SPA500 Series

7.4.3 Update

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Locate firmware instructions:
https://www.myciscocommunity.com/docs/DOC-2181

First draft November 5th 2009. **Revised** on January 20h 2010

Check for updates of this document at:
https://www.myciscocommunity.com/docs/DOC-11915

Document History

- Added camera information January 20th 2010
- Revised November 9th 2009
- Initial release November 5th 2009

Agenda

- Executive summary
- List of features
- Feature-by-feature

Executive Summary

- 7.4.3 is for the SPA5xx Series IP Phones
- Includes updates for:
  - UC500
  - Broadsoft
  - Metaswitch
  - Asterisk and other 3rd party call control
- 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 (3 seconds)

Features / Enhancements 1/4

1. SSL VPN Client
2. SSL VPN UI
3. Programmable soft keys
4. Line Monitoring Enhancement
5. XML service entry point: Line keys
6. XML service entry point: Menu button

Features / Enhancements 2/4

7. XML API support
8. XML service trigger vial SIP notify
9. RTCP-XR
10. Broadsoft directory
11. Broadsoft feature synchronization
12. Broadsoft / Metaswitch private call hold

Features / Enhancements 3/4

13. Multi-group multicast paging
14. Broadsoft BLF via notify
15. Ignore option for incoming call
16. Time zone via DHCP option 2 & 42
17. DHCP option 150, 159, 160
18. Verisign certificate authentication
19. DTMF volume adjustment

Features / Enhancements 4/4

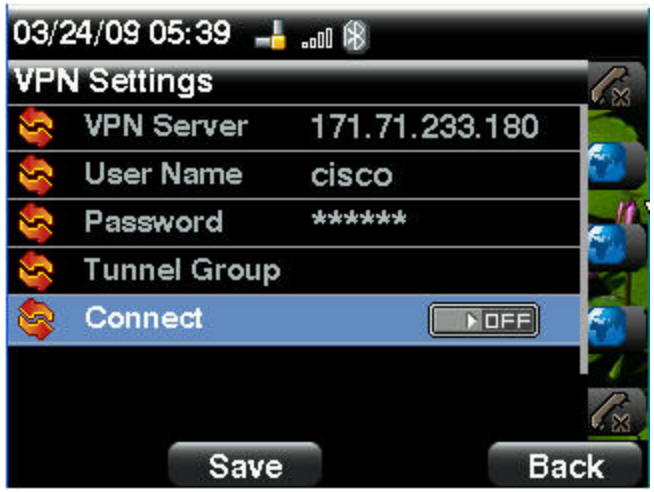
20. More soft key removed
21. Cancel soft key during conference initialization
22. Speed dial: press and hold idle line key
23. Camera support

SSL VPN Client [Feature 1/22]

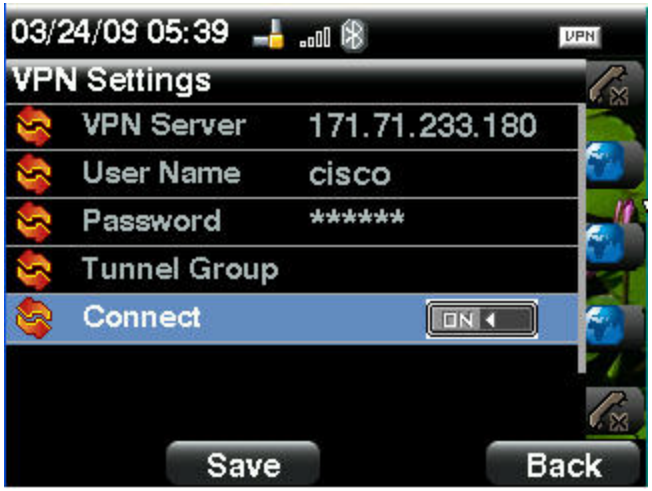
SIP Mode?	SPCP Mode?	SPA525G Support?	SPA509– 2G Support?	SPA501G Support?
Y	Y	Y	N	N

- Provides secure tunnel between phone and head-end
- Code ported from Cisco AnyConnect SSL VPN Client
- Supports UC500, SR520, & ASA55xx head-ends
- Uses factory loaded cert., username, and password
- G.711 codec, no other codecs
- Configure via Web-ui
- VPN status via web-ui and phone's display

SSL VPN Client ctd. [Feature 1/22]



Disconnected



Connected

Status

SSL VPN Client ctd. [Feature 1/22]

- SRTP not supported
- HTTP proxy not supported
- SSL client certificate not supported
- CDP not supported
- VLAN tagging and QoS for voice data not supported
- VLAN tagging and QoS for PC port data not supported

SSL VPN Client ctd. [Feature 1/22]

- VPN head-end must be separately configured
- PC connected to PC port of phone not affected by VPN
- Cannot turn VPN on or off during call processing
- Phone attempts auto connection during boot
- Animated display when connecting to VPN server
- Phone boots as normal if VPN fails

SSL VPN Client ctd. [Feature 1/22]

Configuration Parameters:

Field	Description
Enable VPN	Enable / disable VPN
VPN Server	IP address of VPN head-end
VPN User Name	User account on VPN head-end
VPN Password	User password on VPN head-end
VPN Tunnel Group	VPN connection tunnel group
Auto Connect	Enable / disable auto VPN session after booting up

SSL VPN UI [Feature 2/22]

SIP Mode?	SPCP Mode?	SPA525G Support?	SPA509– 2G Support?	SPA501G Support?
Y	Y	Y	N	N

Voice tab > System tab > VPN Settings

Programmable Soft keys [Feature 3/22]

SIP Mode?	SPCP Mode?	SPA525G Support?	SPA509– 2G Support?	SPA501G Support?
Y	N	Y	Y	N

- Predefined soft keys and 6 programmable soft keys psk[1-6]
- Speed dial script: sd;ext=123@$PROXY;vid=1;nme=SD123
- XML service script: fnc=xml;nme=XML123;url=http://abc/def [URL tag must be last]
- Programmable states:
- Idle, Ringing, Connected, Conference, Start-Conf, Start-Xfer, Missed-Call, Off-Hook, Dialing input
- Specify a semicolon separated list of soft key
- <sk_name>[|<pos>]; <sk_name>[|<pos>];
- <pos> is an optional position starting from 1

Programmable Soft keys [Feature 3/22]

SIP Mode?	SPCP Mode?	SPA525G Support?	SPA509– 2G Support?	SPA501G Support?
Y	N	Y	Y	N

- Keys with specified positions are anchored to a position
- Unspecified keys float
- When phone enters a state, the key spec-list is processed left to right
- A key is applicable if it complies with allowed keys for the state and is meaningful under the circumstances. For example, the “confLx” key is only meaningful when there are two or more calls.

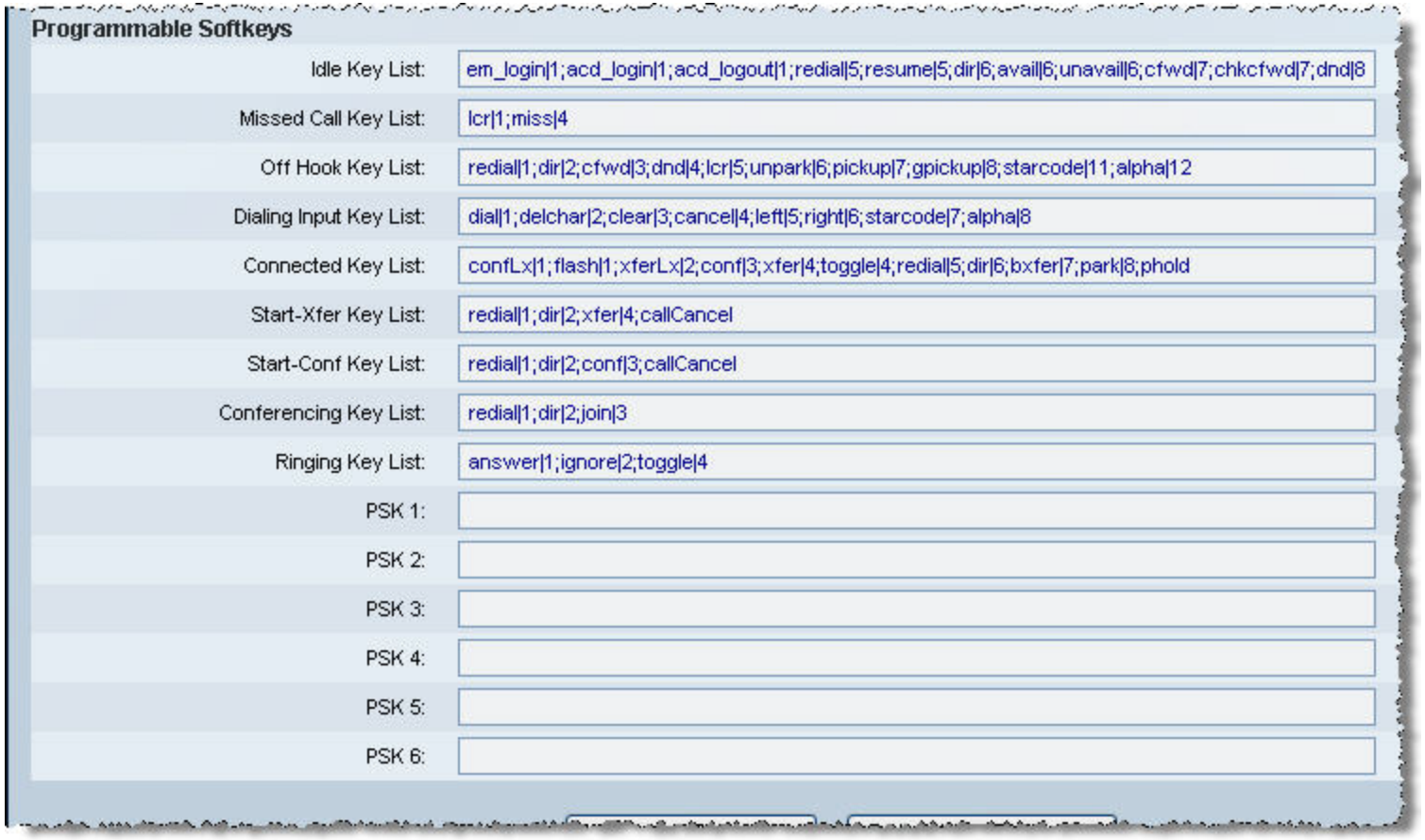
Programmable Soft keys [Feature 3/22]

SIP Mode?	SPCP Mode?	SPA525G Support?	SPA509– 2G Support?	SPA501G Support?
Y	N	Y	Y	N

- The spec-list is evaluated left-to-right in 3 passes:
  - 1. It is scanned for anchor keys. Applicable anchor keys are positioned. Existing anchor key are over-written.
    Example: “confLx|1; flash|1; xferLx|2; conf|3, xfer|4” “flash” ovewrites “confLx”
  - 2. It is scanned for “blank pages”. A blank page is defined as four consecutive blank spots starting at position 1, 4, 8... Blank pages are removed.
  - 3. It is scanned left to right for floating keys. An applicable floating key is placed in the first blank spot in the interim list of soft keys

Programmable Soft keys [Feature 3/22]

Phone tab > Programmable Softkeys



Programmable Soft keys [Feature 3/22]

SIP Mode?	SPCP Mode?	SPA525G Support?	SPA509– 2G Support?	SPA501G Support?
Y	N	Y	Y	N

Label / Keyword	Applicable state
Login / em_login	When extension mobility is enabled and the user has not logged in.
Logout / em_logout	When extension mobility is enabled and the user has logged in.
Login / acd_login	If “ ACD login serv” is enabled and the user has not logged in.
Logout / acd_logout	If “ ACD login serv” is enabled and the user has logged in.
Redial / redial	Invokes call history menu
Resume / resume	the foreground call is on hold.
toggle	two calls (active or on hold). [avail on SPA502G]

Programmable Soft keys [Feature 3/22]

SIP Mode?	SPCP Mode?	SPA525G Support?	SPA509– 2G Support?	SPA501G Support?
Y	N	Y	Y	N

Label / Keyword	Applicable state
Dir / dir	Invokes directory menu
Avail / avail	If a user has logged in to an ACD server and has claimed to be unavailable
Unavail / unavail	If a user has logged in to an ACD server and has claimed to be available
Forward / cfwd	If call forward is not active.
chkcfwd	If call forward is active.
dnd	If DND is not active.
chkdnd	If DND is active.

Programmable Soft keys [Feature 3/22]

SIP Mode?	SPCP Mode?	SPA525G Support?	SPA509– 2G Support?	SPA501G Support?
Y	N	Y	Y	N

Label / Keyword	Applicable state
Call Rtn / lcr	Server must support SIP B or SPA9000
Pickup / pickup	Server must support SIP B or SPA9000
GrPickup / gpickup	Server must support SIP B or SPA9000
Park / park	Server must support SIP B or SPA9000
Unpark / unpark	Server must support SIP B or SPA9000
Answer / answer	Pending inbound call
Ignore / ignore	Pending inbound call

Programmable Soft keys [Feature 3/22]

SIP Mode?	SPCP Mode?	SPA525G Support?	SPA509– 2G Support?	SPA501G Support?
Y	N	Y	Y	N

Label / Keyword	Applicable state
Flash / flash	If registered to UC 320 and there is an inbound PSTN call
Conf Line / confLx	If Conf Serv is enabled and there are 2 or more calls active or hold
Xfer Line / xferLx	If Attn Xfer Serv is enabled and there are two or more calls active or hold
Conf / conf	If Conf Serv is enabled and there is at least one connected call and one idle call
Transfer / xfer	If “Attn Xfer Serv” is enabled and there is at least one connected call and one idle call.
BlindXfer / bxfer	If “Blind Xfer Serv” is enabled and there is at least one connected call
Join / join	If the phone is conferencing

Programmable Soft keys [Feature 3/22]

SIP Mode?	SPCP Mode?	SPA525G Support?	SPA509– 2G Support?	SPA501G Support?
Y	N	Y	Y	N

Label / Keyword	Applicable state
PrivHold / phold	If there is an active shared line
Miss / miss	
delChar / delchar	
Dial / dial	
clear	
Cancel / cancel	
left	

Programmable Soft keys [Feature 3/22]

SIP Mode?	SPCP Mode?	SPA525G Support?	SPA509– 2G Support?	SPA501G Support?
Y	N	Y	Y	N

Label / Keyword	Applicable state
right	
starcode	
Alpha / alpha	

Programmable Soft keys [Feature 3/22]

State	Default & Allowed features for State	
Idle	Default:	em_login; acd_login; acd_logout; avail; unavail; redial; dir; cfwd; dnd; lcr; pickup; gpickup; unpark; em_logout
	Allowed:	As in default, plus psk[1-6]. Extras TBD.
Missed-Call	Default:	lcr|1; miss|4
	Allowed:	As in default, plus psk[1-6]. Extras TBD.
Off-Hook (no input)	Default:	option; redial; dir; cfwd; dnd; lcr; unpark; pickup;gpickup
	Allowed:	As in default, plus psk[1-6]. Extras TBD.
Dialing (input)	Default:	option|1; dial|2; delchr|3;cancel|4
	Allowed:	As in default, plus psk[1-6]. Extras TBD.
Progressing	Default:	endcall|2
	Allowed:	As in default, plus psk[1-6]. Extras TBD.
Connected	Default:	hold|1; endcall|2; conf|3; xfer|4; bxfer; xferlx; conflx; park; phold; flash
	Allowed:	As in default, plus psk[1-6]. Extras TBD.
Start-Xfer	Default:	hold|1; endcall|2; xfer|4
	Allowed:	As in default, plus psk[1-6]. Extras TBD.
Start-Conf	Default:	hold|1; endcall|2; conf|3
	Allowed:	As in default, plus psk[1-6]. Extras TBD.
Conferencing	Default:	hold|1; endcall|2; join|4
	Allowed:	As in default, plus psk[1-6]. Extras TBD.
Releasing	Default:	endcall|2
	Allowed:	As in default, plus psk[1-6]. Extras TBD.
Hold	Default:	resume|1; endcall|2; newcall|3; redial; dir; cfwd; dnd
	Allowed:	As in default, plus psk[1-6]. Extras TBD.
Ringing	Default:	answer|1; ignore|2
	Allowed:	As in default, plus psk[1-6]. Extras TBD.
Shared-Active	Default:	newcall|1; barge|2; cfwd|3; dnd|4
	Allowed:	As in default, plus psk[1-6]. Extras TBD.
Shared-Held	Default:	resume|1; barge|2; cfwd|3; dnd|4
	Allowed:	As in default, plus psk[1-6]. Extras TBD.
PSK 1 – 6	Default:	<empty string>

Programmable Soft keys [Feature 3/22]

Although the phone models are very similar, subtle differences result in some unique keys:

- SPA525G Unique keys:
  barge, endcall, hold, ip, newcall, num, & option
- SPA50xG Unique keys:
  chkcfwd, chkdnd, & starcode
- SPA502G Unique key:

  toggle

Line Monitoring Enhancement [Feature 4/22]

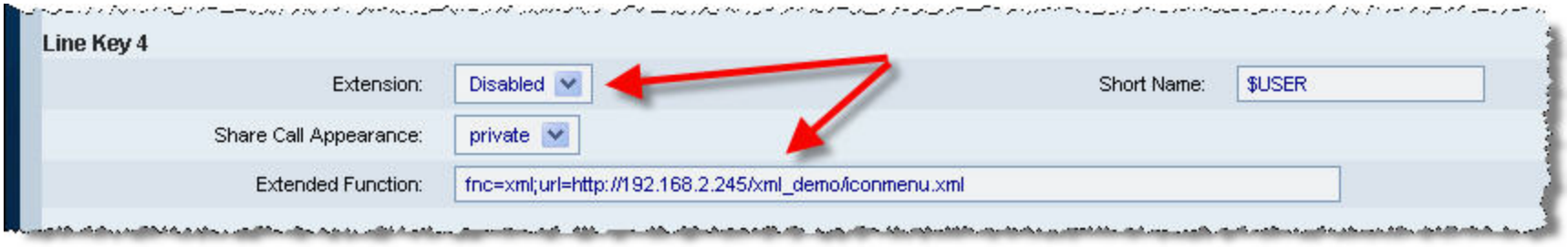
SIP Mode?	SPCP Mode?	SPA525G Support?	SPA509– 2G Support?	SPA501G Support?
Y	N	Y	Y	Y

- Allows station monitoring instead of just extension (SPA9000)
- `fnc=blf;sub=station1@$PROXY;nme=station1` (station monitor)
- `fnc=blf;sub=station1@$PROXY;ext=101@$PROXY;nme=101-station1` (ext monitor)

XML Service Entry Point: Line Key [Feature 5/22]

SIP Mode?	SPCP Mode?	SPA525G Support?	SPA509– 2G Support?	SPA501G Support?
Y	N	Y	Y	N

- Capability to support XML Entry Point from line keys
- Use a line key to trigger XML service



XML Service Entry Point: Menu Btn [Feature 6/22]

SIP Mode?	SPCP Mode?	SPA525G Support?	SPA509– 2G Support?	SPA501G Support?
Y	N	Y	Y	N

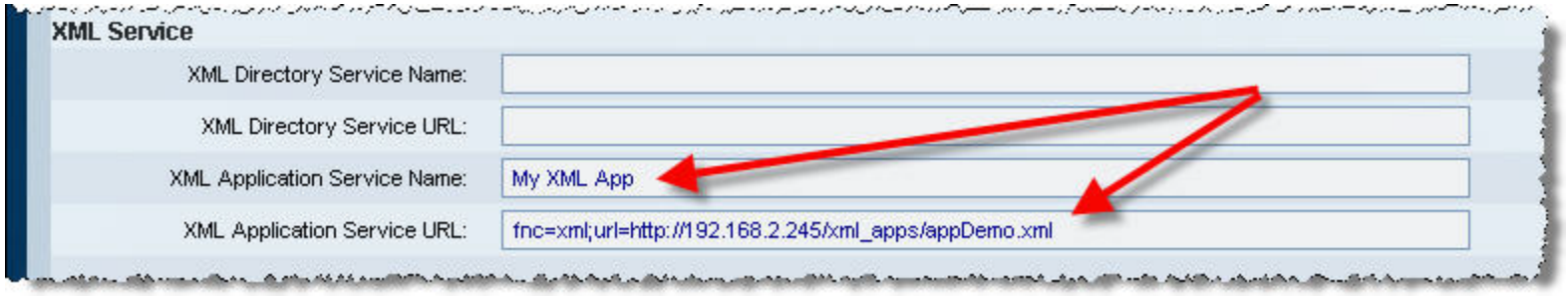
- Support XML Entry Point from Menu Button
- Support adding a new entry in setting menu for XML Service

Phone tab > XML Service > XML Directory Service

XML API Support [Feature 7/22]

SIP Mode?	SPCP Mode?	SPA525G Support?	SPA509– 2G Support?	SPA501G Support?
Y	N	Y	Y	N

Phone tab > XML Service > XML Application



XML API Support [Feature 7/22]

SIP Mode?	SPCP Mode?	SPA525G Support?	SPA509– 2G Support?	SPA501G Support?
Y	N	Y	Y	N

Cisco XML Support on SPA5xx Phones with the following Cisco XML API

- CiscoIPPhoneMenu
- CiscoIPPhoneText
- CiscoIPPhoneInput
- CiscoIPPhoneDirectory
- CiscoIPPhoneExecute

XML API Support [Feature 7/22]

Cisco XML Object	SPA525G	502,4,8,9G
CiscoIPPhoneMenu	X	X
CiscoIPPhoneText	X	X
CiscoIPPhoneInput	X	X
CiscoIPPhoneDirectory	X	X
CiscoIPPhoneImage	X	
CiscoIPPhoneImageFile	X	
CiscoIPPhoneGraphicMenu	X	
CiscoIPPhoneIconMenu	X	X
CiscoIPPhoneFileMenu	X	
CiscoIPPhoneStatus	X	
CiscoIPPhoneStatusFile	X	
CiscoIPPhoneExecute	X	X
CIscoIPPhoneResponse	X	
CiscoIPPhoneError	X	
CiscoIPPhoneGraphicFileMenu	X	

XML Service Trigger via SIP Notify [Feature 8/22]

SIP Mode?	SPCP Mode?	SPA525G Support?	SPA509– 2G Support?	SPA501G Support?
Y	N	Y	Y	N

- Application at SP can asynchronously trigger XML application on phone
- SIP Notify > Phone > Authenticate/Authorize > Phone sends HTTP get & 200 OK
- Only MD5 digest authentication is used [HTTPS in future]

XML Service Trigger via SIP Notify [Feature 8/22]

SIP Mode?	SPCP Mode?	SPA525G Support?	SPA509– 2G Support?	SPA501G Support?
Y	N	Y	Y	N

1. SP sends SIP Notify to phone
2. IP address in URL must be same as proxy address or defined in list of trusted hosts, else phone discards
3. If no authentication in SIP header, phone authenticates server using standard resync authentication mechanism
4. Phone sends HTTP request with MD5 digest authentication to SP
5. If authentication & authorization successful phone sends 200 OK response to SIP notify event

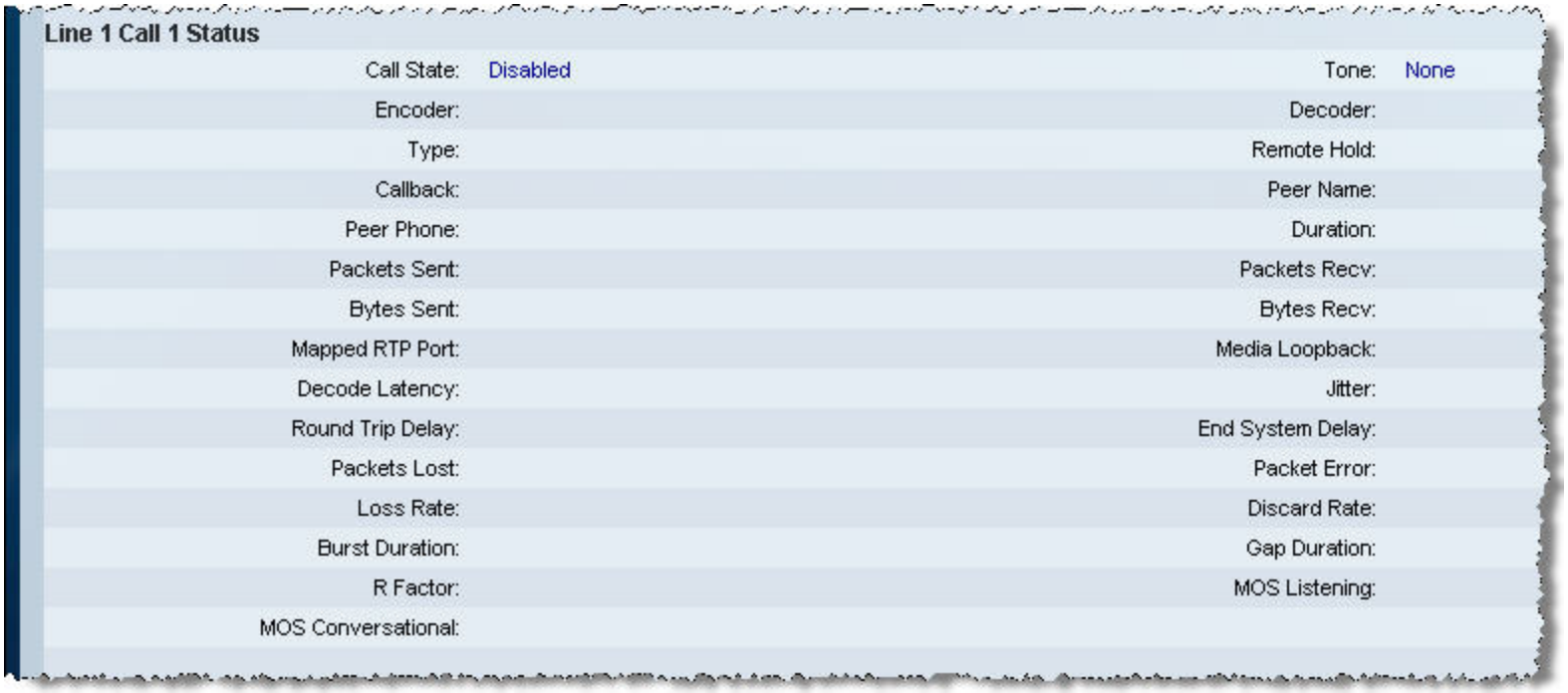
RTCP-XR [Feature 9/22]

SIP Mode?	SPCP Mode?	SPA525G Support?	SPA509– 2G Support?	SPA501G Support?
Y	N	Y	Y	Y

- RTCP-XR (Real-time Transport Protocol Control Protocol Extended Reports)
- Defined in RFC3611

RTCP-XR [Feature 9/22]

- Info tab > Line N Call N Status:



Line 1 Call 1 Status

Call State:	Disabled	Tone:	None
Encoder:		Decoder:	
Type:		Remote Hold:	
Callback:		Peer Name:	
Peer Phone:		Duration:	
Packets Sent:		Packets Recv:	
Bytes Sent:		Bytes Recv:	
Mapped RTP Port:		Media Loopback:	
Decode Latency:		Jitter:	
Round Trip Delay:		End System Delay:	
Packets Lost:		Packet Error:	
Loss Rate:		Discard Rate:	
Burst Duration:		Gap Duration:	
R Factor:		MOS Listening:	
MOS Conversational:			

RTCP-XR [Feature 9/22]

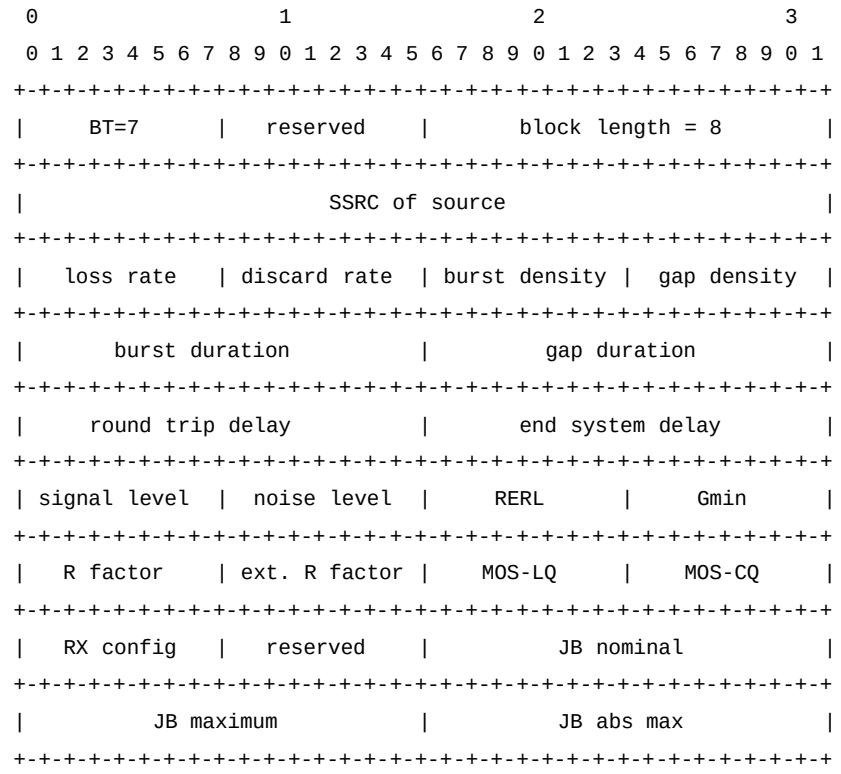
SIP Mode?	SPCP Mode?	SPA525G Support?	SPA509– 2G Support?	SPA501G Support?
Y	N	Y	Y	Y

RTCP-XR Metrics	SPA525 Support	SPA50x Support	
Loss Rate	Y	Y	Fraction of RTP data lost since reception start
Discard Rate	Y	Y	Fraction of discarded RTP data since reception start
Burst Density	Y	N	Fraction of lost RTP data in burst periods since reception start
Gap Density	Y	N	Fraction of RTP data in inter-burst gaps since reception start
Burst Duration	Y	Y	Mean duration of bursts since reception start in msec
Gap Duration	Y	Y	Mean duration of gaps since start of reception in msec
Round Trip Delay	Y	Y	Recent calculated round trip time between RTP interfaces
End System Delay	Y	Y	Recent estimate of sum of all delays
Signal Level	Y	Y	Voice signal relative to a reference in dB
Noise Level	Y	Y	Ratio of silent period to a reference in dB
RERL	Y	N	Residual echo return loss
Gmin	Y	Y	Gap threshold
Ext. R Factor	N	N	Voice quality metric for segment external to RTP segment
RX Config	Y	Y	Receiver configuration
JB nominal	Y	Y	Jitter Buffer nominal delay
JB maximum	Y	Y	Jitter Buffer maximum delay
JB abs maximum	Y	Y	Jitter Buffer absolute maximum delay
R Factor	Y	Y	Voice quality metric for segment carrying RTP
MOS-LQ	Y	Y	Mean Opinion Score Listening Quality
MOS-CQ	Y	Y	Mean Opinion Score Conversational Quality

RTCP-XR [Feature 9/22]

SIP Mode?	SPCP Mode?	SPA525G Support?	SPA509– 2G Support?	SPA501G Support?
Y	N	Y	Y	Y

Source: RFC3611



Broadsoft Directory [Feature 10/22]

SIP Mode?	SPCP Mode?	SPA525G Support?	SPA509– 2G Support?	SPA501G Support?
Y	N	Y	Y	N

- GUI on the phone for user to perform corporate directory searches against a Broadsoft XFP Corporate server

Broadsoft Feature Synchronization [Feature 11/22]

SIP Mode?	SPCP Mode?	SPA525G Support?	SPA509– 2G Support?	SPA501G Support?
Y	N	Y	Y	Y

- Synchronization of call forward and DND status between the phone and Broadsoft server

Broadsoft / Metaswitch Private Call Hold [Feature 12/22]

SIP Mode?	SPCP Mode?	SPA525G Support?	SPA509– 2G Support?	SPA501G Support?
Y	N	Y	Y	N

- Allows placing a call on private hold

Multi-group Multicast Paging [Feature 13/22]

SIP Mode?	SPCP Mode?	SPA525G Support?	SPA509– 2G Support?	SPA501G Support?
Y	?	Y	Y	Y

- Phone can page up to 5 groups and will listen to first 2 configured paging groups
- Phone tab > Multiple Paging Group Parameters > Group Paging Script:

Multi-group Multicast Paging [Feature 13/22]

SIP Mode?	SPCP Mode?	SPA525G Support?	SPA509– 2G Support?	SPA501G Support?
Y	?	Y	Y	Y

Enable paging:

Phone tab > Supplementary Services > Paging Serv: yes [factory default is yes]

Accept pages:

User tab > Supplementary Services > Auto Answer Page: yes [factory default is yes]

Configure page groups:

Phone tab > Multiple Paging Group Parameters > Group Paging Script:
factory default is: pggrp=224.168.168.168:34560;name=All;num=800;listen=yes;

Use paging:

Dial 800 to page all phones, regardless of call control

Multi-group Multicast Paging [Feature 13/22]

SIP Mode?	SPCP Mode?	SPA525G Support?	SPA509– 2G Support?	SPA501G Support?
Y	?	Y	Y	Y

- Provisioning Script to allow: Dial 800 to page all phones, 801 for Sales:

```
<Group_Paging_Script ua="na">
    pggrp=224.168.168.168:34560;name=All;num=800;listen=yes;
    pggrp=224.168.168.168:34561;name=Sales;num=801;listen=yes;
</Group_Paging_Script>
```

Multi-group Multicast Paging [Feature 13/22]

SIP Mode?	SPCP Mode?	SPA525G Support?	SPA509– 2G Support?	SPA501G Support?
Y	?	Y	Y	Y

`pggrp=multicast-address:port;[name=xxx;]num=xxx;[listen={yes|no}]];`
Where:
- IP address: Multicast IP address of the phone that will listen for and receive pages.
- port: Port on which to page; you must use different ports for each paging group.
- name (optional): The name of the paging group.
- num: The number users will dial to access the paging group; must be unique to the group.
- listen: If the phone should listen on the page group. Only the first two groups with listen set to yes will listen to group pages. If the field is not defined, the default value is no, so you must set this field to listen to the group pages.

For example:
pggrp=224.123.123.121:43210;name=All; num=801;listen=yes;
pggrp=224.123.123.121:43211;name=Sales;num=802; listen=yes;
pggrp=224.123.123.121:43212;name=Support;num=803;
pggrp=224.123.123.121:43213;name=Engineering;num=804;

Broadsoft BLF via Notify [Feature 14/22]

SIP Mode?	SPCP Mode?	SPA525G Support?	SPA509– 2G Support?	SPA501G Support?
Y	N	Y	Y	Y

- Support populating the list of extensions to monitor based on the Subscribe Notify message received from the Broadsoft Server

Ignore Soft key Incoming Call [Feature 15/22]

SIP Mode?	SPCP Mode?	SPA525G Support?	SPA509– 2G Support?	SPA501G Support?
Y	?	Y	Y	N

- Support ability to ignore an incoming call via a soft key option

DHCP: Time Zone [Feature 16/22]

SIP Mode?	SPCP Mode?	SPA525G Support?	SPA509– 2G Support?	SPA501G Support?
Y	Y	Y	Y	Y

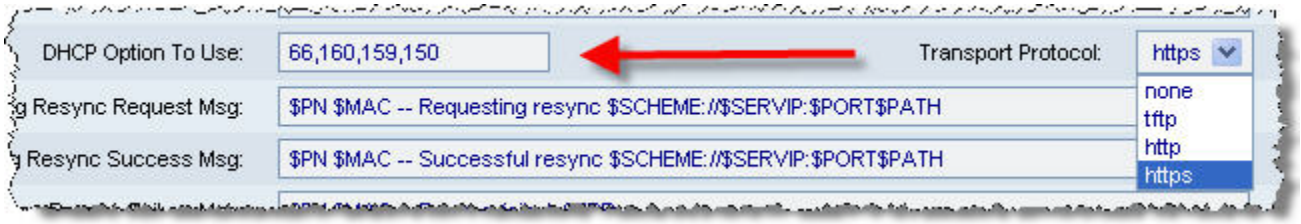
Support Time Zone Configuration via DHCP Option:

- 2—Time offset in seconds from UTC
- 42—NTP server addresses

DHCP: Options 150, 159, 160 [Feature 17/22]

SIP Mode?	SPCP Mode?	SPA525G Support?	SPA509– 2G Support?	SPA501G Support?
Y	?	Y	Y	Y

- Configurable DHCP Options Supporting Bootstrap Provisioning:



- DHCP Options:
  - 66—TFTP Server IP address / Name [RFC2132]
  - 150—Cisco-TFTP
  - 159—Host-code
  - 160—Host-code

DHCP: Options 150, 159, 160 [Feature 17/22]

SIP Mode?	SPCP Mode?	SPA525G Support?	SPA509– 2G Support?	SPA501G Support?
Y	?	Y	Y	Y

dhcpd.conf partial contents:

```
# define the "type" of the options
# define string and IP address types
option cisco-tftp code 150 = ip-address;
option my159host code 159 = string;
option my160host code 160 = string;
# use defined types in subnet
subnet 192.168.2.0 netmask 255.255.255.0 {
...
...
option cisco-tftp code 192.168.2.245;
option my159host "host.domain.com";
option my160host "host2.domain.com";
...
...
}
```

DHCP: Options 150, 159, 160 [Feature 17/22]

SIP Mode?	SPCP Mode?	SPA525G Support?	SPA509– 2G Support?	SPA501G Support?
Y	?	Y	Y	Y

- Two new configurable parameters:

DHCP_Option_To_Use & Transport_Protocol

- Used when Profile_Rule contains only a file path ("/..."), with no server or transport protocol specified. The DHCP server is queried for the options listed in DHCP_Options_To_Use (a comma separated list in the range 66,128-254, with default value "66,160,159,150"). The responses (if any) must contain server names or IP addresses, optionally preceded by a transport protocol, optionally followed by an explicit port number, and further optionally followed by a full path, all using URL-like syntax.

DHCP: Options 150, 159, 160 [Feature 17/22]

SIP Mode?	SPCP Mode?	SPA525G Support?	SPA509– 2G Support?	SPA501G Support?
Y	?	Y	Y	Y

- Examples:
  - 171.17.12.5
  - 171.17.12.5/filepath.cfg
  - 171.17.12.5:80
  - prov.server.com
  - prov.server.com:8080
  - prov.server.com:8080/another/path.cfg
  - tftp://prov.server.com:2100
  - http://prov.server.com
  - https://prov.server.com/a/complete/url.xml
- Recognized schema are: tftp,http,& https.

DHCP: Options 150, 159, 160 [Feature 17/22]

SIP Mode?	SPCP Mode?	SPA525G Support?	SPA509– 2G Support?	SPA501G Support?
Y	?	Y	Y	Y

- The values returned by the DHCP server are used to locate an initial profile to load into the SPA942.
- The values are tested in the order specified by DHCP_Option_To_Use.
- If a file path is missing, the path specified in Profile_Rule is used instead.
- If a schema is missing, the one specified in Transport_Protocol is used instead (except that if the option under consideration is 66, then TFTP is used instead of the setting under Transport_Protocol)
- If DHCP_Option_To_Use is blank, option 66 is assumed.
- Transport_Protocol is a selection parameter with possible values none,tftp,http,https. Default value is https.

DHCP: Options 150, 159, 160 [Feature 17/22]

SIP Mode?	SPCP Mode?	SPA525G Support?	SPA509– 2G Support?	SPA501G Support?
Y	?	Y	Y	Y

- The phone attempts the generated URLs in sequence, until one succeeds or all fail.
- The intention is that a server on the network will respond to at least one of the requests, and will reconfigure the Profile_Rule for all subsequent resyncs.
- If a file path is not supplied, then the file path in Profile_Rule is tried first. If it fails, then the file path '/Cisco/$PN/$MA.cfg‘ is tried as an alternative.
- Here '$PN' expands to ‘SPA504G', and '$MA' expands to the Ethernet MAC address of the phone, in lowercase hexadecimal.
- Note that the DHCP server is expected to supply string values for the configured list of options, except for option 150, which is expected to contain an octet encoded IP address, for compatibility with current usage.

Verisign Certificate Authentication [Feature 18/22]

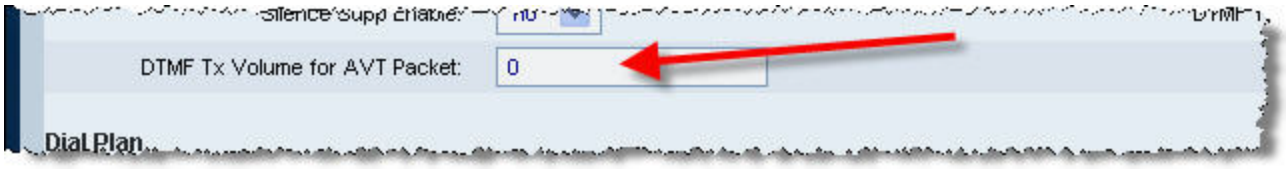
SIP Mode?	SPCP Mode?	SPA525G Support?	SPA509– 2G Support?	SPA501G Support?
Y	?	Y	Y	Y

- Verisign Certificates for SSL Server Authentication (Provisioning)
- Support authentication of a certificate that is signed by Verisign Root Authority
- This SPA942 image can authenticate a provisioning server whose certificate chain is rooted in the Verisign Class 3 Public Certificate Authority with serial number: 70:ba:e4:1d:10:d9:29:34:b6:38:ca:7b:03:cc:ba:bf
- Also, this release carries the Verisign intermediate certificate Verisign Class 3 Secure Server CA with serial number: 75:33:7d:9a:b0:e1:23:3b:ae:2d:7d:e4:46:91:62:d4

DTMF Volume Adjustment [Feature 19/22]

SIP Mode?	SPCP Mode?	SPA525G Support?	SPA509– 2G Support?	SPA501G Support?
Y	?	Y	Y	Y

- Support AVT Volume and with Web GUI and remote provisioning.
- Audio/Video Transport (AVT) Dual-Tone Multifrequency (DTMF) Volume adjustment with web-ui and remote provisioning
- `DTMF_Tx_Volume_for_AVT_Packet`
- Ext N tab > Audio Configuration > DTMF Tx Volume for AVT Packet



More Soft key Removed [Feature 20/22]

SIP Mode?	SPCP Mode?	SPA525G Support?	SPA509– 2G Support?	SPA501G Support?
Y	N	Y	Y	N

Use the navigational left/right key to move to the next sets of soft key options. Previously the 4th key was a more soft key

Cancel Soft key During Conf. Init. [Feature 21/22]

SIP Mode?	SPCP Mode?	SPA525G Support?	SPA509– 2G Support?	SPA501G Support?
Y	Y	Y	Y	N

When a user tried to conference in another user. They can choose to end the call with the user after x amount of rings or the call is forwarded to the voice mail

Speed Dial: Press & Hold Idle Key [Feature 22/22]

SIP Mode?	SPCP Mode?	SPA525G Support?	SPA509– 2G Support?	SPA501G Support?
Y	N	Y	Y	?

Press and hold an unused line key for 3 seconds to add a speed dial

Camera Support [Feature 23/22] [added 7.4.3 release]

SIP Mode?	SPCP Mode?	SPA525G Support?	SPA509– 2G Support?	SPA501G Support?
Y	Y	Y	N	N

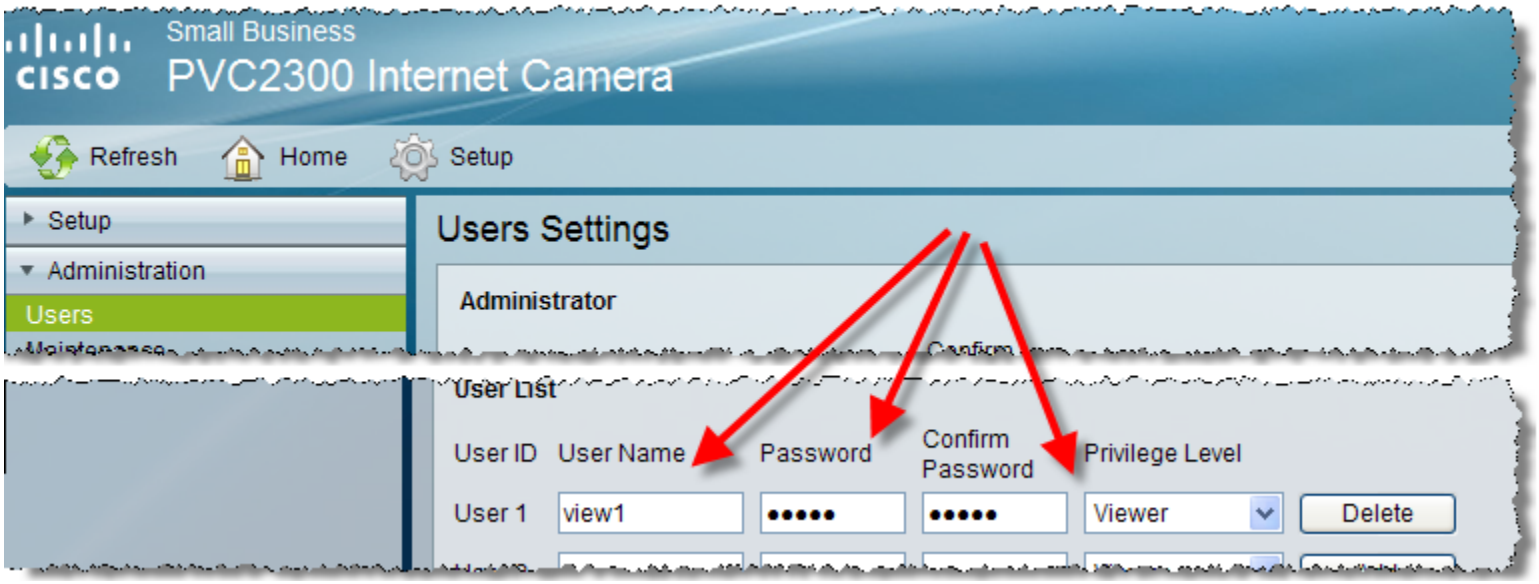
- SPA525G Release 7.4.3 Supports Cisco PVC2300 and Cisco WVC2300 cameras
- Camera firmware must be at least 1.1.1.4

Camera Support [Feature 23/22] [added 7.4.3 release]

Configure for SIP mode as follows:

[Detailed SIP & SPCP configuration instructions at: https://www.myciscocommunity.com/docs/DOC-11631]

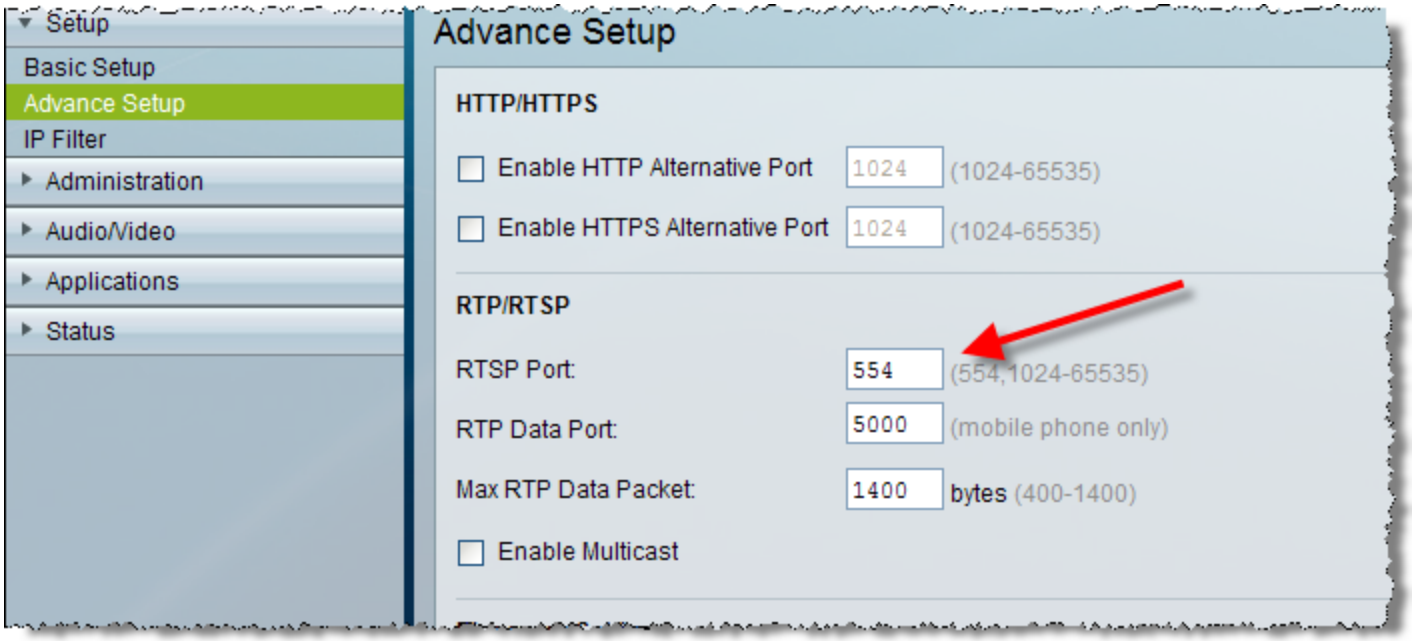
1. Factory default the camera
2. Verify that camera has at least version 1.1.1.4 firmware: Administration > Firmware
3. Define a camera user and password: Administration > Users:



3.a. Click Save

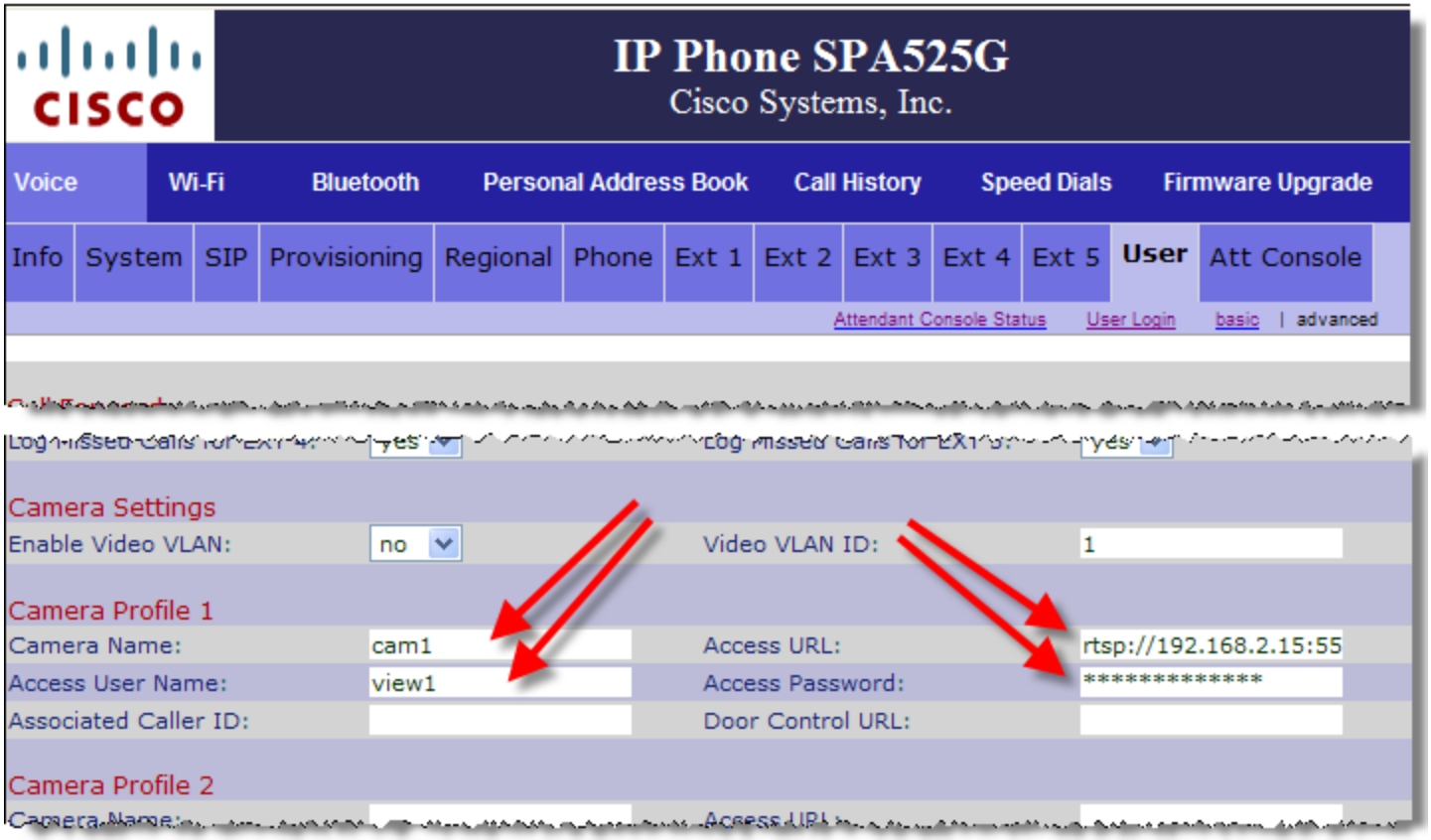
Camera Support [Feature 23/22] [added 7.4.3 release]

4. Verify RTSP port number: Setup > Advance Setup > RTSP Port:



Camera Support [Feature 23/22] [added 7.4.3 release]

5. Configure SPA525G for monitoring: http://IP_SPA525G/admin/advanced > User tab > Camera Profile *N*:



Access URL: **`rtsp://`***IP_of_Camera:RTSP_Port*`/img/jpgvideo.sav`**

For example if camera is at 192.168.2.15 and the default RTSP port of 554 from step 4 is used, the Access URL will be: **`rtsp://192.168.2.15:554/img/jpgvideo.sav`**

6. Click Submit All Changes

Camera Support [Feature 23/22] [added 7.4.3 release]

Monitoring on the SPA525G

7. Press the phone's Setup button to monitor the RTSP stream from the camera
8. Press 4 to select Video Monitoring
9. Select the camera of interest
10. Press the Monitor soft button

Troubleshooting:

- Phone displays: **Camera not RSTP**
  Verify that SPA525G Web-UI User tab > Camera Profile > Access URL:
  `rtsp://`*IP_of_Camera:RTSP_Port*`/img/jpgvideo.sav`

  Example: **`rtsp://192.168.2.15:554/img/jpgvideo.sav`**
- Phone displays: **Camera access URL is invalid**
  Verify that SPA525G Web-UI User tab > Camera Profile > Access URL:
  `rtsp://`*IP_of_Camera:RTSP_Port*`/img/jpgvideo.sav`

  Example: **`rtsp://192.168.2.15:554/img/jpgvideo.sav`**

Greater detail and SPCP-mode Configuration at: https://www.myciscocommunity.com/docs/DOC-11631


CISCO

SSL VPN Method – VAR & End User Experience

Deployment Steps – Configuring Headend

- VAR sets up UC500 & SR520 (if required) using CCA as normal
- Configure UC500 or SR520 for SSL VPN using CCA

  IP Addresses and certificates of VPN Concentrators

  Authorization Method

  Enable VPN Client

Deployment Steps – Staging the Phone

- Power up SPA500 Series phone on premise
- SPA500 Series phone will initialize and self-provision itself to UC500 with an extension
- User will go to CCA and select the phone as a remote worker's phone
- CCA will automatically generate a new configuration file with the following parameter populated:

  Enable VPN *YES*

  TFTP Server *UC500 Voice VLAN IP address*

  SSL VPN Server *UC500 or SR520 WAN IP address*

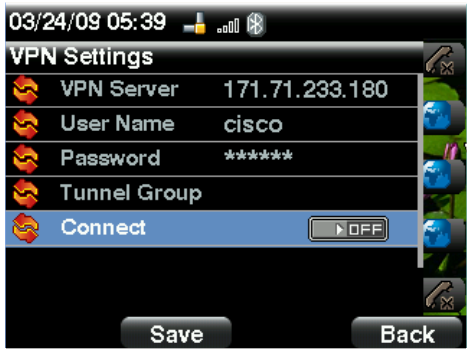
  User Name *xxx*

  Password *xxx*

  Auto Connect *Disabled*
- CCA will push this new configuration to SPA500 Phone on premise
- SPA500 phone can now be shipped to or taken by remote worker to remote location

End User Experience – 1st Time Connect

- User connects SPA500 phone to on remote network with access to internet
- SPA500 phone will initialize and get an IP Address from the home network
- User will need to manually select the VPN Connect button to initiate the SSL VPN Session (since Auto Connect is set to Off)
- Phone will setup SSL VPN & register with headend UC500 to obtain it's respective extension
- **Note :** User has the option to set Auto-Connect to Yes under the VPN Setting of the phone GUI. IF Auto-Connect is set to Yes. Phone will automatically connect to SSL VPN Server upon every reboot or restart.



End User Experience – Manual Authentication

Prerequisites:

SPA500 phone is not staged at HQ, sent to remote site directly

UC500 & SR520 are setup for SSL VPN with correct end user credentials

UC500 has remote phone configuration added

- End user plugs SPA500 phone into router at home
- SPA500 phone will initialize and get an IP Address from the home network
- User will need to manually select the VPN settings and enter below info per what the installer sent:

Enable VPN *YES*

TFTP Server *UC500 Voice VLAN IP address*

SSL VPN Server *UC500 or SR520 WAN IP address*

User Name *xxx*

Password *xxx*

Auto Connect *Enabled*

- SPA500 phone will save config & initialize SSL VPN per above settings.