



Cisco 10000 SIP-600 Overview

This chapter provides an overview of the Cisco 10000 SIP-600 and includes the following sections:

- [Release History, page 3-1](#)
- [Supported SIP Features, page 3-1](#)
- [SIP and PRE Compatibility, page 3-2](#)
- [Supported MIBs, page 3-3](#)
- [Required Configuration Tasks, page 3-5](#)
- [Bandwidth Oversubscription, page 3-5](#)
- [Showing the SIP Hardware Type, page 3-6](#)

Release History



Note

For release history information about the introduction of SPA support on the SIPs, refer to the corresponding “Overview” chapters in the SPA technology sections of this document. In addition, features specific to certain SPA technologies are documented in the corresponding SPA sections of this document.

| Release | Modification |
|------------|---|
| 12.2(33)SB | Support for the following SPA interface processor (SIP) hardware was introduced on the Cisco 10000 series router: <ul style="list-style-type: none">• Cisco 10000 SIP-600 |

Supported SIP Features

The Cisco 10000 SIP-600 is a high-performance, feature-rich SPA interface processor (SIP) that functions as a carrier card for shared port adapters (SPAs) on the Cisco 10000 series router. The SIP is compatible with one or more platform-independent SPAs. For more information on SPA compatibility, see the “[SIP and SPA Compatibility](#)” section on [page 2-2](#).

This section provides a list of some of the primary features supported by the SIP hardware and software.

Cisco 10000 SIP-600 Features

- Support for two full-height or four half-height SPAs, or one double-width SPA
- Online insertion and removal (OIR) of the SIP and SPAs
- Interoperability with the Performance Routing Engine 3 (PRE3) and PRE4
- Nonstop Forwarding (NSF)
- Stateful switchover (SSO)
- Minimal Disruptive Restart (MDR) on SPAs
- 10-Gbps bandwidth for packet sizes greater than 256 bytes (PRE4 only)
- Support for handling low- and high-priority ingress packets
- Shared 128 MB Error-Correcting Code (ECC)-protected ingress buffering
- Up to 240 KB of ECC-protected memory for each of the 64 egress queues
- 512 MB of ECC-protected processor memory
- Up to 16 SPI4.2 (System Packet Interface Level 4 Phase 2) channels per SPA
- Channel and interface counters for various SIP-related statistics
- Extended Flow Control (EFC) supporting up to 8000 channels per SPA
- In Band Flow Control Message support
- 64,000 flow channels for each SIP and 16,000 maximum flow channels for each SPA
- Power control and environmental monitoring of SPAs
- On-board failure logging (OBFL)
- Field-programmable device (FPD) upgrade support
- NEBS Level 3 compliant

SIP and PRE Compatibility

Table 3-1 compares the Cisco 10000 SIP-600 capabilities on a PRE3 with the Cisco 10000 SIP-600 capabilities on a PRE4.

Table 3-1 SIP and PRE Compatibility

| Feature | PRE3 | PRE4 |
|--|---|---|
| Backplane bandwidth | 2.8 Gb/s per full-height backplane slot | 5.6 Gb/s per full-height backplane slot |
| External column memory (XCM) size | 128 megabytes per column | 256 MB per column |
| Parallel express forwarding (PXF) packet memory size | 256 MB | 512 MB |
| PXF control memory size | 64 MB | 128 MB |
| Route processor (RP) memory size | 2 GB | 4 GB |
| SIP redundancy with PRE | No | Yes |

Table 3-1 SIP and PRE Compatibility

| Feature | PRE3 | PRE4 |
|-------------------------------|-----------|-----------------|
| Total throughput | 9.78 Mpps | Minimum 10 Mpps |
| Up to 10 Gbps on a single SIP | No | Yes |

Supported MIBs

The following MIBs are supported in Release 11, Part Number 78-13568-01 Rev. A1, June 2002, and later releases on the Cisco 10000 series router. There are no additional MIBs for the Cisco 10000 SIP-600.

- ATM-FORUM-ADDR-REG-MIB
- ATM-FORUM-MIB
- BGP4-MIB
- CISCO-AAA-SERVER-MIB
- CISCO-AAA-SESSION-MIB
- CISCO-AAL5-MIB
- CISCO-ATM-EXT-MIB
- CISCO-BULK-FILE-MIB
- CISCO-CDP-MIB
- CISCO-CLASS-BASED-QOS-MIB
- CISCO-CONFIG-COPY-MIB
- CISCO-CONFIG-MAN-MIB
- CISCO-ENTITY-ALARM-MIB
- CISCO-ENTITY-ASSET-MIB
- CISCO-ENTITY-EXT-MIB
- CISCO-ENTITY-FRU-CONTROL-MIB
- CISCO-ENTITY-PFE-MIB
- CISCO-ENTITY-VENDORTYPE-OID-MIB
- CISCO-ENVMON-MIB
- CISCO-FLASH-MIB
- CISCO-FRAME-RELAY-MIB
- CISCO-FTP-CLIENT-MIB
- CISCO-IMAGE-MIB
- CISCO-IPMROUTE-MIB
- CISCO-IP-STAT-MIB
- CISCO-IP-STAT-MIB
- CISCO-MEMORY-POOL-MIB
- CISCO-OAM-MIB

- CISCO-PIM-MIB
- CISCO-PING-MIB
- CISCO-PPPOE-MIB
- CISCO-PROCESS-MIB
- CISCO-PRODUCTS-MIB
- CISCO-RTTMON-MIB
- CISCO-SSG-MIB
- CISCO-SYSLOG-MIB
- CISCO-VPDN-MGMT-EXT-MIB
- CISCO-VPDN-MGMT-MIB
- DS1-MIB
- DS3-MIB
- ENTITY-MIB
- ETHERLIKE-MIB
- EVENT-MIB
- EXPRESSION-MIB
- IGMP-MIB
- IPMROUTE-MIB
- MPLS-LDP-MIB
- MPLS-LSR-MIB
- MPLS-TE-MIB
- MPLS-VPN-MIB
- MSDP-MIB
- NOTIFICATION-LOG-MIB
- PIM-MIB
- RFC1213-MIB
- RFC1253-MIB
- RFC1315-MIB
- SNMP-FRAMEWORK-MIB
- SNMP-MPD-MIB
- SNMP-NOTIFICATION-MIB
- SNMP-PROXY-MIB
- SNMP-TARGET-MIB
- SNMP-USM-MIB
- SNMPv2-MIB
- SNMP-VACM-MIB
- SONET-MIB
- TCP-MIB

- UDP-MIB

To locate and download MIBs for selected platforms using Cisco IOS software, use the Cisco MIB Locator at:

<http://www.cisco.com/public/sw-center/netmgmt/cmtk/mibs.shtml>

From the Access Products menu, choose **Cisco10000**.

To access the Cisco MIB Locator, you must have an account on Cisco.com. If you have forgotten or lost your account information, send a blank e-mail to cco-locksmith@cisco.com. An automatic check verifies that your e-mail address is registered with Cisco.com. If the check is successful, account details with a new random password will be e-mailed to you. Qualified users can establish an account on Cisco.com by following the directions at:

<http://www.cisco.com/register>

Required Configuration Tasks

There are no required configuration tasks for the Cisco 10000 SIP-600. To configure the features on the SPAs supported on the Cisco 10000 SIP-600, refer to the appropriate SPA configuration chapter in this guide.

Bandwidth Oversubscription

On the Cisco 10000 series router with a Performance Routing Engine 4 (PRE4), each half (comprising 4 slots) of the chassis is serviced by a single Nickel 10G ASIC which supports a bandwidth of 11.2 Gbps. Therefore, the total bandwidth supported on both sides of the chassis is limited to 11.2 Gbps regardless of the number of line cards, SIPs, or SPAs. In order to maximize throughput, install the SIP/SPA interfaces for ingress and egress in a balanced ratio across both sides of the chassis. Balancing can be done by using any pair or pairs of odd slots on opposite sides of the PREs.

When interfaces are oversubscribed, the line cards on a heavily oversubscribed side will receive less overall bandwidth as compared to the line cards on the less subscribed side. It is important to balance the bandwidth between the left and right sides of the chassis when the forwarded throughput is more than 10 Gbps.

[Table 3-2](#) provides information about the bandwidth for each port (per-port bandwidth) on a SPA, as well as the cumulative bandwidth (total bandwidth) for all ports available on the SPA.

Table 3-2 SPA Bandwidth Capacity

| SPA | Per-Port Bandwidth | Number of Ports | Total Bandwidth |
|------------------------------|--------------------|-----------------|-----------------|
| 1-Port 10-Gigabit Ethernet | 10 Gbps | 1 | 10 Gbps |
| 2-Port Gigabit Ethernet | 1 Gbps | 2 | 2 Gbps |
| 5-Port Gigabit Ethernet SPA | 1 Gbps | 5 | 5 Gbps |
| 8-Port Gigabit Ethernet SPA | 1 Gbps | 8 | 8 Gbps |
| 2-Port Channelized OC-12 SPA | 622 Mbps | 2 | 1244 Mbps |

Showing the SIP Hardware Type

To verify the SIP hardware type that is installed in your Cisco 10000 series router, use the **show inventory** command in privileged EXEC mode.

show inventory Command

The following example shows output from the **show inventory** command on a Cisco 10000 series router with SIPs installed in slots 1, 5, and 7.

```
Router# show inventory

NAME: "Chassis", DESCR: "C10000 Edge Service Router (ESR) Chassis"
PID: ESR-CHASSIS , VID: N/A , SN: 00021320497

NAME: "module 1/0", DESCR: "4 bay Cisco 10000 SPA Jacket Card"
PID: 10000-SIP-600 , VID: V00 , SN: CSJ10497152

NAME: "SPA subslot 1/0", DESCR: "5-port Gigabit Ethernet Shared Port Adapter"
PID: SPA-5X1GE-V2 , VID: V01, SN: JAB110202MS

NAME: "subslot 1/0 transceiver 0", DESCR: "GE SX"
PID: N/ , VID: 0000, SN: FNS1037C1FQ

NAME: "subslot 1/0 transceiver 1", DESCR: "GE SX"
PID: N/ , VID: 0000, SN: FNS103812VH

NAME: "subslot 1/0 transceiver 2", DESCR: "GE SX"
PID: 10-2143-01 , VID: A , SN: FNS1045097W

NAME: "subslot 1/0 transceiver 3", DESCR: "GE SX"
PID: 10-2143-01 , VID: A , SN: FNS10440QC6

NAME: "subslot 1/0 transceiver 4", DESCR: "GE SX"
PID: 10-2143-01 , VID: A , SN: FNS10440QCB

NAME: "SPA subslot 1/1", DESCR: "5-port Gigabit Ethernet Shared Port Adapter"
PID: SPA-5X1GE-V2 , VID: V01, SN: JAB110202ER

NAME: "subslot 1/1 transceiver 0", DESCR: "GE SX"
PID: 10-2143-01 , VID: A , SN: FNS1045097E

NAME: "subslot 1/1 transceiver 1", DESCR: "GE SX"
PID: 10-2143-01 , VID: A , SN: FNS10440Q81

NAME: "subslot 1/1 transceiver 2", DESCR: "GE SX"
PID: 10-2143-01 , VID: A , SN: FNS10440QCD

NAME: "subslot 1/1 transceiver 3", DESCR: "GE SX"
PID: 10-2143-01 , VID: A , SN: FNS10440QCJ

NAME: "subslot 1/1 transceiver 4", DESCR: "GE SX"
PID: 10-2143-01 , VID: A , SN: FNS10450977

NAME: "SPA subslot 1/2", DESCR: "5-port Gigabit Ethernet Shared Port Adapter"
PID: SPA-5X1GE-V2 , VID: V01, SN: JAB104002TW

NAME: "subslot 1/2 transceiver 0", DESCR: "GE SX"
PID: 10-2143-01 , VID: A , SN: FNS1037R8433-7
```

```

NAME: "subslot 1/2 transceiver 1", DESCR: "GE SX"
PID: 10-2143-01 , VID: A , SN: FNS10381JG0

NAME: "subslot 1/2 transceiver 2", DESCR: "GE SX"
PID: 10-2143-01 , VID: A , SN: FNS1037R83V

NAME: "subslot 1/2 transceiver 3", DESCR: "GE ZX"
PID: 10-2031-01 , VID: D , SN: ECL103900KX

NAME: "subslot 1/2 transceiver 4", DESCR: "GE ZX"
PID: 10-2031-01 , VID: D , SN: ECL103900K1

NAME: "SPA subslot 1/3", DESCR: "5-port Gigabit Ethernet Shared Port Adapter"
PID: SPA-5X1GE-V2 , VID: V01, SN: JAB104002RX

NAME: "subslot 1/3 transceiver 0", DESCR: "GE SX"
PID: 10-2143-01 , VID: A , SN: FNS10450H5G
.
NAME: "SPA subslot 5/0", DESCR: "Two port Channelized OC12/STM4 down to DS0 SPA"
PID: SPA-2XCHOC12/DS0 , VID: V01, SN: PRTA640XXXX

NAME: "subslot 5/0 transceiver 0", DESCR: "OC12 SR-1/STM4 I-4"
PID: SFP-OC12-SR , VID: 0000, SN: OCP11490479

NAME: "subslot 5/0 transceiver 1", DESCR: "OC12 SR-1/STM4 I-4"
PID: SFP-OC12-SR , VID: 0000, SN: OCP11490485.

```

Table 3-3 describes the significant fields shown in the example.

Table 3-3 *show inventory Field Descriptions*

| Field | Description |
|-------|---|
| NAME | Hardware identifier for which the inventory information appears. If you are showing raw inventory, this field shows the node name. For a node, the NAME is expressed in <i>slot/subslot</i> notation. |
| DESCR | Node description. The description “4 bay SPA Jacket Line Card” indicates the Cisco 10000 SIP-600. |
| PID | Physical model name of the node. |
| VID | Physical hardware revision of the node. |
| SN | Serial number for the node. |

■ Showing the SIP Hardware Type