

Cisco SPA8000 8-Port IP Telephony Gateway

Cisco Small Business Voice Gateways and ATAs

High-Density VoIP Gateway for Analog Devices

Highlights

- Connect up to eight analog devices to your IP network, such as fax, standard phone, or overhead paging system
- Continue to use existing analog phones on your VoIP system
- Excellent for IP Centrex deployments, providing remote provisioning and support for dynamic, in-service software upgrades
- Clear, high-quality voice communication, using standards based voice codec's and quality of service

Figure 1. Cisco SPA8000 8-Port IP Telephony Gateway



Product Overview

The Cisco[®] SPA8000 8-Port IP Telephony Gateway (Figure 1) is a full-featured analog telephone adapter (ATA) for small businesses, providing enhanced communication services via a broadband connection to the Internet.

The Cisco SPA8000 features eight RJ-11 FXS ports to connect analog telephones to IP-based data networks and includes a single multiport RJ-21 50-pin connector, offering an alternative connection choice when deploying the telephony gateway in varied environments. The device also has one 10/100BASE-T RJ-45 Ethernet interface to connect to either a router or a multilayer switch.

Solid in design, the Cisco SPA8000 is an affordable solution that is ideally suited for use in business and consumer voice over IP (VoIP) service offerings, including call centers and multidwelling environments. Customers can protect and extend their investment by continuing to use their existing analog telephones and teleconferencing equipment.

Installed by the end user and remotely provisioned, configured, and maintained by the service provider, each Cisco SPA8000 converts voice traffic into data packets for transmission over an IP

network and uses common standards for voice and data networking for reliable voice and fax operation.

Features

- Toll-quality voice and carrier-grade feature support: The Cisco SPA8000 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 SPA8000 is interoperable with common telephony equipment such as voicemail, fax, private branch exchange (PBX), and interactive voice response systems.
- Large-scale deployment and management: The Cisco SPA8000 enables service providers to provide customized services to their subscribers. It 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 SPA8000 supports highly secure, encryption-based methods for communication, provisioning, and servicing.

Telephony Features

- Eight voice ports (RJ11) for analog phones or fax machines
- Impedance agnostics: eight configurable settings
- Call waiting, cancel call waiting, call waiting caller ID
- Caller ID with name and number (multinational variants)
- Caller ID blocking
- Call forwarding: no answer, busy, all
- Do not disturb
- Call transfer
- Three-way conference calling with local mixing
- Message waiting indication-visual and tone based
- Call return
- Call back on busy
- Call blocking with toll restriction
- Delayed disconnect
- Distinctive ringing-calling and called number
- Off-hook warning tone
- Selective/anonymous call rejection
- Touch-tone phone keypad configuration with interactive voice response (IVR)
- Fax: G.711 pass-through or real-time fax over IP via T.38 (T.38 support is dependent on fax machine and network/transport resilience)

Specifications

Table 1 contains the specifications and package contents for the Cisco SPA8000 8-Port IP Telephony Gateway. Table 2 compares the SPA8000 with other Cisco Small Business Voice products.

Table 1. Specifications for the Cisco SPA8000 8-Port IP Telephony Gateway

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 SPA8000 at the time of provisioning.	
Data networking	<ul style="list-style-type: none"> • MAC address (IEEE 802.3) • IPv4 (RFC 791), upgradable to v6 (RFC 1883) • 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) • 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 • Session Initiation Protocol (SIP) channels support both 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 gateway	<ul style="list-style-type: none"> • SIP v2 (RFC 3261, 3262, 3263, 3264) <ul style="list-style-type: none"> ◦ SIP proxy redundancy-dynamic via DNS SRV, A records ◦ Reregistration with primary SIP proxy server • SIP support in Network Address Translation (NAT) networks (including Serial Tunnel [STUN]) • Secure (encrypted) calling via prestandard implementation of Secure RTP • Codec name assignment <ul style="list-style-type: none"> ◦ G.711 (a-law and μ-law) ◦ G.726 (16/24/32/40 kbps) ◦ G.729 A ◦ G.723.1 (6.3 kbps, 5.3 kbps) • Dynamic payload • Adjustable audio frames per packet • Fax tone detection pass-through • Fax pass-through (using G.711) • Dual-tone multifrequency (DTMF): in-band and out-of-band (RFC 2833) (SIP info) • Flexible dial plan support with interdigit timers and IP dialing • Call progress tone generation • Jitter buffer-adaptive • Frame loss concealment • Full-duplex audio • Echo cancellation (G.165/G.168) • Voice activity detection (VAD) with silence suppression • Comfort noise generation (CNG) • QoS (Ethernet port upstream bandwidth control, physical port, MAC address, application) • Attenuation/gain adjustments • Flash hook timer • Message waiting indicator (MWI) tones • Visual message waiting indicator (VMWI) via frequency shift keying (FSK) • Polarity control • Hook flash event signaling • Caller ID generation (name and number)-Bellcore, DTMF, European Telecommunications Standards Institute (ETSI) • Music on hold client • Streaming audio server-up to 10 sessions • System dial-on-demand routing (DDR) synchronous dynamic RAM (SDRAM)-16 MB • System flash ROM-4 MB
Security	<ul style="list-style-type: none"> • Password-protected system reset to factory default • Password-protected administrator and user access authority • Provisioning/configuration/authentication: <ul style="list-style-type: none"> ◦ HTTPS with factory-installed client certificate • HTTP digest-encrypted authentication via MD5 (RFC 1321) • Authentication: Extensible Authentication Protocol Transport Layer Security (EAP-TLS), EAP Tunneled Transport Layer Security (EAP-TTLS), and Protected EAP (PEAP) • SIP TLS • Up to 256-bit Advanced Encryption Standard (AES) encryption
Provisioning, administration, and maintenance	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 8-port standard FXS voice ports (RJ-11) • RJ-21 (50-pin telco connector) multipoint voice connection • 1 WAN 100BASE-T RJ-45 Ethernet Port (IEEE 802.3) • Reset button

Subscriber line interface circuit (SLIC)	<ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> ◦ On-hook voltage (tip/ring): -46 ~ -56V ◦ Off-hook current: 18–25 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	FCC (Part 15 Class B), CE, ICES-003, C-Tick certification, Restriction of Hazardous Substances (RoHS), UL
Power supply	<ul style="list-style-type: none"> • 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 8
Documentation	<ul style="list-style-type: none"> • Quick installation, user, and configuration guides • Administration guide-service providers only • Provisioning guide-service providers only
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, operating and nonoperating
Storage humidity	10% to 90% noncondensing, operating and nonoperating
Package Contents	
<ul style="list-style-type: none"> • Cisco SPA8000 8-Port IP Telephony Gateway • 12V power adapter • RJ-45 Ethernet cable • Quick installation guide 	
Product Warranty	
1-year limited hardware warranty with return to factory replacement and 90-day limited software warranty	

Table 2. Cisco Small Business Voice Gateways and ATAs

Model	Service Lines	Active Calls	3-Way Conferences	Public Switched Telephone Network (FXO) Connections
Cisco SPA2102 Phone Adapter with Router	2	4	2	0
Cisco SPA3102 Phone Adapter with Router	2	3	1	1
Cisco SPA8000 8-Port Telephony Gateway	8	16	8	0

Cisco Limited Warranty for Cisco Small Business Series Products

This Cisco Small Business product comes with a 1-year limited hardware warranty with return to factory replacement and a 90-day limited software warranty. In addition, Cisco offers software application updates for bug fixes and telephone technical support at no charge for the first 12 months following the date of purchase. 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:

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