Cisco SPA8800 IP Telephony Gateway with 4 FXS and 4 FXO Ports: Cisco Small Business Pro Gateways and ATAs

External Gateway Solution for an On-Premise PBX

Highlights

- Increase in FXO port density to connect PSTN lines
- Adds VoIP to a legacy TDM PBX or key system
- Converts voice traffic into data packets for transmission over an IP network
- Supports SIP standards for voice and data networking, for reliable voice and fax operation
- Includes highly secure, encryption-based methods for communicating, provisioning, and servicing

Figure 1.   Cisco SPA8800 IP Telephony Gateway with 4 FXS and 4 FXO Ports

Product Overview

Developed for small businesses, the Cisco® SPA8800 IP Telephony Gateway (Figure 1) adapts to the needs of businesses that maintain their own on-premise IP private branch exchange (PBX) or that want to add voice over IP (VoIP) to their legacy time-division multiplexing (TDM) PBX or key system. The SPA8800 can be configured to be a FXO gateway for an Asterisk open source PBX, providing a versatile solution when conditions favor an external device.

Powered by industry-leading VoIP technology from Cisco, the SPA8800 is designed with a solid hardware casing and contains many standard features, including four RJ-11 FXS and four FXO ports, a 10/100BASE-T RJ-45 Ethernet interface to connect to either a router or multilayer switch, and an auxiliary port for local administration. The gateway also includes a single multiport RJ-21 50-pin connector, offering an alternative connection choice for FXO and FXS ports when deploying the gateway in varied environments.

The SPA8800 features a high level of security by implementing state-of-the-art technologies to provide standards-based encryption protocols (Session Initiation Protocol [SIP] over Transport Layer Security [TLS], Secure Real Time Transport Protocol [SRTP], and HTTPS/SSL). The gateway's provisioning capabilities give service providers a secure mechanism not for only remotely managing the device, but also for installing software upgrades without interrupting service and obtaining performance measurements and troubleshooting information.

The Cisco SPA8800 is an affordable IP telephony gateway solution that is ideal for small business environments that have VoIP service and also require a connection to the public switched telephone network (PSTN). It can be used with existing analog telephones and teleconferencing equipment, enabling small business customers to protect and extend their investments.

Features

- **Toll-quality voice and carrier-grade feature support:** The Cisco SPA8800 delivers clear, high-quality voice communication in diverse network conditions. Excellent voice quality in a demanding IP network is achieved via the advanced implementation of standard voice coding algorithms. The SPA8800 is interoperable with common telephony equipment such as voicemail, fax, PBX, and interactive voice response systems.
- **Large-scale deployment and management:** The Cisco SPA8800 enables service providers to provide customized services to their subscribers. The gateway can be remotely provisioned and supports dynamic, in-service software upgrades. A highly secure profile upload saves providers the time and expense of managing and preconfiguring or reconfiguring customer premises equipment (CPE).
- **Ironclad security:** Cisco understands that security for both end users and service providers is a fundamental requirement for a solid, carrier-grade telephony service. The Cisco SPA8800 supports highly secure, encryption-based methods for communication, provisioning, and servicing.

Specifications

Table 1 contains the specifications and package contents for the Cisco SPA8800 IP Telephony Gateway with 4 FXS and 4 FXO Ports. Table 2 compares the Cisco SPA8800 with other Cisco Small Business Voice products. Table 3 gives ordering information for the SPA8800.

Table 1.   Specifications for the Cisco SPA8800 IP Telephony Gateway with 4 FXS and 4 FXO Ports

Specifications	
* **Note:** Many specifications are programmable within a defined range or list of options. Please see the Administration Guide for details. The target configuration profile is uploaded to the Cisco SPA8800 at the time of provisioning.	
Data networking	• MAC address (IEEE 802.3) • IPv4 (RFC 791) • Address Resolution Protocol (ARP) • DNS A record (RFC 1706), SRV record (RFC 2782) • Dynamic Host Configuration Protocol (DHCP) client (RFC 2131) • DHCP server (RFC 2131) • Point-to-Point Protocol over Ethernet (PPoE) client (RFC 2516) • Internet Control Message Protocol (ICMP) (RFC 792) • Transport Control Protocol (TCP) (RFC 793) • User Datagram Protocol (UDP) (RFC 768) • Real Time Protocol (RTP) (RFC 1889, 1890) • Real Time Control Protocol (RTCP) (RFC 1889) • Differentiated Services (DiffServ) (RFC 2475), type of service (ToS) (RFC 791, 1349) • VLAN tagging (IEEE 802.1p) • Simple Network Time Protocol (SNTP) (RFC 2030) • Upload data rate limiting: static and automatic • Quality of service (QoS): voice packet prioritization over other packet types • MAC address cloning • Port forwarding • SIP channels support both User Datagram Protocol (UDP) and TCP transport • VPN pass-through with IP Security encapsulating security payload (IPsec ESP), Point-to-Point Tunneling Protocol (PPTP), and Layer 2 Tunneling Protocol (L2TP)

Voice features	• SIP version 2
	• Dual-tone multifrequency (DTMF) tone detection and generation
	• Voice Activity Detection (VAD)
	• Comfort Noise Generation (CNG) compatible
	• Silence suppression
	• Call waiting, call waiting caller ID (FXS ports only)
	• Caller ID with name/ number
	• Caller ID blocking
	• Call forwarding: no answer, busy, all
	• Do not disturb
	• Call transfer, call return, call back on busy
	• Fax: G.711 pass-through or real-time fax over IP via T.38 fax relay
	(T.38 support is dependent on fax machine and network/transport resilience)
	• Supports multiple voice codecs: G.711a, G.711u, G.726,G.729A, G.723.1
	• SIP over TLS
	• Three-way conference calling with local mixing
	• Per-call authentication and associated routing
	• Call blocking with toll restriction
	• Delayed disconnect
	• Distinctive ringing: calling and called number
	• Off-hook warning tone
	• Selective/anonymous call rejection
	• VoIP to PSTN (USA) service call origination and termination
	• PSTN (USA) to VoIP service call origination and termination
	• Forward calls to VoIP service: selective, authenticated, all
	• Forward calls to PSTN service: selective, authenticated, all
	• Automatic PSTN fallback (loss of power or IP service to unit, with quiescence to normal operations): fixed fallback pairing of FXS ports to FXO ports
	• Advanced inbound and outbound call routing
	• Independent configurable dial plans (1 per port)
	• Force PSTN disconnection
FXO behavior features	• PSTN answer delay timer
	• PSTN-to-VoIP call max duration timer
	• VoIP-to-PSTN call max duration timer
	• PSTN dialing delay timer
	• VoIP dialog refresh interval timer
	• PSTN ring time-out timer
International control features	• FXO port impedance: configurable to 16 settings
	• Ring frequency: configurable
	• SPA to PSTN and PSTN to SPA gain settings
	• Ring frequency: maximum setting
	• Ring validation time setting
	• Tip/ring voltage adjustment setting
	• Ring indication delay setting
	• Operational loop current minimum value
	• Ring time-out setting
	• On-hook speed setting
	• Ringer impedance setting
	• Line-in-use voltage setting
Security	• Password-protected system reset to factory default
	• Password-protected administrator and user access authority
	• Provisioning/configuration/authentication: HTTPS with factory-installed client certificate
	• HTTP digest-encrypted authentication via MD5 (RFC 1321)
	• Authentication: Extensible Authentication Protocol TLS (EAP-TLS), EAP Tunneled TLS (EAP-TTLS), and Protected EAP (PEAP)
	• SIP over TLS
	• Up to 256-bit Advanced Encryption Standard (AES) encryption

Provisioning, administration, and maintenance	• Web browser administration and configuration via integral web server • Telephone keypad configuration with interactive voice prompts • Automated provisioning and upgrade via HTTPS, HTTP, Trivial File Transfer Protocol (TFTP) • Asynchronous notification of upgrade availability via NOTIFY • Nonintrusive, in-service upgrades • Report generation and event logging • Stats in BYE message • Syslog and debug server records • Per-line and purpose configurable syslog and debug options
Physical interfaces	• 4 RJ-11 FXS phone ports for analog circuit telephone device(s) (tip/ring) • 4 RJ-11 FXO line ports for telco or PABX or KTS connection(s) • RJ-21 (50-pin telco connector) multiport voice connection • 1 WAN 100BASE-T RJ-45 Ethernet port (IEEE 802.3) • 1 AUX 100BASE-T RJ-45 Ethernet port (IEEE 802.3) for Maintenance
Subscriber line interface circuit (SLIC)	• Ring voltage: 40–90 Vpk configurable • Ring frequency: 20–25 Hz • Ring waveform: trapezoidal • Maximum ringer load: 5 ringer equivalence numbers (RENs) • On-hook/off-hook characteristics: • On-hook voltage (tip/ring): -46 ~ -56V • Off-hook current: 18–20 mA • Terminating impedance: 600 ohm resistive or 270 ohm + 750 ohm • 150 nF complex impedance • Frequency response 300–3400 Hz • Return loss (600 ohm, 300–3400 Hz) up to 20 dB • Insertion loss (1 Vrms at 1 kHz) 3–4 dB • Total harmonic distortion (THD) (350 mV peak at 300 Hz) up to 3% • Idle channel noise 72 dB (typical) • Longitudinal balance 55 dB (typical) • Off-hook threshold (line seizure) Rdc < 1000 ohm • On-hook threshold (line release) Rdc >10000 ohm • Rdc DC supervisory range Rdc > 450 ohm
Regulatory compliance	• IEC 60950-1:2005, Second Edition, with all country deviations • AS/NZS 60950-1:2003, First Edition • CAN/CSA 22.2 No. 60950-1-05, Second Edition • UL 60950-1, Second Edition, 2005 • EN55024 • AS/NRZ 3548:1992 Class A • CFR 47 Part 15 Class A • EN55022 Class A • ICES-003, Issue 2, Class A, April 1997 • Industry Canada CS-03 • TIA-968-A, Addendum 1, 2, 3, 4, 5 • TBR21: January 1998 • Australia AS/ACIF S002: 2005 • Australia AS/ACIF S003: 2008 • New Zealand PTC220: 2008
Power supply	• Switching type (100–240V) automatic • DC input voltage: 12V DC at 3.0A max. • Power adapter: 100–240V, 50–60 Hz AC input
Indicator lights/LEDs	• Power, Ethernet, Voice Status, Phone 1 through 4, Line 1 through 4
Documentation	• Quick Start Guide (printed in box) • Administration Guide • Provisioning Guide
Environmental	
Dimensions **W x H x D**	6.69 x 1.54 x 8.66 in. (170 x 39 x 220 mm)
Weight	2.85 lb (1.30 kg)

Operating temperature	32° to 113°F (0° to 45°C)
Storage temperature	−13° to 185°F (−20° to 85°C)
Operating humidity	10% to 90% noncondensing
Storage humidity	10% to 90% noncondensing
Package Contents	

- Cisco SPA8800 IP Telephony Gateway with 4 FXS and 4 FXO Ports
- 12V power adapter
- RJ-45 Ethernet cable
- RJ-11 telephone cable – qty 4
- Quick Start Guide

Product Warranty
1-year limited hardware warranty with return to factory replacement and 90-day limited software warranty

Table 2. Comparison of Cisco Small Business Voice Gateways and Analog Telephone Adapters

Model	Service Lines	Active Calls	3-Way Conference	Public Switched Telephone Network (FXO) Connections	Ethernet Ports
Cisco PAP2T Internet Phone Adapter with 2 VoIP Ports	2	4	2	0	1
Cisco SPA2102 Phone Adapter with Router	2	4	2	0	2
Cisco SPA3102 Phone Adapter with Router	2	3	1	1	2
Cisco SPA8000 8-Port IP Telephony Gateway	8	16	8	0	1
Cisco SPA8800 IP Telephony Gateway with 4 FXS and 4 FXO Ports	4	12	4	4	1
Cisco WRP400 Wireless-G Broadband Router with 2 Phone Ports	2	4	2	0	5

Table 3. Ordering Information

Part Number	Description
SPA8800	SPA8800 IP Telephony Gateway with 4 FXS and 4 FXO Ports

Power is supplied locally using an AC to 12 VDC power adapter (included), and requires one country-specific cord (selected at time of ordering).

Cisco Small Business Service Offerings

The Cisco Small Business Pro Service provides peace-of-mind coverage at a price you can afford. This service enables you to derive maximum value from Cisco Small Business Pro products. Delivered by Cisco, the device-level, subscription-based service includes software upgrades and updates, extended access to the Cisco Small Business Support Center, and next-business-day hardware replacement as necessary. It provides community-based support to enable small businesses to share knowledge and collaborate using online forums and wikis to help boost business efficiency, identify and reduce risks, and serve customers better.

Table 4. Cisco Small Business Service Plan

Service Plan	Description
CON-SBS-SVC2	3 Year Small Business Pro Service

Cisco Limited Warranty for Cisco Small Business Series Products

This Cisco Small Business product comes with a 1-year limited hardware warranty with 10 business day hardware advance replacement and a 90-day limited software warranty. To download software updates, go to: http://www.cisco.com/go/smallbiz.

Product warranty terms and other information applicable to Cisco products are available at http://www.cisco.com/go/warranty.

For More Information

For more information on Cisco Small Business products and solutions, visit: http://www.cisco.com/smallbusiness.