Asterisk Playbook

Cisco Small Business

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This playbook is designed to help you understand when, where and how to position Cisco Small Business Products with Asterisk® and other open source PBX platforms.

Asterisk Overview

- Asterisk is software that turns a computer or server into a voice communications server or PBX. Asterisk is open source and is available free under the terms of the GPL (General Purpose License) .

- Asterisk acts as middleware between IP networks, telephony channels, and applications. A powerful and important capability of Asterisk is its ability to be extended using its APIs and scripting interface. End-users or other open source developers can use these tools to write their own applications. Asterisk is distributed under the GNU General Public License.

- Asterisk highlights:

    - *Free*, software-only PBX – customer provides server.

    - Written for Linux, also runs on BSD, MacOSX, Solaris.

    - Provides a full range of telephony features and voice services such as Voicemail, Conference Bridging, Call Queuing, etcetera.

    - Supports a robust set of codecs, VoIP protocols, PSTN protocols.

    - Asterisk is primarily suitable for SOHO and SMB environments, but there is also interest from other markets, particularly higher education. Asterisk is also being used by call centers, carriers and governments.

- Digium is the lead commercial sponsor of the open source Asterisk project. Digium reserves the exclusive right to license the entire Asterisk code base outside of the GNU GPL for proprietary applications. Digium allows for commercial licensing of all or part of the Asterisk code set, and hardware, consultation, configuration and support services for Asterisk.

- There are several other vendors such as Trixbox/Fonality and Switch Box (from Digium) that offer pre-packaged Asterisk open source IP-PBXs and software appliances that are designed to be easier to manage and install with options such as bundled post-sales service. 3CX offers a software-based PBX, though not open-source.

Sales Opportunity

- **There is a growing opportunity to sell Cisco Small Business VoIP products that can interoperate with the Asterisk Open Source PBX in addition to many other third party call control platforms.**

- Companies that use Asterisk as basis for business:

    - VoIP integrators and Resellers that offer Asterisk customizations

    - Resellers that offer turnkey voice system bundling with hardware and setup scripts

    - See Asterisk User Groups at: http://www.asterisk.org/community/usergroups

- Local events held by the Asterisk community:

    - www.astricon.net (US)

    - www.voip2day.net (Spain)

How to Position Cisco Small Business Products?

- Cisco Small Business manufactures and sells VoIP endpoint hardware for use with open source software including Asterisk.

- **Comprehensive interoperability and SIP-based feature set:** The Asterisk system is open and supports almost all Session Initiation Protocol **(**SIP**)** compatible devices. Cisco Small Business VoIP endpoints are designed to connect as SIP endpoints to Asterisk. These products are fully SIP-compliant and have been tested to make sure they provide comprehensive interoperability with equipment from SIP-based voice over IP (VoIP) leaders including Digium, 3CX, TrixBox, Broadvoice, Teliax, Gizmo Project, etc. If you are looking for a quality business phones and gateways for Asterisk at a reasonable price, these products fit the bill.

- **Quality, Affordable Products:** Cisco offers a broad range of SIP-based IP phones, telephone gateways and analog telephone adaptors aimed squarely at the business market. The products combine the technology originally developed by Sipura/Linksys, combined with the quality, look and feel of Cisco technology to create a portfolio of mid-range devices that are affordable enough for small businesses and yet good enough for the most demanding companies.

- **Intuitive, Easy to Use Products:** The products are quite easy to use with an intuitive context-sensitive menu and soft buttons for the different functions. Employees can take advantage of their phone systems features, including: speakerphone, redial, call transfer, conferencing, paging, intercom, volume control, message-waiting and voicemail indicator lights, mute key, headset use, and call history directories. Devices can be easily configured from the built-in Web interface or can be provisioned through XML files from a TFTP, HTTP, or HTTPS site. Interoperability with Asterisk and other open source and third party PBX systems is fully tested and documented (See: https://www.myciscocommunity.com/docs/DOC-8477)

- **Feature-rich:** SPA5XX phones have all the features of the SPA9XX family, with superb sound quality, multiple network jacks and PoE (power over Ethernet) support across the product family. Virtually every thing about the old SPA9XX phones has been addressed and improved upon in the SPA5XX - from the handset weight, the keys, the display, the overall style, PoE support, PC switch ports, wireless and Bluetooth options, 32-button attendant console, and the sound quality, including wideband audio (G.722) support across the portfolio.

- Position Cisco Small Business products as an *adjunct* endpoint option, rather than a replacement. The Cisco Small Business VoIP products function as standalone endpoints with full Asterisk interoperability without the need for a Cisco Unified Communications system.

- No certification is required to purchase and deploy Cisco Small Business products. Cisco registered partners (free) can purchase Cisco Small Business products at local prices and discounts through local Distributors, and resell for use with Asterisk or other SIP-based open source platforms.

'Why Cisco'?:

- **Networking Leader:** Cisco has the broadest and deepest networking experience of any company in the World. Cisco is unmatched in the industry when it comes to innovation, customer investment return, and support of its networking solutions. We have much broader expertise (WAN, Storage, Routing, Security) to add to our significant leadership advantage in VoIP products. For Cisco Small Business VoIP products, Cisco provides:

- Consistency in software architecture, provisioning automation, firmware management, standards implementation and a consistent feature set across platforms.

- Security including service provisioning, signaling transport, media transport and device-level access.

- Technology leadership with an innovative product roadmap, comprehensive interoperability, in-house feature development, exceptional experience in broadband VoIP and expert and timely support.

- **World-Class Product Breadth:** Cisco has the networking experience and product breadth to create true Small Business solutions. Cisco's SMB portfolio is broad and deep, with solutions for basic, open to guidance and elite customer types.

- **Superior Support:** Our products are also backed by superior pre- and post-sales support. For example, Cisco provides targeted support for small business with the [Cisco Small Business Support Center](#) and [Cisco Small Business Support Community](#), which provide 24.x7x365 troubleshooting and support for Small Business specific solutions. The Cisco Small Business Support Center first line support staffed by CCNA-certified Engineers, resulting in faster problem resolution. Beyond the first level, Cisco has Small Business Business Units and escalation engineers to help customers to resolve any issues as quickly as possible. You can email, web and go through the phone in opening up a case. We also have [Cisco.com](#) knowledge based tools. Together this creates a lower total cost of ownership and makes systems with Cisco Small Business devices easier to operate.

What to Sell? IP Telephones

SPA5XX Series IP Phones

- **Cisco® SPA5xx IP Telephone family** is the next generation of SIP small business IP phones that are perfectly suited to interoperate with Asterisk systems. This new family of phones inherits all of the industry leading VoIP features that Asterisk users loved in the Sipura > Linksys > Cisco SPA9xx family of phones to deliver an upgradeable high quality IP phone family that is unparalleled in features, value and support. SPA9XX phones are already very popular with the Asterisk community, in large part due to the products' low price and high quality.

- The Cisco® SPA5xx IP Telephone family provides small businesses a complete portfolio of affordably priced, reliable, stylish, easy-to-use phones that can be used with a variety of phone systems, including Asterisk, and SIP-based hosted solutions. All phones support the SIP standard and can be used on any of the popular IP PBX systems including Asterisk, SipX, PBXNSIP, Trixbox, 3CX or Switchvox Ready. Features such as wideband/HD audio, XML programmability of soft keys and touch-and-hold speed dial configuration on the phones are very popular with the Asterisk user-base.

  NOTE: SPA5XX IP Telephones are standards-based SIP phones, *not* modified 79xx Cisco phones. One of the frequently asked questions about Cisco Small Business phones is 'Are they rebadged Cisco 79xx phones running modified Skinny?' The answer is no.

- The SPA5XX phone series supports a standard set of features across all phones while providing variations in line count, display type, Bluetooth, and wireless options (see Table 1):

- Intuitive, easy-to-use phone features, including: speakerphone, redial, call transfer, conferencing, paging, intercom, volume control, message-waiting and voicemail indicator lights, mute key, headset use, and call history directories.

- Premier wideband audio experience from the handset and speakerphone that customers expect from Cisco telephony products.

- 802.3af Compliant Power over Ethernet (PoE) on all phones, which means if you do not already have PoE compatible equipment you don't have to purchase either a PoE injector or a power cube for the phone.

- Two Ethernet LAN Ports with Integrated Ethernet Switch on all phones (100BaseT RJ-45), which means that if you only have a single Ethernet drop to a desk you can plug that into the phone and the computer into the phone, versus having to purchase a separate switch and plugging both the phone and the computer into the switch and the switch into the single drop.

- Automated Remote Provisioning, Multiple Methods and up to 256 Bit Encryption (HTTP, HTTPS, TFTP). The phones use standard encryption protocols to provide secure remote provisioning and unobtrusive in-service software upgrades.

- Configuring the SPA5xx IP Phone in an Asterisk environment is very straightforward. Installers can connect SPA5xx IP phones to your network and have them automatically configure, upgrade their firmware and then register against an Asterisk server in a short amount of time. All phones have a built-in Web server for administration and configuration with multiple security levels.

- SIP-specific features (v7.3) includes:

    - SPA525G VPN client for remote workers

    - SPA501G –8 Independent SIP Registrations

    - SPA508G –8 Independent SIP Registrations

    - SPA509G –12 Independent SIP Registrations

    - Programmable Soft Keys on both SPA525G and SPA502,4,8,9 Phones

    - Press and hold speed dial config on unused line keys

Table 1: Cisco Small Business SPA5XX Feature Matrix:

Features:	SPA525G	SPA509G	SPA508G	SPA504G	SPA502G	SPA501G
Line Appearances	5	12	8	4	1	8
Wideband Audio (G.722) – HD Voice	Yes	Yes	Yes	Yes	Yes	Yes
PC Switch Port	Yes	Yes	Yes	Yes	Yes	Yes
Speakerphone	Yes	Yes	Yes	Yes	Yes	Yes
Headset	2.5mm	2.5mm	2.5mm	2.5mm	2.5mm	2.5mm
Color	Yes	No	No	No	No	n/a
Attendant Console	Yes	Yes	Yes	Yes	Yes	Yes
WiFi	Yes	No	No	No	No	No
Bluetooth	Yes	No	No	No	No	No

More information:

- Cisco SPA500 Series Phones:
  http://www.cisco.com/cisco/web/solutions/small_business/products/voice_conferencing/SPA_500/index.html

- Cisco Small Business Support Community:
  https://www.myciscocommunity.com/community/smallbizsupport/voiceandconferencing/ipphones

- SPA5XX feature details: https://www.myciscocommunity.com/docs/DOC-11915

What to Sell? IP Telephony Gateways and Analog Telephone Adapters

SPA8800 IP Telephony Gateway

- The **Cisco® SPA8800 IP Telephony Gateway** is well suited to interoperate with Asterisk systems. The SPA8800 provides 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. It also provides a single multiport RJ-21 50-pin connector. The primary purpose of the SPA8800 is as a VoIP FXO Gateway to connect PSTN lines for use with an on-premise IP PBX.

- The SPA8800 can be easily be configured as an Asterisk FXO gateway. Calls originating from the public switched telephone network (PSTN) can be terminated by the SPA8800's FXO ports and routed to analog or IP phones based on an Asterisk server's configuration. Analog phones connected to the SPA8800 can make low-cost VoIP calls via an Internet Telephony Service Provider (ITSP) or can make calls via the PSTN.

- Many interesting call routing options are possible using Asterisk to control the SPA8800 gateway. Asterisk can be configured to trunk the SPA8800's four FXO ports together into a trunk group. A trunk group allows the PSTN lines connected to the FXO ports to be over-subscribed and shared among all configured analog and IP phones, effectively lowering telephony costs by not requiring a dedicated line per phone. For example, you can have 4 connected PSTN lines and share them with any number of phones. When all 4 lines are busy, the 5_{th} user will hear a congestion tone.

- The SPA8800 supports fax with G.711 pass-through or real-time fax over IP via T.38 fax relay and also supports the G.711 A-law, G.711 μ-law, G.726, G.729A, G.723.1 voice codecs

- Additionally, the SPA8800's FXS ports can be used in other ways, including connecting analog phones, door phones, and fax machines.

SPA8000 IP Telephony Gateway

- In the event that you only need FXS ports and do not need any FXO ports, consider using the **Cisco® SPA8000 IP Telephony Gateway**, an 8-Port IP Telephony Gateway. The SPA8000 configuration is very similar to the SPA8800.

Analog Telephone Adapters

- The Cisco® SPA3102, SPA2102 and PAP2T Analog Telephone Adapters (ATAs) will allow you to connect your Asterisk box to both the Public Switched Telephone Network (PSTN) and an ordinary phone (see

Table 3).

- The **Cisco® PAP2T Internet Phone Adapter** with 2 VoIP Ports enables high-quality feature-rich VoIP service through your broadband Internet connection. Plug it into your home router or gateway and use the two standard telephone ports to connect analog phones or fax machines. Each phone port operates independently, with separate phone service and phone numbers, like having two telephone lines.

- The **Cisco® SPA-2102** is an analog telephone adapter that features 2 POTS (Plain Old Telephone Service) ports for connection to existing analog telephones, fax machines, PBX and key system communication platforms.

- The **Cisco® SPA-3102** is a PSTN Gateway + analog telephone adapter that can convert your analog phone line into a SIP trunk into your Asterisk PBX. The SPA3102 in a very inexpensive and versatile FXO, FXS, VoIP Gateway.

Table 3: Cisco Small Business IP Telephony Gateway Feature Matrix:

Features:	SPA8000	SPA8800	PAP2T	SPA2102	SPA3102
FXS Lines	8	4	2	2	2
Active Calls	16	12	4	4	3
3-way Conference	8	4	2	2	1
FXO Lines	0	4	0	0	1

More information:

- Cisco Small Business Voice Gateways:
  http://www.cisco.com/cisco/web/solutions/small_business/products/voice_conferencing/small_business_voice_gateways/index.html-tab-Resources

- Cisco Small Business Support Community:
  https://www.myciscocommunity.com/community/smallbizsupport/voiceandconferencing/ata

- Interoperability information for Asterisk(R)-based Phone Systems:
  https://www.myciscocommunity.com/docs/DOC-10647

Additional Information and Links

Asterisk Interoperability Info: SPA IP Phone products

- Asterisk: Configuring Cisco SPA5xx phones with the Web-UI
- Asterisk: Zero-Touch Configuring Cisco SPA5xx phones
- Asterisk: Configuring the Cisco SPA500S Attendant Console
- SPA5xx IP Phone 7.x Firmware Update Information

Asterisk Interoperability Info: SPA IP Telephony Gateway products

- Asterisk: Configuring the SPA8800 IP Telephony Gateway
- Using a SPA8800 as an outbound FXO Gateway from Asterisk

Interoperability Information to Third Party PBXs:
- https://www.myciscocommunity.com/docs/DOC-8477
- 3CX Phone System: https://www.myciscocommunity.com/docs/DOC-8476

General Information:

- http://www.voip-info.org/wiki/
- Cisco Small Business Voice Gateways and ATAs: www.cisco.com/go/gateways
- SMB Partner Central for Voice and Conferencing:
  www.cisco.com/web/partners/sell/smb/products/voice_and_conferencing.html
- Support for Cisco Small Business Voice & Conferencing:
  https://www.myciscocommunity.com/community/smallbizsupport