Cisco SPA9000 Voice System
Cisco Small Business Voice Systems

Full-Featured Phone System for the Small Business

Highlights

- Entry-level small business phone system helps grow your business but not your budget
- Supports traditional business system features, such as voicemail, transfer, conference, hold, hunt groups, and automated attendant
- Connects to the public switched telephone network via a highly reliable traditional FXO line or to a flexible, highly efficient SIP trunk connection from a local IP telephony service provider
- Designed to be highly intuitive and easy to use

Figure 1. Cisco SPA9000 Voice System

Product Overview

The Cisco® SPA9000 Voice System combines the rich feature set of a high-end private branch exchange (PBX) telephone system with the convenience and cost advantages of voice over IP (VoIP). It has common voice system features such as an automated attendant, shared line appearances, three-way call conferencing, intercom, music on hold, call forwarding, and much more. The SPA9000 opens up access to the benefits of VoIP, including low-cost long-distance service, telephone number portability, and one network for both voice and data.

The Cisco SPA9000 is easy to configure, and a fully working system can be set up in minutes. New telephones are automatically detected and registered when they are connected to the SPA9000. Its integrated web server allows features to be configured using a web browser. The web server has multiple levels of password-protected access to user and service-level features. Service-level settings can be locked by the Internet telephony service provider to ensure that they are not inadvertently corrupted. The service provider also can remotely update the software and settings through a highly secure encrypted connection.

With its integrated router, the Cisco SPA9000 can be connected either directly to the Internet connection or to another router on your network. The SPA9000 has separate WAN and LAN Ethernet ports. The WAN connection can be connected through Dynamic Host Configuration Protocol (DHCP) or a fixed IP address. The LAN port can assign IP addresses to IP telephones and computers using Network Address Translation (NAT) and DHCP.

Although the Cisco SPA9000 will work with any Session Initiation Protocol (SIP) compatible IP telephone, it is the ideal host for Cisco Small Business IP Phones, such as the Cisco SPA901, SPA921, SPA922, SPA941, and SPA942. Powerful configuration capabilities enable the SPA9000 to support a greater set of advanced features with these telephones, such as shared line appearances, hunt groups, call transfer, call parking lot, and group paging. With its two FXS ports, the SPA9000 can support traditional analog devices such as telephones, answering machines, FAX machines, and media adapters. The SPA9000 initially supports 4 SIP-compatible IP phones and is upgradable to 16 IP phones with an easy-to-install license key upgrade.

Features

- SIP application server, proxy, registrar, and location server (RFC 3261)
- Multiple service provider lines/SIP account support (four)
- Shared line appearance (SLA)
- Automated attendant
- Configurable automated attendant answer delay
- Interactive voice response (IVR)
- Recordable IVR prompts
- Automatic call distribution (ACD)
- Configurable call routing
  - Least-cost routing
  - Multiple direct inward dialing (DID) numbers per VoIP line
  - Call routing to multiple extensions or targeted user
  - Call hunting: sequential, round-robin, random
- Phone configuration and management server
  - Discovery and configuration of IP phones
  - Assignment of extension
  - Assignment of dial plan
  - Proxy logging of SIP messages
  - Phone firmware upgrade management
- Corporate directory with automatic update

- Configuration and maintenance via web interface (local or remote)
  - Status display of all connections
- Remote configuration via:
  - HTTPS with XML-formatted files
  - HTTP or Trivial File Transfer Protocol (TFTP) with 256-bit encrypted binary files
- Call park: user-definable parking space number
- Call unpark
- Call transfer
- Call forward
- Group paging
- Intercom
- Directed call pickup
- Group call pickup
- Music/information via streaming audio server (SAS) for calls:
  - On hold
  - Parked in the parking lot
  - Being transferred
- Simultaneous ringing (find-me service)
- Do not disturb
- Voicemail integration -- service provider based
  - Voicemail notification via SUBSCRIBE/NOTIFY
  - Forward call directly to voicemail
- Integrated media proxy or direct Real-Time Protocol (RTP) routing to service provider
- Differentiated Services (DiffServ)/type of service (ToS) support
- Two FXS ports for phones, fax machines, or media adapters
- Voice encoding according to G.711 (64 kbps)
- Fax support using G.711 pass-through or T.38
- Echo cancellation (G.165)

Additional Features When Used with Cisco Small Business IP Phones

- Line status: active line indication, name/number
- Digits dialed with number auto-completion
- Call hold
- Call waiting
- Call transfer: attended and blind
- Call conferencing
- Automatic redial
- Call pickup: selective and group[1]

[1] Service feature availability depends on call feature and server platform. Cisco SPA9000 upgrade license to support 16 IP phones: SPA9000UPG.

- Call swap
- Call forwarding: unconditional, no answer, on busy
- Hot line and warm line automatic calling
- Call log (60 entries each): made, answered, missed calls
- Personal directory with autodial (100 entries)
- Do not disturb
- Uniform Resource Identifier (URI) IP dialing support (vanity numbers)
- On-hook default audio configuration (hands-free/headset)
- Multiple ring tones with selectable default ring tone per line
- Called number with directory name matching
- Calling number with name: directory matching or via caller ID
- Subsequent incoming calls with calling name and number
- Date and time with intelligent daylight savings support
- Call duration with call timestamp stored in call logs
- Name/identity (text) display at startup
- Distinctive ringing based on calling and called number
- User-downloadable ring tones and ring tone generator
- Download on demand ring tones: 10
- Speed dial support
- Configurable dial/numbering plan support per line
- DNS SRV and multiple A records for proxy lookup and proxy redundancy
- Syslog, debug, report generation, and event logging
- Highly secure call-encrypted voice communication support
- Built-in web server for administration and configuration with multiple security levels
- Automated provisioning, multiple schemes, up to 256-bit encryption (HTTP, HTTPS, TFTP)
- Option to require administrator password to reset unit to factory defaults

Specifications

Table 1 gives the specifications for the Cisco SPA9000 Voice System.

Table 1. Specifications for the Cisco SPA9000 Voice System

Specifications	
Data networking	• 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) • 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) • RTP (RFC, 1890) • Real Time Control Protocol (RTCP) (RFC 1889) • DiffServ (RFC 2475), ToS (RFC 791, 1349) • VLAN tagging (IEEE 802.1p/Q) • 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 • Router or bridge mode of operation • MAC address cloning • Port forwarding
Voice gateway	• SIP version 2 (RFC 3261, 3262, 3263, 3264) • SIP proxy redundancy: dynamic via DNS SRV, A records • Reregistration with primary SIP proxy server • SIP support in NAT networks (including Serial Tunnel [STUN]) • Highly secure (encrypted) calling via prestandard implementation of secure RTP • Codec name assignment • Voice algorithms: ◦ 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 support • Adjustable audio frames per packet • Dual-tone multifrequency (DTMF): in-band and out-of-band (RFC 2833) (SIP INFO) • Flexible dial plan support with interdigit timers • IP address/URI dialing support • Call progress tone generation • Jitter buffer: adaptive • Frame loss concealment • -Voice activity detection (VAD) with silence suppression • Attenuation/gain adjustments • Message waiting indicator (MWI) tones • Visual message waiting indicator (VMWI) via NOTIFY, SUBSCRIBE • Caller ID support (name and number)
Provisioning, administration, and maintenance	• Web browser administration and configuration via integral web server • Telephone keypad configuration of select networking parameters via IVR • Automated provisioning and upgrade via HTTPS, HTTP, 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 configurable
Physical interfaces	• Two 10/100BASE-T RJ-45 Ethernet ports (IEEE 802.3): 1 WAN, 1 LAN • 2 RJ-11 FXS phone ports for analog circuit telephone device (tip/ring)

Subscriber line interface circuit (SLIC)	• Ring voltage: 40–55 Vrms configurable • Ring frequency: 10–40 Hz • Ring waveform: trapezoidal and sinusoidal • Maximum ringer load: 3 ringer equivalence numbers (RENs) • On-hook/off-hook characteristics: on-hook voltage (tip/ring): –50V nominal, off-hook current: 25 mA min, terminating impedance: 8 configurable settings including North America 600 ohms, European CTR21 switching type (100–240V) automatic
Compliance	
FCC (Part 15 Class B), CE, A-Tick, ICES-003	
Security	
• Password-protected system reset to factory default • Password-protected administrator and user access authority • HTTPS with factory-installed client certificate • HTTP digest: encrypted authentication via MD5 (RFC 1321) • Up to 256-bit Advanced Encryption Standard (AES) encryption	
LEDs	
Power, Internet, Phone 1, Phone 2	
Documentation	
Quick Installation and Configuration Guide, User Guide, Administration Guide—Service Providers Only, Provisioning Guide—Service Providers Only	
Package Contents	
• Cisco SPA9000 Voice System • 5V power adapter • RJ-45 Ethernet cable • Quick installation guide	
Environmental	
Dimensions (W x H x D)	3.98 x 3.98 x 1.1 in (101 x 101 x 28 mm)
Unit weight	5.3 oz (0.15 kg)
Power	Switching type (100–240V) automatic, DC input voltage: +5V DC at 2.0A max., power consumption: 5W, power adapter: 100–240V, 50–60Hz (26–34 VA) AC input, 1.8m cord
Operating temperature	32º~113ºF (0º~45ºC)
Storage temperature	–13º~185ºF (–25º~85ºC)
Operating humidity	10%~90% noncondensing
Storage humidity	10%~90% noncondensing
Product Warranty	
1-year limited hardware warranty with return to factory replacement and 90-day limited software warranty.	

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 SPA9000 at the time of provisioning.

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: http://www.cisco.com/smallbusiness.

Americas Headquarters
Cisco Systems, Inc.
San Jose, CA

Asia Pacific Headquarters
Cisco Systems (USA) Pte. Ltd.
Singapore

Europe Headquarters
Cisco Systems International BV
Amsterdam, The Netherlands

Cisco has more than 200 offices worldwide. Addresses, phone numbers, and fax numbers are listed on the Cisco Website at www.cisco.com/go/offices.

Printed in USA C78-504126-00 11/08