

Deploying Analog Phones with the SPA8000 ATA and the SPA9000 IP PBX

The SPA8000, an 8-port FXS Analog Telephone Adapter (ATA), can be integrated with the SPA9000 IP PBX to deliver an affordable voice solution for customers who want (or need) to support legacy analog phones. Up to two SPA8000 devices can be stacked up, for a total of 18 FXS ports (including the ones built into the SPA9000 itself), offering the customer an attractive device density, for a low price.

The solution also delivers IP Telephony-like features to the analog phone users. By using the Setup Wizard, you can install and configure the SPA8000 in minutes without the need of additional infrastructure.

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Scope and Assumptions

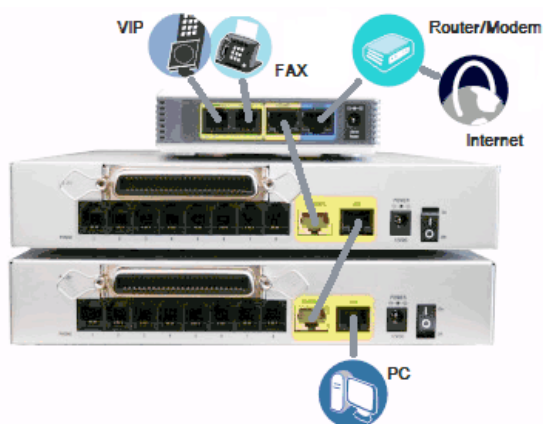
The information in this application note is intended for Cisco VARs and channel partners. It is assumed that users are familiar with configuration of features for the Cisco voice products mentioned in the document.

The scope of this application note is limited to the configuration of the most common security deployment scenarios and is not intended to document the configuration of additional or optional voice and networking features.

The information in this document applies to Version 1.0 of the SPA9000/SPA8000 Setup Wizard.

Basic Topology

The picture below shows the topology for this integration:



The first SPA8000 is connected to the LAN port of the SPA9000 (labeled "Ethernet"). The second (optional) SPA8000 connects to the LAN port of the first SPA8000 (labeled "AUX"). Finally, the PC that will run the Setup Wizard needs to be connected to the AUX port of the secondary SPA8000. The advantage of this setup is that no additional router or switch is needed.

Deployment Description

The following limitations apply to this solution:

- IP Phones are not supported. This is an analog-only solution.
- Voicemail is not supported (no SPA400 integration). However, a regular answering machine can be used instead. Refer to the *Voicemail Considerations* section for more details.
- The SPA9000 Setup Wizard cannot be used in conjunction with this Wizard.

The extension assignment process is automatic and static. The dial plan offers 3-digit dialing and allows internal calling, transfers and conferencing.

The FXS ports on the SPA8000 are given extensions 101-108 (if there is only one SPA8000) or 101-116 (if two SPA8000s are present). All extensions are mapped to a single hunt group. The hunting mechanism can be altered.

The FXS ports on the SPA9000 get extensions 201 and 202 (for FXS1 and FXS2 respectively).

Optionally, three ITSP accounts can be provisioned. Each SIP ITSP account can have its own phone number. For inbound call purposes, these numbers are mapped in the following manner::

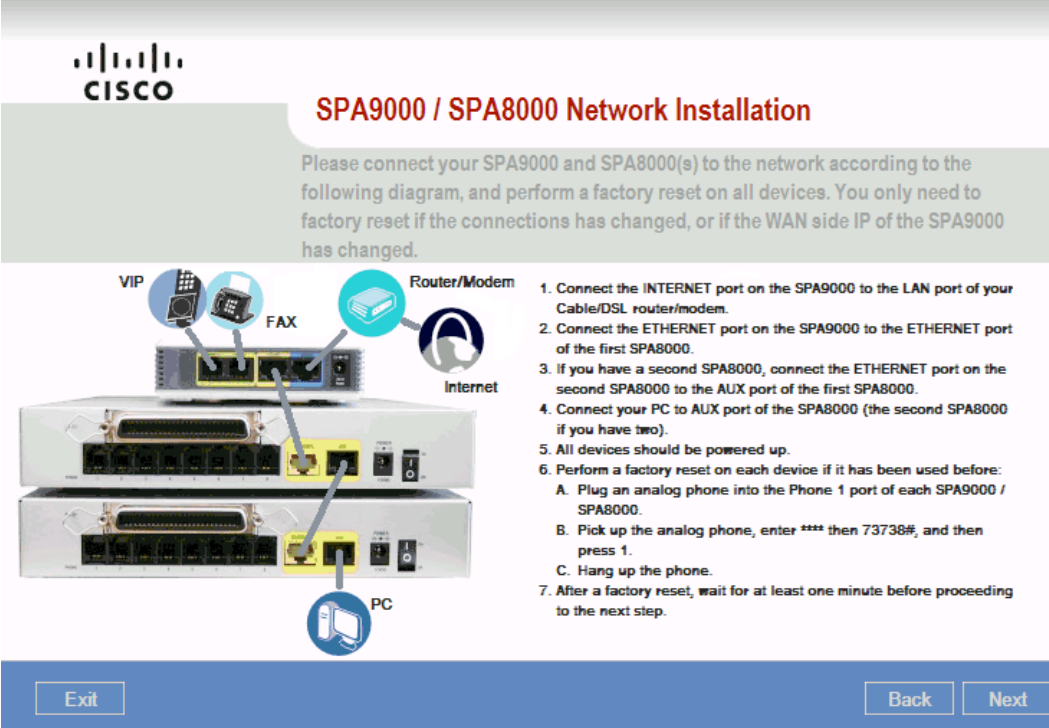
- The Main account is mapped to all the FXS ports on the SPA8000's
- The "VIP" account is mapped to extension 201.
- The Fax/Secretary account is mapped to extension 202.

Running the Setup Wizard

The Setup Wizard 8k9k can be downloaded from Cisco.com. Once installed, it must be run from the PC connecting to the AUX port of the SPA8000 (primary or secondary, depending on the topology). The presentation screen will display:



1. Select your desired language and click **Next**. The Network Installation screen will appear.



CISCO

SPA9000 / SPA8000 Network Installation

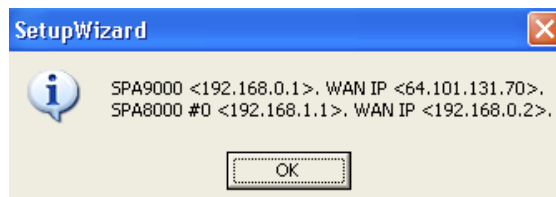
Please connect your SPA9000 and SPA8000(s) to the network according to the following diagram, and perform a factory reset on all devices. You only need to factory reset if the connections has changed, or if the WAN side IP of the SPA9000 has changed.

Diagram Labels: VIP, FAX, Router/Modem, Internet, PC

1. Connect the INTERNET port on the SPA9000 to the LAN port of your Cable/DSL router/modem.
2. Connect the ETHERNET port on the SPA9000 to the ETHERNET port of the first SPA8000.
3. If you have a second SPA8000, connect the ETHERNET port on the second SPA8000 to the AUX port of the first SPA8000.
4. Connect your PC to AUX port of the SPA8000 (the second SPA8000 if you have two).
5. All devices should be powered up.
6. Perform a factory reset on each device if it has been used before:
 - A. Plug an analog phone into the Phone 1 port of each SPA9000 / SPA8000.
 - B. Pick up the analog phone, enter **** then 73738#, and then press 1.
 - C. Hang up the phone.
7. After a factory reset, wait for at least one minute before proceeding to the next step.

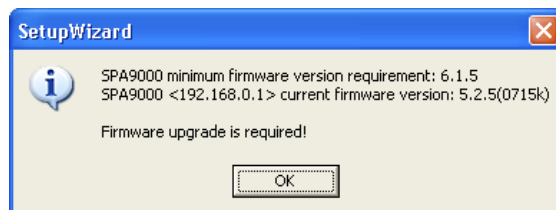
Buttons: Exit, Back, Next

2. Follow the steps on this screen very carefully. It is very important that all devices are brought to factory defaults in order to avoid configuration conflicts. The factory reset process for the SPA8000 and SPA9000 is the same and it is described on the screen.
3. Click **Next** after you are done reviewing the introductory instructions. The System will detect the current IP address assigned to the available devices.



4. Click **OK** after you verify the current settings.

If your system is on an older firmware version, the Wizard will automatically prompt you to upgrade the devices to the latest supported release. You should see the following screen should that be the case:



5. Click **OK** and wait until all devices are upgraded.

The SPA8000 configuration will appear and you will be prompted to define the Hunt group characteristics:

Number of Phones 2 Use Auto Attendant On Main Line

Hunt Rule Simultaneous

"No Answer" Extension 101 Exclude "No Answer" Extension from hunt group

Maximum Ring Time 4 **Country** US

Ring Duration Per Phone 4 **Time Zone** GMT-08:00 US, Pacific

Outbound Dial Prefix 9 **NTP Server** time.nist.gov

Exit Save and Exit Firmware Upgrade Preview Back Next

Cisco SPA9000 Analog Phone PBX Setup Wizard 8k9k v1.0.0.0 Model No. SPA9000

The SPA8000 FXS ports are sequentially assigned extensions starting at 101, grouped into a single hunt group.

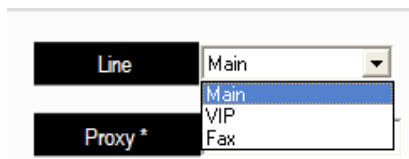
6. Enter the desired settings:
 - Number of phones.
 - "Use Auto Attendant on Main Line" checkbox, which enables call handling by the System AA when the mainline number is called.
 - Simultaneous, Sequential or Random hunt.
 - Maximum ring time (when using sequential or random hunt). Default 20 seconds.
 - Ring duration per phone (default 8 seconds).
 - "No answer extension" is the extension to call when total hunt time limit is exceeded (20 seconds by default). The "No answer extension" can be excluded from the hunt group so it is rung last in case you want to connect an answering machine to the port associated with it.
 - Outbound dialing prefix (secondary dialtone access code).
 - Country locale for the system (this setting determines the progress tones and impedance settings for the FXS ports).
7. Click **Next** to move to the SPA9000 WAN configuration page. These settings affect the "Internet" port on the SPA9000.

The options here are DHCP (client), static IP and PPPoE.

8. Fill out the appropriate fields and click **Next**. The ITSP account configuration page will appear:

9. Enter the User ID, Password, and Proxy for your ITSP account.

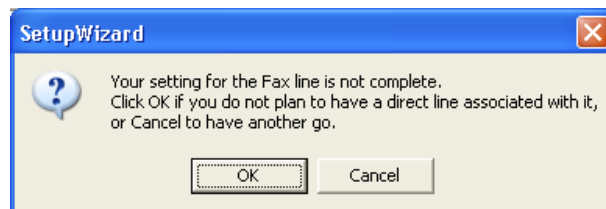
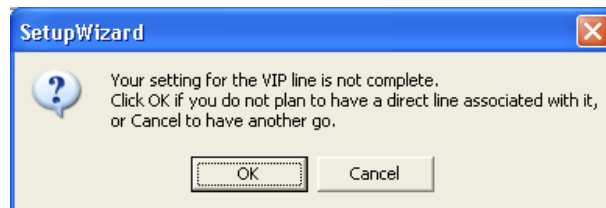
Currently, up to three ITSP accounts can be associated with the system:



Line	Main
Proxy *	Main
	VIP
	Fax

- Main represents the account that all the SPA8000 ports (hunt group) will use to make Internet calls.
- VIP is an independent account associated with the first FXS port on the SPA9000. Internally, the box extension can be reached by dialing 201.
- Fax is also an independent account mapped to the second FXS port on the SPA9000 unit. Internally, the Fax/Secretary extension can be reached by dialing "202".

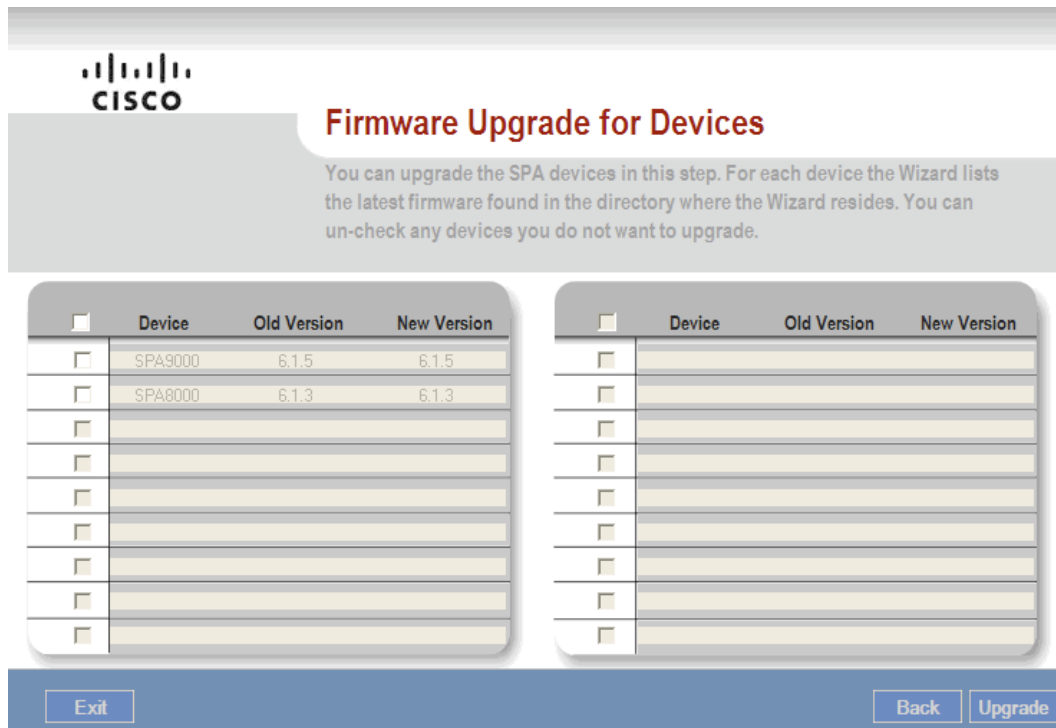
You don't have to configure all three ITSP accounts. If you configure only one (the "Main" account, for example), just ignore the warning windows that appear later:



10. Click **OK**. You will have the opportunity to review the raw configuration that is pushed down to the devices.
11. Click **OK** again to exit out of the Wizard. The Setup process is complete and you can start making calls as soon as the units reboot.

Firmware Upgrade

During the setup process, each screen offers the opportunity to upgrade the SPA9000 and the SPA8000 to the latest firmware version. You also can upgrade the firmware by clicking the **Firmware Upgrade** button at the bottom of the screen. The following page appears:



The Wizard automatically places a check mark next to any device that requires an upgrade. As needed, you can uncheck any device, and then click **Upgrade**.

Voicemail Considerations

This Analog PBX solution does not offer native voicemail capabilities. However, a very effective and inexpensive way to provide basic voice messaging is to connect a regular answering machine to one of the FXS ports on the SPA8000.

Once you have connected the answering machine, identify the extension assigned to that port and enter it under the “Non Answer Extension” of the Setup Wizard Main Configuration screen. “No answer extension” is the extension to call when total hunt time limit is exceeded (20 seconds by default). The “No answer extension” would have to be excluded from the hunt group so it is rung last.

Number of Phones 2 Use Auto Attendant On Main Line

Hunt Rule Simultaneous

"No Answer" Extension 101 Exclude "No Answer" Extension from hunt group

Maximum Ring Time 4 **Country** US

Ring Duration Per Phone 4 **Time Zone** GMT-08:00 US, Pacific

Outbound Dial Prefix 9 **NTP Server** time.nist.gov

Exit Save and Exit Firmware Upgrade Preview Back Next

Cisco SPA9000 Analog Phone PBX Setup Wizard 8k9k v1.0.0.0 Model No. SPA9000

Click **Save and Exit** once you have made all your changes.

An inbound call will ring through the Hunt Group members and if no one answers, it will be forwarded to the "No Answer" extension. When using AA to handle inbound calls, if you want to enable call forward to answering machine, then you need to modify this setting manually in the SPA8000 native configuration screen as the Setup Wizard does not support this feature. Refer to the *ATA Administration Guide* for instructions.

Tested Features

The following tables illustrate some commonly used analog features that have been tested with this solution:

Feature	Supported	Comments
Internal Calls (In/Out)	Yes	
Inbound Call to Hunt Group	Yes	
Inbound calls to VIP	Yes	
Inbound Call to fax	Yes	
Outbound Calls	Yes	
Internal Transfer (Blind/Consult)	Yes	Inbound call from ITSP transferred from SPA9000 to SPA8000 and vice versa
External Transfer (Blind/Consult)	Yes	Internal call from SPA9000 to SPA8000 and vice versa, transferred to ITSP
Conferencing	Yes	Participants included SPA9000, SPA8000 and ITSP. Conference initiated by SPA9000 or SPA8000
Redial	Yes	Tested using *07
Callback	Yes	Tested using *66
Call Forward (All/Busy/Noan)	Yes	Tested using *72, *90 and *92 respectively. Both internal and

		external destinations work.
Do not Disturb (DND)	Yes	Tested using *78. Caller gets reorder.
Call Waiting / Call Selection	Yes	
Speed Dials	Yes	
Call Return	No	Tested using *69
Fax Calls	Yes	Long faxes
Music on Hold (MOH)	Yes	Automatically configured via imusic

For More Information

For more information on Cisco Voice solutions, visit the Small Business Support Community at the following URL:

www.cisco.com/go/smallbizsupport