

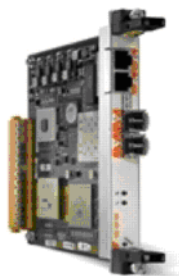
## Cisco 7304 2-Port 1000Base-X/1000Base-T Gigabit Ethernet Shared Port Adapter

The Cisco® I-Flex design combines shared port adapters (SPA) and SPA interface processors (SIP), leveraging an extensible design that enables service prioritization for voice, video and data services. Enterprise and service provider customers can take advantage of improved slot economics resulting from modular port adapters that are interchangeable across Cisco routing platforms. The I-Flex design maximizes connectivity options and offers superior service intelligence through programmable interface processors that deliver line-rate performance. I-Flex enhances speed-to-service revenue and provides a rich set of QoS features for premium service delivery while effectively reducing the overall cost of ownership. This data sheet contains the specifications for the Cisco 7304 2-Port 1000BASE-X/1000BASE-T Gigabit Ethernet Shared Port Adapter (Cisco 7304 Gigabit Ethernet SPA; refer to Figure 1).

### PRODUCT OVERVIEW

The Cisco 7304 Gigabit Ethernet SPA is designed to meet the growing demand for customers who need cost-effective and simple connectivity for Internet gateway, peering, or Metro Ethernet access applications. This SPA is a single-height module capable of supporting two fiber Small Form-Factor Pluggable (SFP) or copper RJ-45 connections. Two SPAs fit into one carrier card in a single line-card slot of the Cisco 7304 Router, greatly extending port density and modularity.

**Figure 1.** Cisco 7304 Gigabit Ethernet SPA



### Cisco 7304 SPA Modular Services Card

The Cisco 7304 SPA Modular Services Card (Cisco 7304 SPA MSC) is designed to enable the use of SPAs in the Cisco 7304 Router. It allows the configuration of two single-height SPAs per Cisco 7304 line-card slot. Online insertion and removal (OIR) of a SPA and the MSC is supported.

## FEATURES AND BENEFITS

Table 1 summarizes the features and benefits of the Cisco 7304 Gigabit Ethernet SPA.

**Table 1.** Features and Benefits of Cisco 7304 Gigabit Ethernet SPA

Feature	Benefits
<b>Enables up to four ports of Gigabit Ethernet per slot for Ethernet aggregation</b>	The single-height form factor provides maximum flexibility for a variety of densities of Gigabit Ethernet aggregation topologies.
<b>Provides maximum modularity for flexible deployment options</b>	With the implementation of a single-height SPA, the Cisco 7304 Gigabit Ethernet SPA doubles its modularity as well as its density for Gigabit Ethernet interfaces.
<b>Supports standards-based Gigabit Ethernet implementation for compatibility and interoperability</b>	The Cisco 7304 Gigabit Ethernet SPA is based on industry standards—ensuring interoperability and compatibility with other standards-based Gigabit Ethernet products in the customer's network.

## PRODUCT SPECIFICATIONS

Table 2 gives specifications of the Cisco 7304 Gigabit Ethernet SPA.

**Table 2.** Specifications of Cisco 7304 Gigabit Ethernet SPA

Features	Descriptions
<b>Hardware Requirements</b>	<p>The Cisco 7304 Gigabit Ethernet SPA is supported on the following:</p> <ul style="list-style-type: none"><li>• Chassis—Cisco 7304 Router</li><li>• Routing engines—Cisco 7304 NSE-100 Network Services Engine and Cisco NPE-G100 Network Processing Engine</li><li>• Line cards—SPAs, port adapters, and Cisco 7304 native line cards can coexist in the Cisco 7304 chassis</li><li>• Carrier—requires a Cisco 7304 SPA Modular Services Card (part number 7304-MSC-100)</li><li>• Fiber small form-factor pluggable optics (SFPs):<ul style="list-style-type: none"><li>◦ Extended temperature tri-rate SX/SW (short reach) SFP (part number SFP-FCGE-S)</li><li>◦ Extended temperature tri-rate LX/LW (long reach) SFP (part number SFP-FCGE-L)</li><li>◦ Extended temperature ZX (extended reach) SFP (part number SFP-GE-Z)</li></ul></li></ul>
<b>Software Requirements</b>	Cisco IOS® Software Release 12.2(20)S2 and later
<b>Features and Functions</b>	<ul style="list-style-type: none"><li>• Two ports of Gigabit Ethernet per SPA, and up to four ports per line-card slot</li><li>• 802.1Q VLAN termination</li><li>• Jumbo frame support</li><li>• Full-duplex operation in fiber or SFP mode and half- or full-duplex operation in RJ-45 mode</li><li>• Autosensing of medium dependent interface-crossover (MDI-X) for crossover cables</li><li>• Autodetection and autonegotiation of 10, 100, and 1000 link rates in RJ-45 mode</li><li>• Autosensing of MDI-X for crossover cables for RJ-45 mode</li><li>• Support for command-line interface (CLI)-controlled OIR</li><li>• Parity and cyclic-redundancy-check (CRC) detection for application-specific integrated circuit (ASIC) and discrete memory errors</li><li>• 802.3x flow control</li><li>• Autonegotiation in duplex mode</li><li>• Up to 4096 VLANs per SPA subject to IDB limits</li><li>• Up to 2046 VLAN-filtering entries per port</li><li>• Up to 2048 MAC address entries for destination MAC address filtering per SPA, and up to 1020 MAC address filtering entries per port</li><li>• Per-port counters for policy drops, oversubscription drops, CRC error drops, packet sizes, unicast, multicast, and broadcast packets</li><li>• Per-port byte counters for good bytes and dropped bytes</li></ul> <p>The following additional features are supported in the Cisco 7304 Router:</p> <ul style="list-style-type: none"><li>• Ethernet over Multiprotocol Label Switching (EoMPLS)</li><li>• QoS</li><li>• Hot Standby Router Protocol (HSRP)</li><li>• Virtual Router Redundancy Protocol (VRRP)</li></ul>

Features	Descriptions
<b>Environmental Conditions</b>	<ul style="list-style-type: none"> <li>Storage temperature: –38 to 150°F (–40 to 70°C)</li> <li>Operating temperature, nominal: 32 to 104°F (0 to 40°C)</li> <li>Operating temperature, short term: 32 to 131°F (0 to 55°C)</li> <li>Storage relative humidity: 5 to 95% relative humidity</li> <li>Operating humidity, nominal: 5 to 85% relative humidity</li> <li>Operating humidity, short term: 5 to 90% relative humidity</li> <li>Operating altitude: –60 meters to 4000 meters</li> </ul>
<b>LEDs</b>	<p>The Cisco 7304 Gigabit Ethernet SPA has a series of front-panel LEDs that indicate power and operational status as well as Ethernet port status. The green and amber LEDs encode the SPA status as follows:</p> <ul style="list-style-type: none"> <li>LED off indicates that the SPA is powered off.</li> <li>LED amber indicates that the SPA is powered on and initializing.</li> <li>LED green indicates that the SPA is powered on and operational.</li> </ul> <p>In addition to the status LED, the Cisco 7304 Gigabit Ethernet SPA also has a bicolor, surface-mount, right-angle LED dedicated to each Gigabit Ethernet port to indicate port status. The green and amber LEDs encode the port status as follows:</p> <ul style="list-style-type: none"> <li>LED off indicates that the port is not enabled by software.</li> <li>LED amber indicates that the port is enabled by software, but there is a problem with the Ethernet link.</li> <li>LED green indicates that the port is enabled by software, and there is a valid Ethernet link.</li> </ul> <p>The Cisco 7304 SPA MSC supports LEDs indicating OIR status and operational status. The illumination of the LED for OIR status means the following:</p> <ul style="list-style-type: none"> <li>LED off indicates a default state.</li> <li>LED on (green light) indicates that the line card is ready to be removed.</li> </ul> <p>The operational status LED is bicolor with an off state, a green state, or a yellow state as follows:</p> <ul style="list-style-type: none"> <li>LED off indicates that the card is offline.</li> <li>LED yellow indicates that Cisco SPA MSC is powering up.</li> <li>LED green indicates that the power is on and OK.</li> </ul>
<b>Physical Specifications</b>	<ul style="list-style-type: none"> <li>Height: 0.80 inches (2.03 cm) (single-height)</li> <li>Width: 6.75 inches (17.15 cm)</li> <li>Depth: 8.10 inches (20.57 cm)</li> <li>Weight: 0.80 lb (0.37 kg)</li> </ul>
<b>Network Management</b>	<ul style="list-style-type: none"> <li>Network management using: <ul style="list-style-type: none"> <li>Host system CLI</li> <li>Simple Network Management Protocol (SNMP)</li> </ul> </li> <li>Inventory and asset management related MIBs: <ul style="list-style-type: none"> <li>Entity-MIB (RFC 2737)</li> <li>Cisco-entity-asset-MIB</li> </ul> </li> <li>Fault management: <ul style="list-style-type: none"> <li>Cisco-entity-field-replaceable unit (FRU)-control-MIB</li> <li>Cisco-entity-alarm-MIB</li> <li>Cisco-entity-sensor-MIB</li> </ul> </li> <li>Physical interface management: <ul style="list-style-type: none"> <li>IF-MIB</li> <li>Etherlike-MIB (RFC 2665)</li> </ul> </li> <li>Other MIBs: <ul style="list-style-type: none"> <li>Remote Monitoring (RMON)-MIB (RFC 1757)</li> <li>Cisco-class-based-QoS-MIB</li> <li>MPLS-related MIBs</li> </ul> </li> <li>Ethernet MIB/RMON</li> </ul>
<b>Power</b>	Unit power: 10.0W
<b>Connector Specifications</b>	<ul style="list-style-type: none"> <li>Supports both copper and fiber connections (one port can have an RJ-45 connection while the other one can have an FX connection)</li> <li>Physical ports: <ul style="list-style-type: none"> <li>Two 1000BASE-X SFP ports</li> <li>Two 10/100/1000 RJ-45 ports</li> </ul> </li> </ul>

Features	Descriptions
Regulatory Compliance	<p><b>CE Marking</b></p> <p><b>Safety</b></p> <ul style="list-style-type: none"> <li>• UL 60950</li> <li>• CSA C22 No. 60950</li> <li>• EN 60950</li> <li>• IEC 60950</li> <li>• AS/NZS 3260</li> <li>• EN 60825-1</li> <li>• EN 60825-2</li> <li>• 21 CRF 1040.10 and 1040.11</li> </ul> <p><b>EMC</b></p> <ul style="list-style-type: none"> <li>• CFR 47, Part 15</li> <li>• ICES 003</li> <li>• CISPR 22</li> <li>• EN 55022</li> <li>• EN 300386</li> <li>• AS/NZS 3548</li> <li>• VCCI</li> <li>• EN 50082-1</li> <li>• EN 55024</li> <li>• EN 61000-6-1</li> <li>• EN 61000-4-2</li> <li>• EN 61000-4-3</li> <li>• EN 61000-4-4</li> <li>• EN 61000-4-5</li> <li>• EN 61000-4-6</li> </ul> <p><b>Industry Standards</b></p> <p>The Cisco 7304 Gigabit Ethernet SPA is designed to meet the following requirements (some qualifications are currently in progress):</p> <ul style="list-style-type: none"> <li>• SR-3580—Network Equipment Building System (NEBS): Criteria levels (Level 3 compliant)</li> <li>• GR-63-CORE—NEBS: Physical protection</li> <li>• GR-1089-CORE—NEBS EMC and safety</li> <li>• ETS 300 019 part 1-1, class 1.1</li> <li>• ETS 300 019 part 1-2, class 2.3</li> <li>• ETS 300 019 part 1-3, class 3.1</li> <li>• Verizon-SIT.NEBS.TE.NPI.2002.010</li> <li>• SBC-TP6200MP, May 2002</li> <li>• AT&amp;T-NEDS 4.0 (pending)</li> <li>• Verizon-SIT.NEBS.TE.NPI.2002.010</li> <li>• SBC-TP76200MP</li> <li>• AT&amp;T-NEBS 4.0</li> <li>• IEEE 802.3 (1 Gigabit Ethernet interface)</li> </ul>

## ORDERING INFORMATION

To place an order, visit the [Cisco Ordering Home Page](#) or refer to Table 3.

**Table 3.** Ordering Information

Product Name	Part Number
Cisco 7304 2-Port 1000BASE-X/1000BASE-T Gigabit Ethernet Shared Port Adapter	SPA-2GE-7304
Cisco 7304 2-Port 1000BASE-X/1000BASE-T Gigabit Ethernet Shared Port Adapter, Spare	SPA-2GE-7304=
Cisco 7304 SPA Modular Services Card	7304-MSC-100
Cisco 7304 SPA Modular Services Card, Spare	7304-MSC-100=
Cisco SPA Blank Cover	SPA-BLANK
Cisco SPA Blank Cover, Spare	SPA-BLANK=
Extended Temperature Tri-Rate SX/SW SFP	SFP-FCGE-S
Extended Temperature Tri-Rate SX/SW SFP, spare	SFP-FCGE-S=
Extended Temperature Tri-Rate LX/LW SFP	SFP-FCGE-L
Extended Temperature Tri-Rate LX/LW SFP, spare	SFP-FCGE-L=
1000BASE-SX short wavelength; with DOM	SFP-GE-S
1000BASE-SX short wavelength; with DOM , spare	SFP-GE-S=
1000BASE-LX/LH short wavelength; with DOM	SFP-GE-L
1000BASE-LX/LH short wavelength; with DOM , spare	SFP-GE-L=
1000BASE-ZX; with DOM	SFP-GE-Z
1000BASE-ZX; with DOM, spare	SFP-GE-Z=
1000BASE-CWDM 1470 nm SFP (single mode only)	CWDM-SFP-1470=
1000BASE-CWDM 1490 nm SFP (single mode only)	CWDM-SFP-1490=
1000BASE-CWDM 1510 nm SFP (single mode only)	CWDM-SFP-1510=
1000BASE-CWDM 1530 nm SFP (single mode only)	CWDM-SFP-1530=
1000BASE-CWDM 1550 nm SFP (single mode only)	CWDM-SFP-1550=
1000BASE-CWDM 1570 nm SFP (single mode only)	CWDM-SFP-1570=
1000BASE-CWDM 1590 nm SFP (single mode only)	CWDM-SFP-1590=
1000BASE-CWDM 1610 nm SFP (single mode only)	CWDM-SFP-1610=
1000BASE-BX10-D downstream bidirectional single fiber; with DOM	GLC-BX-D
1000BASE-BX10-D downstream bidirectional single fiber; with DOM, spare	GLC-BX-D=
1000BASE-BX10-U upstream bidirectional single fiber; with DOM	GLC-BX-U
1000BASE-BX10-U upstream bidirectional single fiber; with DOM, spare	GLC-BX-U=

### Note:

1. All CWDM-SFPs and GLC-BX SFPs are supported in the Cisco IOS Software Release 12.2(28)SB or later on the Cisco 7304 Router.
2. Beginning September 1, 2005, the former SFP SFP-FCGE-S and SFP-FCGE-L will no longer be valid for use with Cisco 7304 Router configurations. Detailed information can be found at:

[http://www.cisco.com/en/US/prod/collateral/routers/ps352/prod\\_bulletin0900aecd80304c6c.html](http://www.cisco.com/en/US/prod/collateral/routers/ps352/prod_bulletin0900aecd80304c6c.html)

## SERVICE AND SUPPORT

Cisco Systems offers a wide range of services programs to accelerate customer success. These innovative services programs are delivered through a unique combination of people, processes, tools, and partners, resulting in high levels of customer satisfaction. Cisco services help you protect your network investment, optimize network operations, and prepare your network for new applications to extend network intelligence and the power of your business. For more information about Cisco services, refer to [Cisco Technical Support Services](#) or [Cisco Advanced Services](#).

## FOR MORE INFORMATION

For more information about the Cisco SPA/SIP portfolio, visit <http://www.cisco.com/go/spa> 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](http://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](http://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](http://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](http://www.cisco.com)  
Tel: +65 6317 7777  
Fax: +65 6317 7799

Cisco Systems has more than 200 offices in the following countries and regions. Addresses, phone numbers, and fax numbers are listed on the **Cisco.com Website at [www.cisco.com/go/offices](http://www.cisco.com/go/offices).**

Argentina • Australia • Austria • Belgium • Brazil • Bulgaria • Canada • Chile • China PRC • Colombia • Costa Rica • Croatia • Cyprus • Czech Republic  
Denmark • Dubai, UAE • Finland • France • Germany • Greece • Hong Kong SAR • Hungary • India • Indonesia • Ireland • Israel • Italy  
Japan • Korea • Luxembourg • Malaysia • Mexico • The Netherlands • New Zealand • Norway • Peru • Philippines • Poland • Portugal  
Puerto Rico • Romania • Russia • Saudi Arabia • Scotland • Singapore • Slovakia • Slovenia • South Africa • Spain • Sweden  
Switzerland • Taiwan • Thailand • Turkey • Ukraine • United Kingdom • United States • Venezuela • Vietnam • Zimbabwe

Copyright © 2006 Cisco Systems, Inc. All rights reserved. CCSP, CCVP, the Cisco Square Bridge logo, Follow Me Browsing, and StackWise are trademarks of Cisco Systems, Inc.; Changing the Way We Work, Live, Play, and Learn, and iQuick Study are service marks of Cisco Systems, Inc.; and Access Registrar, Aironet, BPX, Catalyst, CCDA, CCDP, CCIE, CCIP, CCNA, CCNP, Cisco, the Cisco Certified Internetwork Expert logo, Cisco IOS, Cisco Press, Cisco Systems, Cisco Systems Capital, the Cisco Systems logo, Cisco Unity, Enterprise/Solver, EtherChannel, EtherFast, EtherSwitch, Fast Step, FormShare, GigaDrive, GigaStack, HomeLink, Internet Quotient, IOS, IP/TV, iQ Expertise, the iQ logo, iQ Net Readiness Scorecard, LightStream, Linksys, MeetingPlace, MGX, the Networkers logo, Networking Academy, Network Registrar, Packet Systems, Inc. and/or its affiliates in the United States and certain other countries.

All other trademarks mentioned in this document or Website are the property of their respective owners. The use of the word partner does not imply a partnership relationship between Cisco and any other company. (0601R)