



Linksys Voice over IP Products Guide: SIP CPE for Massive Scale Deployment

Version 3.2

Corporate Headquarters

Linksys
121 Theory Drive
Irvine, CA 92617
USA
<http://www.linksys.com>
Tel: 949 823-1200
800 546-5797)
Fax: 949 823-1100

Specifications are subject to change without notice. Linksys is a registered trademark or trademark of Cisco Systems, Inc. and/or its affiliates in the U.S. and certain other countries. Other brands and product names are trademarks or registered trademarks of their respective holders.

Copyright ©2007 Cisco Systems, Inc. All rights reserved.



Linksys Voice Products

The following table summarizes the ports and features provided by each product in the Linksys Voice Product family.

Product Name	FXS (Analog Phone)	FXO PSTN Connection	RJ-45 Internet (WAN)	RJ-45 Ethernet (LAN)	Configurable Voice Lines	Additional Features/Notes
VoIP PBX Products						
SPA9000	Two (2)	—	One (1)	—	Up to 4 SIP trunks	IP PBX, Auto-Attendant, Setup Wizard to Configure SPA400
SPA400	—	Four (4)	One (1)	—	—	PSTN Gateway, Integrated voicemail server for SPA9000
IP Telephones						
SPA901	—	—	—	One (1)	One (1)	Small, affordable, no display
SPA921	—	—	—	One (1)	One (1)	One-line business phone
SPA922	—	—	—	Two (2)	One (1)	Power over Ethernet (PoE) support
SPA932	—	—	—	—	—	32 LEDs to monitor or call forward SPA962
SPA941	—	—	—	One (1)	Four (4)	Default is two lines active; upgradeable to four lines
SPA942	—	—	—	Two (2)	Four (4)	Default is two lines active; upgradeable to four lines. Power over Ethernet (PoE) support
SPA962	—	—	—	Two (2)	Six (6)	Six lines, hi-res color display
Analog Telephone Adapters (ATAs)						
PAP2T	Two (2)	—	One (1)s	—	Two (2)	Voice adapter with two FXS ports
SPA1001	One (1)	—	One (1)	—	One (1)	Small VoIP adapter
SPA2102	Two (2)	—	One (1)	—	One (1)	Voice adapter with router
SPA3102	One (1)	One (1)	One (1)	One (1)	Two (2)	Voice adapter with router and PSTN gateway
SPA8000	Eight (8)	—	One (1)	—	Four (4)	Voice adapter with 8 FXS ports
AG310	One (1)	One (1)	—	Four (4)	Two (2)	High-speed ADSL2/+ modem with VoIP, Ethernet switch, and PSTN gateway
ATAs with IP Routing						
WAG310	One (1)	One (1)	One (1)	Four (4)	One (1)	Wireless-G ADSL2+ gateway with VoIP and limited PSTN connectivity
WRP400	Two (2)	—	One (1)	Four (4)	Two (2)	Wireless-G IP router with two FXS ports
RTP300	Two (2)	—	One (1)	Four (4)	Two (2)	IP router with two FXS ports
WRTP54G WRT54GP2	Two (2)	—	One (1)	Three (3)	Two (2)	Wireless-G IP router with two FXS ports

Linksys SPA9000 and SPA400 VoIP PBX Products

The SPA9000 IP Telephony System delivers features comparable to high-end PBX telephone systems with the convenience and cost advantages of VoIP. Alternatively, Linksys Voice Products can leverage your existing PSTN lines with the SPA400 Internet Telephony Gateway, offering a phased transition to VoIP service.

SPA9000

The SPA9000 is a full-featured IP PBX with integrated auto-attendant, call park, and music on hold.

Front Panel

Power	Steady green: powered on and connected to the Internet. Flashing: not connected to the Internet or is booting or upgrading firmware.
Ethernet	Steady green: active connection. Flashing: indicates traffic.
Phone 1/2	Steady green: active/registered connection to ITSP through port. Flashing: in use or off hook.

Back Panel

Phone 1/2	Connect to an analog telephone or fax machine with an RJ-11 cable.
Internet	Connect to a switch, router, or broadband (cable/DSL) modem.
Ethernet	For administration only.
Power	Connect to the power adapter.

Figure 1 LVS SPA9000



SPA400

The SPA400 has four FXO ports and provides connectivity to the PSTN, long-distance toll bypass, and an integrated voicemail server.

Front Panel

Power	Steady green: powered on and connected to the Internet. Flashing: not connected to the Internet, booting, or upgrading firmware.
Status	Steady green: SPA400 registered to the SPA9000. Flashing: SPA400 not registered.
Line 1-4	Steady green: line is active; flashing: ringing; off: idle.
Ethernet	Steady green: active connection. Flashing: indicates traffic.
USB	Steady green: USB voicemail module registered. Off: no module detected.

Back Panel

USB	USB connection to the SPA400 voicemail module.
Ethernet	Connect to the SPA9000 through a local switch using an Ethernet cable.
Line 1-4	Connect to a standard telephone wall jack using an RJ-11 cable.
Power	Connect to the power adapter.

Figure 2 LVS SPA400



Linksys SPA900 Series IP Telephones

The SPA900 Series features a wide range of inexpensive IP Phones to meet your needs and your budget. SPA900 Series phones provide one, two, or six lines and one or two Ethernet ports. When used with the SPA9000, Linksys IP Phones install in minutes, automatically configuring themselves with the features you need.

SPA901

The SPA901 provides an entry-level IP phone that can be wall mounted (see [Figure 3](#)).

Front Panel and Side of Phone

Message waiting light	On: you have a voicemail message.
STATUS	Off: make a call. On: make a call; line is shared. Flashing: shared line on hold. On red: line in use. Flashing red: local call on hold. On orange: phone not registered.
FLASH	Press to pickup a second incoming call, transfer a call, or setup a three-way conference call.
REDIAL	Press the redial the last number called.

Back Panel

Phone jack	Connect to the handset.
Ethernet port	Connect to the SPA9000 through a local switch.
Power	Connect to the 5-volt power supply.

Figure 3 SPA901



SPA921

The SPA921 has one RJ-11 phone port and one 100BaseT RJ-45 port for connecting to the LAN (see [Figure 4](#)).

Front Panel

LCD display	Lists device status and configuration options.
Telephone keypad	Enters numeric digits for initiating a call or for entering configuration information.
Navigation button	Scrolls between display and configuration options in the LCD display.
Soft keys 1-4	Select options on the LCD display

Back Panel

Phone jack	Connect to the handset.
Ethernet ports	The SPA921 has one; the SPA922 has two. Use one port to connect to the SPA9000 through a local switch. Use the other port to connect to a PC or other Ethernet device.
Power	Connect to the 5-volt power supply.

Figure 4 SPA921



Figure 5 SPA922

SPA922

The SPA942 is similar to the SPA941, but provides two Ethernet ports for connecting to the LAN and supports Power over Ethernet (see [Figure 5](#)). See the table for SPA921.



Linksys SPA900 Series IP Telephones

SPA932

The SPA932 is a 32-button attendant console for the SPA962, with support for Broadsoft Busy Lamp Field and Asterisk Line Monitoring (see [Figure 6](#)). It obtains power directly from the SPA962 and does not require a separate power supply. Two SPA932 units can be attached to a single SPA962 to monitor a total of 64 separate lines.

Ports/LEDsf

AUX IN	Connects to the SPA962
AUX OUT	Connects to a second SPA932 unit (optional)
Green	Idle
Red	In-use
Blinking Red	Ringing

Figure 6 SPA932 (Shown with SPA962)



Figure 6 SPA941

SPA941

The SPA941 provides a single Ethernet connection.(see [Figure 6](#)).

Front Panel

LCD display	Lists device status and configuration options.
Telephone keypad	Enters numeric digits for initiating a call or for entering configuration information.
Navigation button	Scrolls between display and configuration options in the LCD display.
Soft keys 1-4	Select options on the LCD display.
Line status indicators 1-4	Displays status of each extension.

Back Panel

Phone jack	Connect to the handset.
Ethernet ports	The SPA941 has one; the SPA942 has two. Use one port to connect to the SPA9000 through a local switch. Use the other port to connect to a PC or other Ethernet device.
Power	Connect to the 5-volt power supply.

Figure 7 SPA942



SPA942

The SPA942 is similar to the SPA941, but provides two Ethernet ports for connecting to the LAN and supports Power over Ethernet (see [Figure 7](#)). See table for SPA941.

SPA962

The SPA962 has a full-color LCD display and provides up to six telephone extensions (see [Figure 8](#)).

Front Panel

Full-color LCD display	Lists device status and configuration options.
Telephone keypad	Enters numeric digits for initiating a call or for entering configuration information.
Navigation button	Scrolls between display and configuration options in the LCD display.
Soft keys 1-4	Select options on the LCD display.
Line status indicators 1-6	Displays status of each extension.

Back Panel

Phone jack	Connect to the handset.
Ethernet ports (2)	Connect to the SPA9000 through a local switch.
Power	Connect to the 5-volt power supply.
AUX RJ-11 port	Reserved for future functionality and not for use as a telephone line port.

Figure 8 SPA962



Linksys Analog Telephone Adapters (ATAs)

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

PAP2T

The PAP2T provides two FXS ports (see [Figure 9](#)).

Front Panel

Phone 1/2	Steady green: active or registered connection to the ITSP through the Phone port. Flashing: device is in use or off hook.
Ethernet	Steady green: active connection. Flashing: indicates traffic.
Power	Steady green: power on and Internet connection. Flashing: not connected to the Internet, booting or firmware upgrade.

Back Panel

Phone 1/2	Connect to an analog telephone or fax machine with an RJ-11 cable.
Internet	Connect to a router or broadband (cable/DSL) modem.
Power	Connect to the 5-volt power adapter.

Figure 9 PAP2T



SPA1001

The SPA1001 provides one FXS port (see [Figure 10](#)).

Back Panel

Phone	Connect to an analog telephone or fax machine with an RJ-11 cable.
Power	Connect to the 5-volt power adapter.
Act	Steady green: active or registered connection to the ITSP through the Phone port. Flashing: device is in use or off hook. Steady yellow: active Ethernet connection. Flashing: indicates traffic.
Ethernet	Connect to a router or broadband (cable/DSL) modem.

Figure 10 SPA1001



Linksys Analog Telephone Adapters (ATAs)

SPA2102

The SPA2102 provides two FXS ports and an Ethernet port for connecting to a local PC.

Front Panel

Power	Steady green: power on and Internet connection. Flashing: not connected to the Internet, booting or firmware upgrade.
Internet	Steady green: active connection. Flashing: indicates traffic.
Phone 1/2	Steady green: active or registered connection to the ITSP through the Phone port. Flashing: device is in use or off hook.

Back Panel

Phone 1/2	Connect to an analog telephone or fax machine with an RJ-11 cable.
Ethernet	Connect to a network device, such as a PC or a switch with an Ethernet cable.
Internet	Connect to a router or broadband (cable/DSL) modem.
Power	Connect to the 5-volt power adapter.

Figure 11 SPA2102



SPA3102

The SPA3102 acts as a PSTN gateway providing connectivity to the PSTN.

Front Panel

Power	Steady green: power on and Internet connection. Flashing: not connected to the Internet, booting or firmware upgrade.
Internet	Steady green: active connection. Flashing: indicates traffic.
Phone	Steady green: active or registered connection to the ITSP through the Phone port. Flashing: device is in use or off hook.
Line	Steady green when a telephone or fax machine has an active connection to traditional phone service through the Line port.

Back Panel

Line	Connect to a standard telephone wall jack with an RJ-11 cable.
Phone	Connect to an analog telephone or fax machine with an RJ-11 cable.
Ethernet	Connect to a network device, such as a PC or a switch with an Ethernet cable.
Internet	Connect to a router or broadband (cable/DSL) modem.
Power	Connect to the 5-volt power adapter.

Figure 12 SPA3102



Linksys Analog Telephone Adapters (ATAs)

SPA8000

The SPA8000 (see [Figure 13](#)) is an analog telephone adapter that supports up to eight analog telephone devices, including up to four fax devices. The SPA8000 consists of four hardware modules, each of which provides two FXS ports. The following tables describe the LEDs on the front panel and the ports on the back panel of the device.

Front Panel

LED	Function
Power	Steady green indicates power on and Internet connection. Flashing indicates not connected to the Internet, booting or firmware upgrade.
Ethernet	Link activity status. Steady green indicates active connection. Flashing indicates traffic.
Status 1/2/3/4	Indicates the status of each of the four hardware modules in the SPA8000. Steady green indicates active connection. Flashing indicates tht the associated module is restarting.
Line 1/2/3/4 /5/6/7/8	Steady green indicates active or registered connection to the ITSP. Flashing indicates device is in use or off hook.

Back Panel

Port	Function
RJ21 port	Provides a single connector that supports up to eight FXS connections.
RJ11 ports: Line 1/2 Line 3/4 Line 5/6 Line 7/8	Connect each of the eight FXS ports to an analog telephone or fax machine using an RJ-11 cable. These ports are distributed among four hardware modules of two ports each. You can connect a single fax machine to each pair of ports (for a maximum of four).
AUX	Ethernet maintenance port. Connect to a network device, such as a PC or a switch with an Ethernet cable for accessing the administration web server on the SPA8000. Note The SPA8000 does not support routing or IP forwarding
Ethernet	Connect to a switch, router or broadband (cable/DSL) modem for access to the Internet. When connected directly to the Internet, connectivity between FXS devices on the SPA8000 depends on the Outbound Proxy service provided by the ITSP.
Power	Connect to the 12-volt DC power adapter.

Figure 13 SPA8000



Linksys Analog Telephone Adapters (ATAs)

AG310

The AG310 provides a high-speed ADSL2/+ modem along with a four-port Ethernet switch and a PSTN gateway (see [Figure 13](#)).

Front Panel

Power	Steady green indicates power on and Internet connection. Flashing indicates not connected to the Internet, booting or firmware upgrade.
Ethernet 1-4	Steady green indicates an active connection to the network. Flashing indicates traffic.
Voice Status	Steady green indicates that a voice call is currently in progress.
Phone	Steady green indicates active or registered connection to the ITSP through the Phone port. Flashing indicates device is in use or off hook.
Line	Steady green when a telephone or fax machine has an active connection to traditional phone service through the Line port.
DSL	Steady green indicates that the DSL connection is active.
Internet	Steady green indicates active connection. Flashing indicates traffic.

Back Panel

DSL	Connect to the telephone wall jack providing DSL service using a RJ-11 cable.
Line	Connect to a standard telephone wall jack with an RJ-11 cable.
Phone	Connect to an analog telephone or fax machine with an RJ-11 cable.
Ethernet 1-4	Connect to network devices, such as a PC or a switch, using an Ethernet cable.
Power	Connect to the power supply.

Figure 13 AG310



Linksys ATAs with Multiport Router

A number of Linksys ATAs provide IP routing functionality in addition to the other functions of an ATA. This allows a single device to provide connectivity to an analog telephone as well as Internet connectivity to a LAN with a built-in four-port switch. The IP router provides QoS support, an integrated firewall and VPN pass-through, and full routing with DHCP and NAT.

WAG310

The WAG310 is an ATA with an ADSL2+ gateway, an FXO port for failback PSTN connectivity, two FXS ports, and a Wireless-G multiport IP router with QoS support (see [Figure 16](#)).

Front Panel

Power	Steady green is powered on, flashing is self-test, and red indicates malfunction.
Ethernet LAN 1-4 Ethernet WAN/LAN 5	Steady green indicates connection; flashing indicates network activity.
Wireless Activity	Steady green indicates wireless is enabled; flashing indicates activity.
Wireless Security	Steady green indicates wireless security is enabled; flashing during setup; red indicates security is disabled.
USB	Steady green indicates device connected to USB port; flashing indicates activity.
Phone 1-2	Steady green indicates telephone connected to FXS port; flashing indicates off-hook.
Line	Steady green indicates FXO port connected to PSTN; flashing indicates off-hook.
DSL	Steady green indicates a DSL connection; flashing indicates ADSL connection is being established.
Internet	Steady green indicates Internet port connected to the Internet; flashing indicates activity; red indicates Internet connection is down.

Back Panel

DSL	Connect to the telephone wall jack providing DSL service using a RJ-11 cable.
Line	Connect to a standard telephone wall jack with an RJ-11 cable.
Phone	Connect to an analog telephone or fax machine with an RJ-11 cable.
USB	Connect to a USB device with a USB cable.
Ethernet WANs/LANs	As a WAN port, connect to broadband modem. As a LAN port, connect to a wired computer or other Ethernet network device.
Ethernet LAN 1-4.	Connect to wired computers and other Ethernet network devices.
Power switch	Power on or off the gateway.
Power	Connect to the power supply.
Reset	Press and hold to restore factory defaults.

Figure 14 WAG310



Linksys ATAs with Multiport Router

WRP400

The WRP400 provides an ATA with two FXS ports and a Wireless-G multiport IP router with QoS support (see [Figure 15](#)).

Front Panel

Power	Steady green indicates that the power supply is connected and the device is functioning.
WLAN	Steady green indicates an active connection to the network. Flashing indicates traffic.
Ethernet 1-3	Steady green indicates an active connection to the network. Flashing indicates traffic.
Phone 1/2	Steady green when telephone or fax machine has an active or registered connection to the ITSP through the Phone port. Flashing indicates phone is in use or off hook.
Internet	Steady green indicates active connection. Flashing indicates traffic.

Back Panel

Internet	Connect to the broadband (cable/DSL) modem using an Ethernet cable.
Phone 1/2	Connect to an analog telephone or fax machine using an RJ-11 cable.
Ethernet 1-3	Connect to local IP devices, such as PCs, using an Ethernet cable.
Power	Connect to the power supply.

Figure 15 WRP400



WRT54GP2

The WRT54GP2 provides an ATA with two FXS ports and a Wireless-G multiport IP router with QoS support (see [Figure 16](#)).

Front Panel

Power	Steady green indicates that the power supply is connected and the device is functioning.
WLAN	Steady green indicates an active connection to the network. Flashing indicates traffic.
Ethernet 1-3	Steady green indicates an active connection to the network. Flashing indicates traffic.
Phone 1/2	Steady green indicates active or registered connection; flashing indicates phone off hook.
Internet	Steady green indicates active connection. Flashing indicates traffic.

Back Panel

Internet	Connect to broadband modem.
Phone 1/2	Connect to analog telephone or fax machine.
Ethernet 1-3	Connect to local IP devices, such as PCs.
Power	Connect to the power supply.

Figure 16 WRT54GP2



Linksys ATAs with Multiport Router

WRTP54G

The WRTP54G provides an ATA with two FXS ports and a Wireless-G multiport IP router with QoS support (see [Figure 17](#)).

Front Panel

Ethernet 1-4	Steady green: active connection to the network. Flashing: indicates traffic.
Wireless	Steady green: an active connection to the network. Flashing: indicates traffic.
Phone 1/2	Steady green when telephone or fax machine has an active or registered connection to the ITSP through the Phone port. Flashing: phone is in use or off hook.
Internet	Steady green: active connection. Flashing: indicates traffic.

Back Panel

Internet	Connect to the broadband (cable/DSL) modem using an Ethernet cable.
Phone 1/2	Connect to an analog telephone or fax machine using an RJ-11 cable.
Ethernet 1-4	Connect to local IP devices, such as PCs, using an Ethernet cable.
Power	Connect to the 12-volt power supply.

Figure 17 WRTP54G



RTP300

The RTP300 provides an ATA with two FXS ports along with an IP router with QoS support (see [Figure 18](#)).

Front Panel

Ethernet 1-4	Steady green: active connection to the network. Flashing: indicates traffic.
Phone 1/2	Steady green: telephone or fax machine has an active or registered connection to the ITSP through the Phone port. Flashing: phone is in use or off hook.
Internet	Steady green: active connection. Flashing: indicates traffic.

Back Panel

Internet	Connect to the broadband (cable/DSL) modem using an Ethernet cable.
Phone 1/2	Connect to an analog telephone or fax machine using an RJ-11 cable.
Ethernet 1-4	Connect to local IP devices, such as PCs, using an Ethernet cable.
Power	Connect to the 12-volt power supply.

Figure 18 RTP300

