

## CISCO 7600 SERIES SPA INTERFACE PROCESSOR-600

The Cisco® Interface Flexibility (I-Flex) design combines shared port adapters (SPAs) and SPA interface processors (SIPs), taking advantage of an extensible design that helps enable service prioritization for voice, video, and data services. Enterprise and service provider customers benefit from the improved economics of modular port adapters that are interchangeable across Cisco Systems® routing platforms.

Modular port adapters and programmable interface processors, which are interchangeable across Cisco routing platforms, protect network investments and reduce total cost of ownership (TCO). The Cisco I-Flex design maximizes connectivity options and offers superior service intelligence through programmable interface processors operating at line rate. This data sheet contains the specifications for the Cisco 7600 Series SPA Interface Processor-600 (7600 SIP 600; refer to Figure 1).

**Figure 1.** Cisco 7600 SIP 600 with 10-Port Gigabit Ethernet SPA



### PRODUCT OVERVIEW

Ideal for both service provider and enterprise applications, the Cisco 7600 SIP 600 supports up to 10 Gbps of bandwidth and a wide range of interfaces; it provides the unique ability to combine both Layer 2 and Layer 3 services on the same line card. The combination of native Layer 2 bridging and Layer 3 routing distinguishes this line card among other products on the market, particularly in Metro Ethernet applications.

The innovative architecture of this industry-leading WAN services module is designed to deliver cost-effective high-touch features, combining both application-specific integrated circuit (ASIC) and network processor technology for an optimal combination of performance and flexibility. The Cisco 7600 SIP 600 provides distributed forwarding with proven ASIC technology in the forwarding path (routing and switching, NetFlow, access control lists [ACLs]) as well as for queuing and shaping functions to provide the maximum performance for these foundation features; additionally, a programmable network processor is included in the forwarding plane to facilitate flexibility and feature growth. This ideal technology combination provides customers with the necessary flexibility for future service deployments and allows them to scale the system capacity as required.

Table 1 lists primary features and benefits.

**Table 1.** Key Features and Benefits

Feature	Cisco 7600 SIP 600	Benefit
<b>Modularity</b>	One SPA per Cisco 7600 SIP 600 module	Offers high-performance, dense services while maintaining attractive footprint and scalability
<b>Performance</b>	Up to 24 millions of packets per second (Mpps)	Capable of line-rate performance with 41-byte IP packets
<b>Packet Memory</b>	256 MB	Up to 200 ms combined bidirectional buffering
<b>Switch Fabric Connectivity</b>	20-Gbps fabric channel	Uses 720-Gbps fabric modules for data forwarding
<b>Online Insertion and Removal (OIR)</b>	Support for OIR of the SIP and SPA	Provides hitless OIR to minimize impact of add, change, and remove operations

## PRODUCT SPECIFICATIONS

**Table 2.** Product Specifications

<b>Chassis Compatibility</b>	<ul style="list-style-type: none"> <li>All Cisco 7600 Series router and Cisco Catalyst® 6500 services switch chassis except the Cisco 7603</li> </ul>
<b>Central Forwarding Engine Compatibility</b>	<ul style="list-style-type: none"> <li>Cisco Catalyst® 6500 Series supervisor engines 720-3B, 720-3BXL, and later</li> <li>Requires switch fabric connectivity; therefore, the Cisco 7600 SIP 600 is not supported with Supervisor Engine 32</li> </ul>
<b>Distributed Forwarding Card (DFC)</b>	<ul style="list-style-type: none"> <li>DFC-3BXL</li> <li>Up to 24 Mpps, distributed forwarding</li> <li>Up to one million hardware forwarding entries</li> <li>Up to 256,000 NetFlow entries</li> </ul>
<b>Minimum Software Compatibility</b>	<ul style="list-style-type: none"> <li>Cisco IOS® Software Release 12.2(18)SXF or later Cisco IOS Software releases</li> </ul>
<b>Slot Configuration</b>	<ul style="list-style-type: none"> <li>One single- or double-height SPA per Cisco 7600 SIP 600 module</li> </ul>
<b>Memory</b>	<ul style="list-style-type: none"> <li>Route memory: 1 GB</li> <li>Packet memory: 256 MB (200 ms combined input/output buffering at 10 Gbps)</li> </ul>
<b>Supported SPAs</b>	<ul style="list-style-type: none"> <li>Cisco 1-Port 10 Gigabit Ethernet Shared Port Adapter (pluggable IEEE LAN PHY XFP optics)</li> <li>Cisco 10-Port Gigabit Ethernet Shared Port Adapter (SFP pluggable optics)</li> <li>Cisco 5-Port Gigabit Ethernet Shared Port Adapter (SFP pluggable optics)</li> <li>Cisco 1-Port OC-192/STM-64 POS Shared Port Adapter (XFP pluggable optics)</li> <li>Cisco 1-Port OC-192/STM-64 POS Shared Port Adapter (long-reach fixed optics)</li> </ul>
<b>Link Encapsulations</b>	<ul style="list-style-type: none"> <li>Ethernet II with optional IEEE 802.1q encapsulation</li> <li>Packet over SONET/SDH (POS) with either Point-to-Point Protocol (PPP) or Cisco High-Level Data Link Control (HDLC) encapsulation</li> </ul>
<b>Hardware Queues</b>	<ul style="list-style-type: none"> <li>8000 queues (dynamically shared between ingress and egress processing)</li> <li>Hierarchical Quality of Service (HQoS): Up to 1000 parent queues</li> </ul>
<b>MAC Addresses</b>	<ul style="list-style-type: none"> <li>MAC-learning in hardware, at wire speed</li> </ul>

<b>Environmental Conditions</b>	<ul style="list-style-type: none"> <li>• Operating temperature: 32 to 104°F (0 to 40°C)</li> <li>• Storage temperature: –40 to 167°F (–40 to 75°C)</li> <li>• Relative humidity: 10 to 90%, noncondensing</li> <li>• Operating altitude: <ul style="list-style-type: none"> <li>– UL Approval: –60 to 2000m</li> <li>– Functionally Tested to 3000m</li> </ul> </li> </ul>
<b>MIBs</b>	<ul style="list-style-type: none"> <li>• Cisco Entity MIB (CISCO-ENTITY-MIB)</li> <li>• Cisco Entity Asset MIB</li> <li>• Cisco Entity Field-Replaceable Unit (FRU) Control MIB</li> <li>• Cisco Entity Alarm MIB</li> <li>• Interface IF MIB (RFC 2233)</li> <li>• Definitions of Managed Objects for Bridges (RFC 1493)</li> <li>• Evolution of Interfaces Group of MIB-II (RFC 1573)</li> <li>• Simple Network Management Protocol (SNMP) MIB II (RFC 1213)</li> <li>• Remote Monitoring (RMON) MIB (RFC 1757)</li> <li>• Switch Monitoring (SMON) MIB</li> </ul> <p>Details on these MIBs are available at:  <a href="http://www.cisco.com/en/US/products/hw/routers/ps368/prod_technical_reference_list.html">http://www.cisco.com/en/US/products/hw/routers/ps368/prod_technical_reference_list.html</a></p>
<b>Network Management</b>	<ul style="list-style-type: none"> <li>• Supported with CiscoWorks—CiscoView, CiscoWorks Resource Manager Essentials (RME)</li> <li>• Integrated Solution Center (ISC)</li> </ul>
<b>Physical Specifications</b>	<ul style="list-style-type: none"> <li>• Occupies one slot in a Cisco 7600 or Cisco Catalyst 6500 Series Chassis</li> <li>• Up to eight Cisco 7600 SIP 600s in a 9-slot chassis</li> <li>• Requires Supervisor Engine 720-3B or 3BXL</li> <li>• Dimensions (H x W x D): 1.75 x 15.375 x 16 in.</li> <li>• Weight: 13 lb (without SPA)</li> </ul>
<b>Power</b>	<ul style="list-style-type: none"> <li>• 341W maximum power consumption per Cisco 7600 SIP 600 with one SPA</li> </ul>
<b>Indicators</b>	<ul style="list-style-type: none"> <li>• Cisco 7600 SIP 600 module status: green (operational); orange (faulty)</li> </ul>
<b>Regulatory Compliance</b>	<ul style="list-style-type: none"> <li>• CE marking</li> </ul>
<b>Safety</b>	<ul style="list-style-type: none"> <li>• UL 60950</li> <li>• CSA C22.2 No. 60950</li> <li>• EN60950</li> <li>• TS001</li> <li>• IEC 60950</li> <li>• AS/NZS3260</li> </ul>

<b>Electromagnetic Compatibility (EMC)</b>	<ul style="list-style-type: none"> <li>• FCC Part 15 Class A</li> <li>• ICES-003 Class A</li> <li>• VCCI Class A</li> <li>• EN55022 Class A</li> <li>• CISPR22 Class A</li> <li>• AS/NZS3548 Class A</li> <li>• EN61000-3-2</li> <li>• EN61000-3-3</li> <li>• EN61000-3-1</li> <li>• EN55024</li> <li>• EN50082-1</li> <li>• EN300 386</li> <li>• FCC Part 15 Class A</li> <li>• ICES-003 Class A</li> <li>• VCCI Class A</li> <li>• EN55022 Class A</li> <li>• CISPR22 Class A</li> <li>• AS/NZS CISPR 22 Class A</li> <li>• EN61000-3-2</li> <li>• EN61000-3-3</li> <li>• EN61000-6-1</li> <li>• EN55024</li> <li>• EN50082-1</li> <li>• EN300 386</li> </ul>
<b>Telecommunications Standards</b>	<ul style="list-style-type: none"> <li>• ITU-T G.691</li> <li>• ITU-T G.707</li> <li>• ITU-T G.783 Sections 9-10</li> <li>• ITU-T G.784</li> <li>• ITU-T G.803</li> <li>• ITU-T G.813</li> <li>• ITU-T G.825</li> <li>• ITU-T G.826</li> <li>• ITU-T G.841</li> <li>• ITU-T G.957 Table 3</li> <li>• ITU-T G.958</li> </ul>

[REFERENCE TABLE 3 IN TEXT.]

**Table 3.** Feature Support

Feature	Benefits
<b>Network Protocols</b>	<ul style="list-style-type: none"><li>• IPv4 Unicast and Multicast</li><li>• IPv6 Unicast and Multicast</li><li>• Multiprotocol Label Switching (MPLS)</li><li>• Ethernet bridging</li></ul>
<b>QoS</b>	<ul style="list-style-type: none"><li>• Modular QoS CLI (MQC)</li></ul>
<b>Congestion Avoidance</b>	<ul style="list-style-type: none"><li>• Weighted Random Early Detection (WRED) based on IP Precedence, differentiated services code point (DSCP), MPLS experimental bit (EXP)</li></ul>
<b>Queuing and Shaping</b>	<ul style="list-style-type: none"><li>• Egress Class-Based Weighted Fair Queuing (CBWFQ)</li><li>• Egress Low-Latency Queuing (LLQ)</li><li>• Two levels of queuing hierarchy</li><li>• Egress shaping</li></ul>
<b>Traffic Classification and Bandwidth Policing</b>	<ul style="list-style-type: none"><li>• Classification based on:<ul style="list-style-type: none"><li>– Extended ACL</li><li>– IP Precedence and IP DSCP</li><li>– MPLS EXP</li><li>– VLAN</li><li>– Input VLAN</li></ul></li><li>• Policer ingress single and dual rate, three color</li></ul>
<b>ACLs and Security</b>	<ul style="list-style-type: none"><li>• Up to 32,000 access-list entries with no forwarding degradation</li><li>• Hardware counters for ACL hits</li></ul>
<b>Layer 2 and Layer 3 VPNs</b>	<ul style="list-style-type: none"><li>• Layer 2 VPNs<ul style="list-style-type: none"><li>– Ethernet over MPLS with MAC learning</li><li>– Virtual private LAN service (VPLS) (MPLS edge or dot1q edge)</li></ul></li><li>• Layer 3 VPNs<ul style="list-style-type: none"><li>– MPLS VPN (RFC 2547-bis)</li><li>– Inter-AS and CsC</li><li>– Multicast VPN</li></ul></li></ul>
<b>Link Protection and Link Bundling</b>	<ul style="list-style-type: none"><li>• SONET automatic protection switching (APS) (1 + 1, revertive and nonrevertive)</li><li>• MPLS Fast Reroute</li><li>• EtherChannel®</li></ul>

## ORDERING INFORMATION

To place an order, visit the [Cisco Ordering Home Page](#) or refer to Table 4.

**Table 4.** Ordering Information

Product Name	Part Number
Cisco 7600 Series SPA Interface Processor-600	7600-SIP-600

## DOWNLOADING THE SOFTWARE

Visit the [Cisco Software Center](#) to download Cisco IOS Software Release 12.2(18)SXF (when used with Supervisor Engine 720).

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## FOR MORE INFORMATION

For more information about the Cisco 7600 SIP 600, visit <http://www.cisco.com/en/US/products/hw/modules/ps2706/ps4221/index.html> or contact your local Cisco account representative.

**Corporate Headquarters**

Cisco Systems, Inc.  
170 West Tasman Drive  
San Jose, CA 95134-1706  
USA  
www.cisco.com  
Tel: 408 526-4000  
800 553-NETS (6387)  
Fax: 408 526-4100

**European Headquarters**

Cisco Systems International BV  
Haarlerbergpark  
Haarlerbergweg 13-19  
1101 CH Amsterdam  
The Netherlands  
www-europe.cisco.com  
Tel: 31 0 20 357 1000  
Fax: 31 0 20 357 1100

**Americas Headquarters**

Cisco Systems, Inc.  
170 West Tasman Drive  
San Jose, CA 95134-1706  
USA  
www.cisco.com  
Tel: 408 526-7660  
Fax: 408 527-0883

**Asia Pacific Headquarters**

Cisco Systems, Inc.  
168 Robinson Road  
#28-01 Capital Tower  
Singapore 068912  
www.cisco.com  
Tel: +65 6317 7777  
Fax: +65 6317 7799

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