	CLI Name of Card
10/100Base-TX Ethernet MIC (12-port) <sup>(1)</sup>	<code>fe-12-port</code>
10/100Base-FX Ethernet MIC (12-port) <sup>(1)</sup>	<code>fe-12-port</code>
ATM OC-3c/STM-1c MIC (2-port) <sup>(2)</sup>	<code>atm-oc3-2-port</code>
1000Base-T Gigabit Ethernet (2-port)	<code>ge-2-port</code>



Table 2 SmartEdge 100 Card Types

Full Name of Card	CLI Name of Card
1000Base-FX Gigabit Ethernet (2-port)	<code>ge-2-port</code>
SmartEdge100 Controller Carrier card	<code>xcrp - SE100</code>

(1) Fast Ethernet (FE)

(2) Second-generation ATM OC line card. This card is PPA2-based.

Table 3 SmartEdge 400, 600, 800, 1200, or 1200H Cards

Full Name of Card	CLI Name of Card
ATM OC-3c/STM-1c (8-port) <sup>(1)</sup>	<code>atm-oc3e-8-port</code>
ATM OC-12c/STM-4c (2-port) <sup>(1)</sup>	<code>atm-oc12e-2-port</code>
POS OC-3c/STM-1c (8-port) <sup>(2)</sup>	<code>oc3e-8-port</code>
POS OC-12c/STM-4c (4-port)	<code>oc12e-4-port</code>
POS OC-48c/STM-16c (4-port)	<code>oc48e-4-port</code>
OC-192c/STM-64c (1-port)	<code>oc192-1-port</code>
Channelized OC-3/STM-1 (8/4-port) /OC-12/STM-4 (2/1-port)	<code>ch-oc3oc12-8or2-port</code>
Fast Ethernet–Gigabit Ethernet (60-port FE, 2-port GE)	<code>fege-60-2-port</code>
Gigabit Ethernet 1020 (10-port)	<code>ge-10-port</code>
Gigabit Ethernet 1020 (20-port)	<code>ge-20-port</code>
Gigabit Ethernet (5-port)	<code>ge-5-port</code>
Gigabit Ethernet DDR (10-port)	<code>ge2-10-port</code>
Gigabit Ethernet DDR (20-port) <sup>(3)</sup>	<code>ge4-20-port</code>
10 Gigabit Ethernet (1-port)	<code>10ge-1-port</code>
10 Gigabit Ethernet DDR (4-port) <sup>(3)</sup>	<code>10ge-4-port</code>
10 Gigabit Ethernet/OC-192c DDR (1-port)	<code>10ge-oc192-1-port</code>
Advanced Services Engine	<code>ase</code>
Advanced Services Engine 2 <sup>(3)</sup>	<code>ase2</code>
SmartEdge Storage Engine <sup>(3)</sup>	<code>sse</code>
XCRP4 Controller card with configurable interface to external timing equipment (BITS or SSU) and 8 GB memory	<code>xcrp4 (base)</code>

(1) Second-generation ATM OC line card. This card is PPA2-based.

(2) Use part number SFP-OC3-SM-IR when ordering the SFP transceivers with POS OC-3 SR-1 or POS OC-3 IR-1 functionality.

(3) This card is not supported in the SmartEdge 400 and SmartEdge 800 chassis.



## 1.2 SmartEdge 100 Router Considerations

Line cards and media interface cards (MICs) are the individual I/O cards in a SmartEdge chassis; ports are the physical interfaces on the SmartEdge line cards and MICs, and a channel is a logical subdivision of the bandwidth of a channelized port on a line card. The SmartEdge 400 and SmartEdge 800 routers support many different types of line cards, ports, and channels. The SmartEdge 100 router supports Ethernet and Gigabit Ethernet (GE) ports and MICs:

- Slot 1 supports the Ethernet management port (1/1). A second Ethernet management port (1/2) is disabled.
- Slot 2 supports two nonremovable native Gigabit Ethernet (GE) ports (2/1 and 2/2) and two MIC slots for removable ports.
- The two MIC slots support port ranges as follows:
  - The first MIC contains ports 2/3 to 2/14.
  - The second MIC contains ports 2/15 to 2/26.

The actual range of available ports depends on the MIC installed in the MIC slot.

## 1.3 Related Information

Other SmartEdge router documents with related tasks and commands include:

- Configuration tasks and commands for Asynchronous Transfer Mode (ATM), Ethernet, and Packet over SONET/SDH (POS) ports are described in *Configuring ATM, Ethernet, and POS Ports*; see Reference [2].
- Configuration tasks and commands for Ethernet are described in *Configuring ATM, Ethernet, and POS Ports*; see Reference [2].
- Configuration tasks and commands for permanent virtual circuits (PVCs) are described in *Configuring Circuits*; see Reference [1].





## 2 Configuration and Operations Tasks

### 2.1 Configure a SmartEdge 100 MIC

To configure the basic features for a SmartEdge 100 MIC, perform the tasks described in Table 4; enter all commands in card configuration mode, unless otherwise noted.

Table 4 Configure a SmartEdge 100 MIC

Step	Task	Root Command	Notes
1.	Configure a card and access card configuration mode.	<i>card</i>	Enter this command in global configuration mode; specify the <b>carrier</b> keyword.
2.	Specify the rate and burst limits rate for Point-to-Point Protocol (PPP) over Ethernet over ATM (PPPoEoA) Active Discovery Initiation (PADI) packets and PPP over ATM (PPPoA) Configure-Request packets that arrive at the SmartEdge router on circuit creation on demand (CCOD) ATM permanent virtual circuits (PVCs).	<i>rate-limit ccod</i>	
3.	Specify the rate and burst limits for Point-to-Point Protocol over Ethernet (PPPoE) Active Discovery Initiation (PADI) packets that arrive at the SmartEdge router.	<i>rate-limit padi</i>	
4.	Specify the rate and burst limits for PPP Link Control Protocol (LCP) Configure-Request packets that arrive at the SmartEdge router on static ATM PVCs.	<i>rate-limit ppp-lcp-configfreq</i>	
5.	Specify the MIC type for the specified slot before the MIC is inserted in the SmartEdge 100 router, and access MIC configuration mode.	<i>mic</i>	
6.	Specify the mode for the segmentation and reassembly (SAR) image in the ATM MIC.	<i>atm mode</i>	Enter this command in MIC configuration mode. This command applies to ATM OC MICs only.



## 2.2 Configure a SmartEdge 400, 600, 800, 1200, or 1200H Card

To configure the basic features for an SmartEdge line card, perform the tasks described in Table 5; enter all commands in card configuration mode, unless otherwise noted.

Table 5 Configure a Line Card

Step	Task	Root Command	Notes
1.	Configure a card and access card configuration mode.	<i>card</i>	Enter this command in global configuration mode.
2.	Specify card-specific attributes. (All attributes are optional.)		
	Specify the mode for the segmentation and reassembly (SAR) image in the card.	<i>atm mode</i>	This command applies to second-generation ATM OC line cards and MICs only.
	Enable lossless flow control for jumbo frames.	<i>lossless-large-mtu</i>	This command applies to the FE-GE line card only.
	Specify the port speed and duplex mode for all FE ports.	<i>medium (fast-ethernet)</i>	This command applies to the FE-GE line card only.
	Specify the MTU size of the payload without fragmentation for all FE ports.	<i>mtu (card)</i>	This command applies to the FE-GE line card only.
3.	Increase the maximum number of circuits on the 1-port 10 Gigabit Ethernet card (10ge-1-port) to 32,000.	<i>high-circuit-count</i>	This command applies to the 10ge-1-port line card only.
4.	Specify the rate and burst limits for PPPoEoA PADI packets and PPPoA Configure-Request packets that arrive at the SmartEdge router on CCOD ATM PVCs.	<i>rate-limit ccod</i>	
5.	Specify the rate and burst limits for PPPoE PADI packets that arrive at the SmartEdge router.	<i>rate-limit padi</i>	
6.	Specify the rate and burst limits for PPP LCP Configure-Request packets that arrive at the SmartEdge router on static ATM PVCs.	<i>rate-limit ppp-lcp-configreq</i>	

### 2.2.1 Configure an ASE or ASE2 Card

For information about how to configure an ASE or ASE2 card, see Reference [4].



## 2.2.2 Configure an SSE Card

For information about how to configure an SSE card, see Reference [5].

## 2.3 Configure an SM Family Chassis Line Card

To configure the basic features for a line card, perform the tasks described in Table 6; enter all commands in card configuration mode, unless otherwise noted.

Table 6 Configure a Line Card

Step	Task	Root Command	Notes
1.	Configure a card and access card configuration mode.	<i>card</i>	Enter this command in global configuration mode.
2.	Specify card-specific attributes. (All attributes are optional.)		
	Enable lossless flow control for jumbo frames.	<i>lossless-large-mtu</i>	This command applies to the FE-GE line card only.
	Specify the port speed and duplex mode for all FE ports.	<i>medium (fast-ethernet)</i>	This command applies to the FE-GE line card only.
	Specify the MTU size of the payload without fragmentation for all FE ports.	<i>mtu (card)</i>	This command applies to the FE-GE line card only.

## 2.4 Line Card Operations

To display the chassis slot number for the destination line card, perform the task listed in Table 7. Enter the `show` command in any mode.

Table 7 Line Card Operations Tasks

Task	Root Command
Display the chassis slot number for the destination line card.	<i>show destination card</i>
Shows slots in which cards are installed and their state.	<i>show chassis</i>





## 3 Configuration Examples

### 3.1 ATM OC-3c/STM-1c Line Card (8-Port)

For SmartEdge routers, the following example shows how to configure a 8-port ATM OC-3c/STM-1c line card in slot 2 and specify vc-fair mode for the line card using the default method:

```
[local]Redback(config)#card atm-oc3-8-port 2
Enter configuration commands, one per line, 'end' to exit
```

The following example shows how to configure a 8-port ATM OC-3c/STM-1c line card in slot 2 and specify vc-fair mode for the line card:

```
[local]Redback(config)#card atm-oc3-8-port 2
[local]Redback(config-card)#atm mode vc-fair
Note: enable vc-fair SAR image will cause card reload
commit to continue; abort to exit without change
[local]Redback(config-card)#commit
```

The following example shows how to configure a 8-port ATM OC-3c/STM-1c line card in slot 2 and specify hsvc-fair mode for the line card:

```
[local]Redback(config)#card atm-oc3-8-port 2
[local]Redback(config-card)#atm mode hsvc-fair
Note: enable hsvc-fair SAR image will cause card reload
commit to continue; abort to exit without change
[local]Redback(config-card)#commit
```

### 3.2 Channelized OC-3c/STM-1c (8/4-Port) / OC-12/SMT-4 (2/1-Port) Line Card

The following example shows how to configure a Channelized ATM OC-3/STM-1(8/4-port) / OC-12/STM-4 (2/1-port) line card in slot 1:

```
[local]Redback(config)#card ch-oc3oc12-8or2-port 1
Enter configuration commands, one per line, 'end' to exit
```

### 3.3 FE-GE Line Card (2-Port)

The following example shows how to specify lossless flow control for the 1 and 2 port groups, a speed of 100 Mbps in full-duplex mode, and an MTU of 9600 for all ports on the FE-GE line card in slot 4:

```
[local]Redback(config)#card fege-60-2-port 4
[local]Redback(config-card)#lossless-large-mtu port-group 1 2
[local]Redback(config-card)#medium 100 duplex full
[local]Redback(config-card)#mtu 9600
[local]Redback(config-card)#exit
```





## Reference List

- [1] *Configuring Circuits*, 12/1543-CRA 119 1170/1
- [2] *Configuring ATM, Ethernet, and POS Ports*, 9/1543-CRA 119 1170/1
- [3] *Configuring Channelized Ports*, 93/1543-CRA 119 1170/1
- [4] *Advanced Services Configuration and Operation Using the SmartEdge OS CLI*, 1/1543-CRA 119 1170/1
- [5] *SSE Configuration and Operation*, 86/1543-CRA 119 1170/1
- [6] *Command List*, 1/190 77-CRA 119 1170/1
- [7] *Commands: t through z*, 26/190 82-CRA 119 1170/1