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Configuring Cisco Unified Communications Manager with Comrex STAC-VIP

CONTENTS

INTRODUCTION

This guide assumes you are starting with a clean install of Cisco UCM (refer to [1], [2] or [3] for installation details) and a STAC-VIP in its factory-default state. STAC-VIP should be running firmware version 1.1p4 or newer and both CUCM and STAC-VIP Mainframe should have static IP addresses assigned. In this guide we set up a basic lab test scenario which allows calls to be made from hardware IP phones or softphones to STAC-VIP via CUCM. CUCM is a very flexible and complex product; you are encouraged to refer to [4], [5] or [6] and / or your Cisco support contact for assistance in developing the configuration which best suits your requirements.

The officially-supported browsers and operating systems for the CUCM 10 web control panel are as follows:

Internet Explorer 8, Internet Explorer 9 (Windows XP, Windows Vista, Windows 7)

Firefox 4.x, Firefox 10.x (Windows XP, Windows Vista, Windows 7, OSX)

Safari 5.x (OSX)

PRELIMINARY STEPS

Enable All Services on CUCM

a) Browse to the IP address of your CUCM installation and click on Cisco Unified Communications Manager; ignore any errors caused by the server's certificate not being trusted by your browser (in Internet Explorer, click 'Continue to this website (not recommended).').
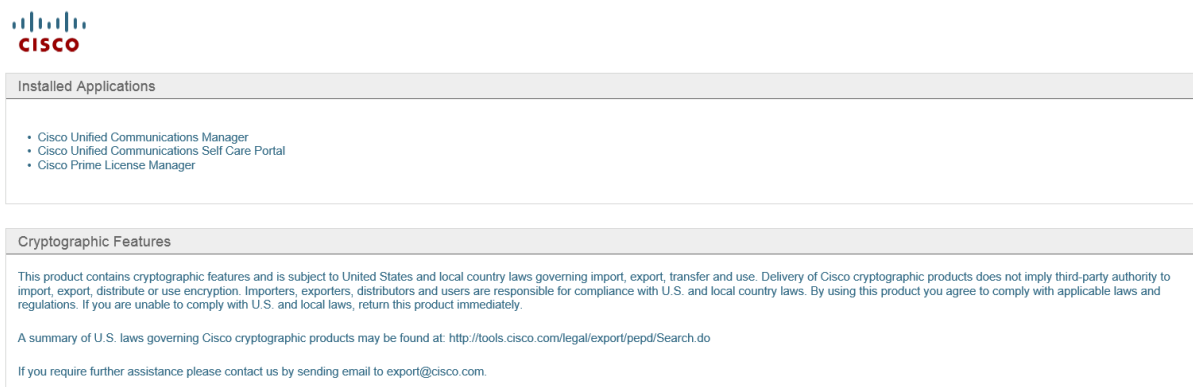
b) In the Navigation drop-down at the top-right of the screen, select Cisco Unified Serviceability and click Go. Then enter the credentials set up when installing the server in the Username and Password fields and click Login.
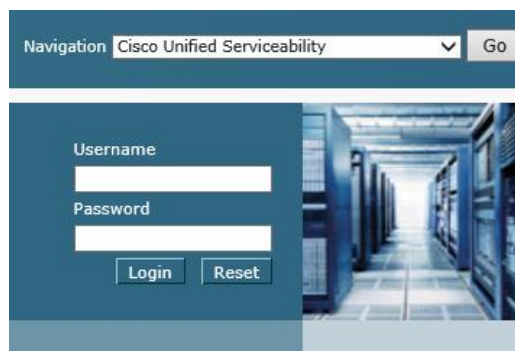
c) In the top menu, click Tools, Service Activation. If asked to select a server, choose the CUCM server you wish to configure from the drop-down menu and click Go.
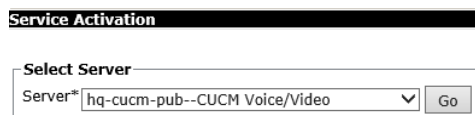
d) Check the Check All Services box, click Save and OK in the warning dialog. Wait a few minutes for the 'Loading, please wait.' message to disappear and the page to refresh, at which point all services should show an Activation Status of Activated.

e) In the Navigation drop-down at the top-right of the screen, select Cisco Unified CM Administration and click Go.

CONNECTING STAC-VIP TO CUCM

Add a Phone Security Profile for STAC-VIP

a) In the top menu, click System, Security, Phone Security Profile. In the 'Find Phone Security Profile where' filter, select Name, begins with, enter 'Third-party' (without quotes) in the empty field and click Find.

b) Click the Copy icon next to Third-party SIP Device Advanced - Standard SIP Non-Secure Profile.

c) Enter the following information on the Phone Security Profile Configuration screen and click Save. You should see Status: Add successful.

Name: Third-party SIP Device Advanced - Digest Authentication
Description: Third-party SIP Device (Advanced) - Digest Authentication
Enable Digest Authentication: Checked

Add an End User for STAC-VIP

a) In the top menu, click User Management, End User, then click Add New.

b) Enter the following information on the End User Configuration screen and click Save. You should see Status: Add successful.

User ID: stacvip
Password: P@ssw0rdOfYourChoice [or any other password of your choice]
Confirm Password: P@ssw0rdOfYourChoice [must match Password]
Last name: STAC-VIP
Digest Credentials: P@ssw0rdOfYourChoice [or any other password of your choice]
Confirm Digest Credentials: P@ssw0rdOfYourChoice [must match Digest Credentials]

Add a Phone for STAC-VIP

a) In the top menu, click Device, Phone, then click Add New.

b) In the Phone Type drop-down, select Third-party SIP Device (Advanced) and click Next.

c) Enter the following information on the Phone Configuration screen and click Save, then OK in the dialog prompting you to apply the configuration. You should see Status: Add successful.

MAC Address: This field is actually ignored in our setup and can be any unique 12-digit hex number (0-9, A-F) without punctuation; the actual MAC address of your STAC-VIP mainframe can be determined by running the Comrex Device Manager application [7], clicking Scan for Devices and noting the entry in the MAC Address column alongside STAC-VIP Mainframe

Description: STAC-VIP

Device Pool: Default

Phone Button Template: Third-party SIP Device (Advanced)

Owner User ID: stacvip *[CUCM 9.1 and above only]*

Device Security Profile: Third-party SIP Device Advanced - Digest Authentication

SIP Profile: Standard SIP Profile

Digest User: stacvip

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Phone Configuration

[Save icon] Save

Status

(i) Status: Ready

Phone Type

Product Type: Third-party SIP Device (Advanced)
Device Protocol: SIP

Device Information

⚠ Device is not trusted

Field	Value
MAC Address*	0123456789AB
Description	STAC-VIP
Device Pool*	Default — View Details
Common Device Configuration	< None > — View Details
Phone Button Template*	Third-party SIP Device (Advanced)
Common Phone Profile*	Standard Common Phone Profile — View Details
Calling Search Space	< None >
AAR Calling Search Space	< None >
Media Resource Group List	< None >
Location*	Hub_None
AAR Group	< None >
Device Mobility Mode*	Default — View Current Device Mobility Settings
Owner	⦿ User ○ Anonymous (Public/Shared Space)
Owner User ID*	stacvip
Use Trusted Relay Point*	Default
Always Use Prime Line*	Default
Always Use Prime Line for Voice Message*	Default
Geolocation	< None >

☑ Retry Video Call as Audio

☐ Ignore Presentation Indicators (internal calls only)

☑ Logged Into Hunt Group

☐ Remote Device

Number Presentation Transformation

Caller ID For Calls From This Phone

Calling Party Transformation CSS < None >

☑ Use Device Pool Calling Party Transformation CSS (Caller ID For Calls From This Phone)

Remote Number

Calling Party Transformation CSS < None >

☑ Use Device Pool Calling Party Transformation CSS (Device Mobility Related Information)

Protocol Specific Information

Field	Value
BLF Presence Group*	Standard Presence group
MTP Preferred Originating Codec*	711ulaw
Device Security Profile*	Third-party SIP Device Advanced - Digest Authenti
Rerouting Calling Search Space	< None >
SUBSCRIBE Calling Search Space	< None >
SIP Profile*	Standard SIP Profile — View Details
Digest User	stacvip

☐ Media Termination Point Required

☐ Unattended Port

☐ Require DTMF Reception

☐ Allow Presentation Sharing using BFCP

☐ Allow iX Applicable Media

MLPP and Confidential Access Level Information

Field	Value
MLPP Domain	< None >
Confidential Access Mode	< None >
Confidential Access Level	< None >

[Save]

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Add a Directory Number (DN) for STAC-VIP

a) In the Association Information panel on the left of the screen, click Line [1] - Add a new DN.

b) Enter the following information on the Directory Number Configuration screen and click Save. You should see a new Associated Devices list appear with a single entry representing the STAC-VIP which you have just added.

Directory Number: 100 [or any other convenient unused extension number]
Description: STAC-VIP
Maximum Number of Calls: 16
Busy Trigger: 16

c) Finally, click Apply Config and OK in the popup window which appears.

Register STAC-VIP to CUCM

a) It should now be possible to register your STAC-VIP to CUCM. Browse to the IP address of your STAC-VIP Mainframe, log in, click Configure and log in again. Click Line Configuration, VoIP Providers, Add Provider, SIP Provider.

b) On the SIP Provider screen, click each of the following settings, enter the appropriate value and click Save Setting each time.

Name: CUCM
Account username: 100 [must match Directory Number associated with STAC-VIP Phone on CUCM above]
Account password: P@ssw0rdOfYourChoice [must match Digest Credentials associated with STAC-VIP End User on CUCM above]
Server/Realm: <IP address of CUCM installation>

c) Click Show Advanced, click each of the following settings, enter the appropriate value and click Save Setting each time. **Note that the SIP Port setting is assigned automatically and should not be changed from its default value.**

Auth Username: stacvip
Codec Priority: No ISAC or Opus [G.722 > G.711 > G.729]
INVITE SDP Compatibility: On

CUCM

Apply Changes   Delete

SIP provider allowing STAC VIP to manage one or more VoIP calls simultaneously.

> Initializing
> Changes to this provider must be applied to take effect.

General Settings

Name	CUCM
Network Port Binding	Primary
Color Code	Blue
SIP Provider	Generic SIP Pr...

Account Information

Account username	100
Account password	*****
Auth Username	stacvip

Codec Settings

Codec Priority	No ISAC or Op...
Codec Fairness	Fair Negotiation

SIP Settings

Outgoing Caller ID Name	
Outgoing Caller ID Number	
Provider Binding Port	5081
Server/Realm	10.10.20.1
Proxy Address	
Outbound Proxy Address	
Registration Proxy Address	
From Username	
From Domain	
Expire time	3600 seconds
Retry time	60 seconds
Register	Yes
Register Transport	UDP
INVITE SDP Compatibility	On
INVITE Contact Compatibility	Off

Extra Settings

Outgoing Enabled	Yes
Transfer Enabled	No
Transfer Domain	
Destination Match	

▤ Hide Advanced

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d) Click Apply Changes then Back, or Back, then Restart (Apply Changes) and OK in the confirmation dialog. You should see the status of the newly-added CUCM provider change to Registered.
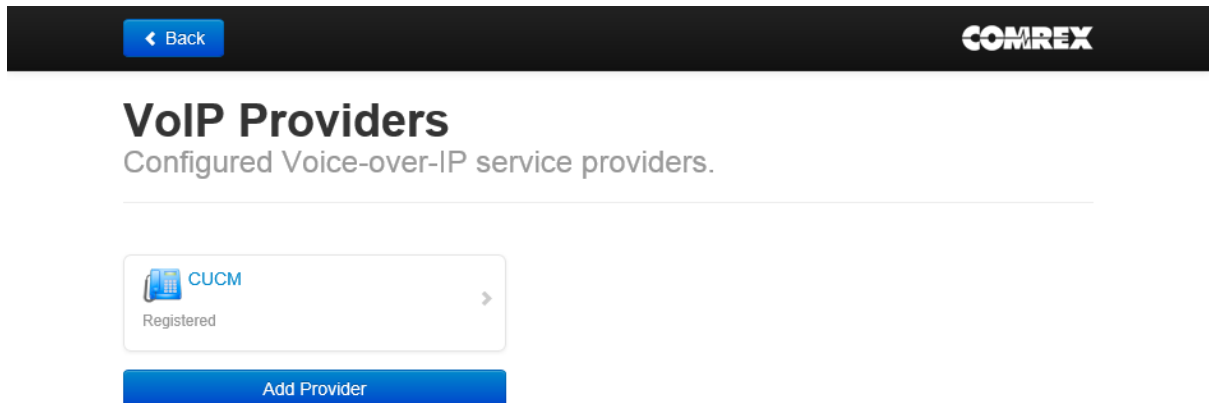
e) Click Back, then Line Assignments. Click each line which you wish to be associated with the CUCM Directory Number (100 in the example above), select CUCM from the Provider assignment drop-down and click Save Setting.
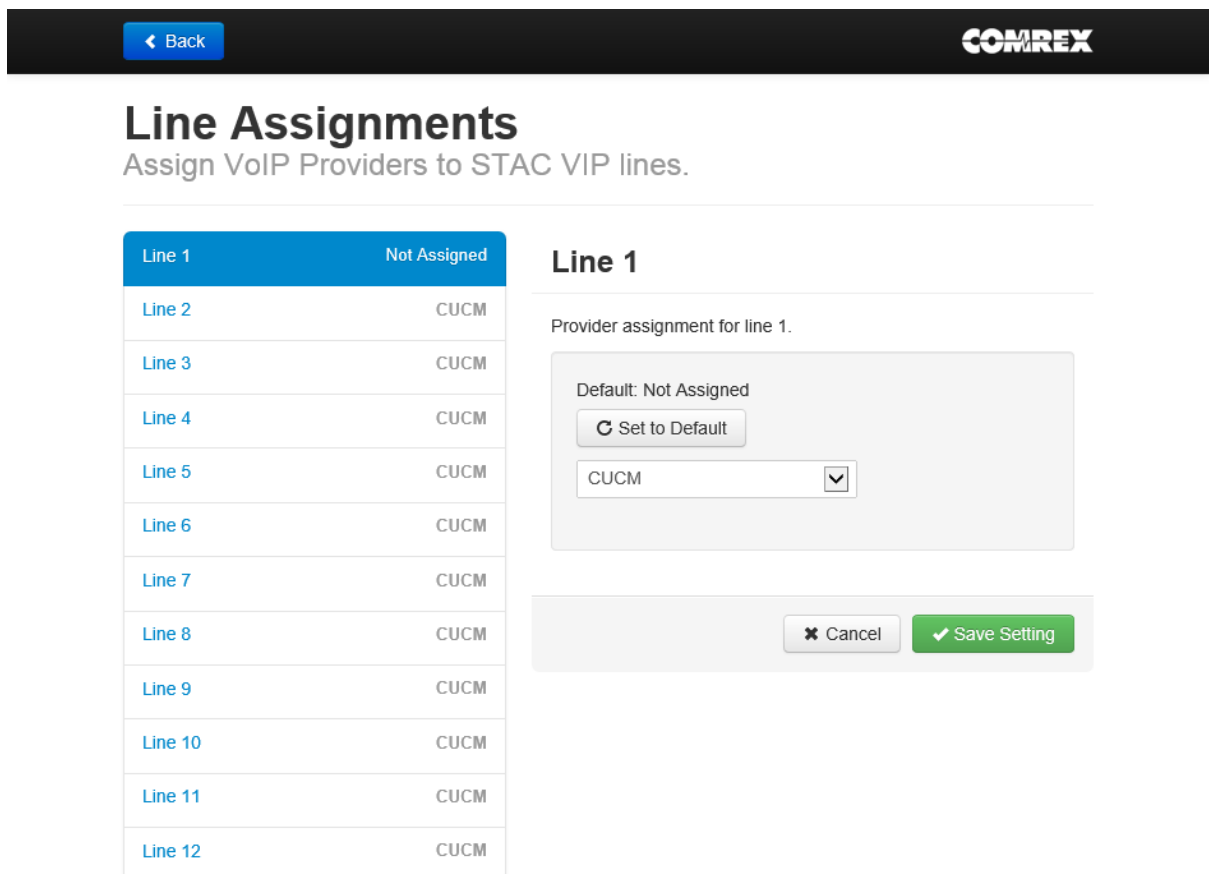
f) The association of STAC-VIP to CUCM is now complete. If you already have software or hardware phones registered to CUCM, you should be able to call into STAC-VIP by dialling the Directory Number associated with it (100 in the example above). If not, continue with this guide to add a softphone account for testing.

CONNECTING A SOFTPHONE TO CUCM

Add a Phone Security Profile for the Softphone

a) Return to the CUCM administration page by entering the IP address of the CUCM installation, clicking Cisco Unified Communications Manager, ensuring Cisco Unified CM Administration is selected in the Navigation drop-down at the top-right of the screen (if not, select it and click Go) and logging if necessary.

b) In the top menu, click System, Security, Phone Security Profile. In the 'Find Phone Security Profile where' filter, select Name, begins with, enter 'Third-party' (without quotes) in the empty field and click Find.

c) Click the Copy icon next to Third-party SIP Device Basic - Standard SIP Non-Secure Profile.

d) Enter the following information on the Phone Security Profile Configuration screen and click Save. You should see Status: Add successful.

Name: Third-party SIP Device Basic - Digest Authentication
Description: Third-party SIP Device (Basic) - Digest Authentication
Enable Digest Authentication: Checked

Add an End User for the Softphone

a)   In the top menu, click User Management, End User, then click Add New.

b)   Enter the following information on the End User Configuration screen and click Save. You should see Status: Add successful.

User ID: softphone1
Password: S3cr3tW0rd [or any other password of your choice]
Confirm Password: S3cr3tW0rd [must match Password]
Last name: Softphone 1
Digest Credentials: S3cr3tW0rd [or any other password of your choice]
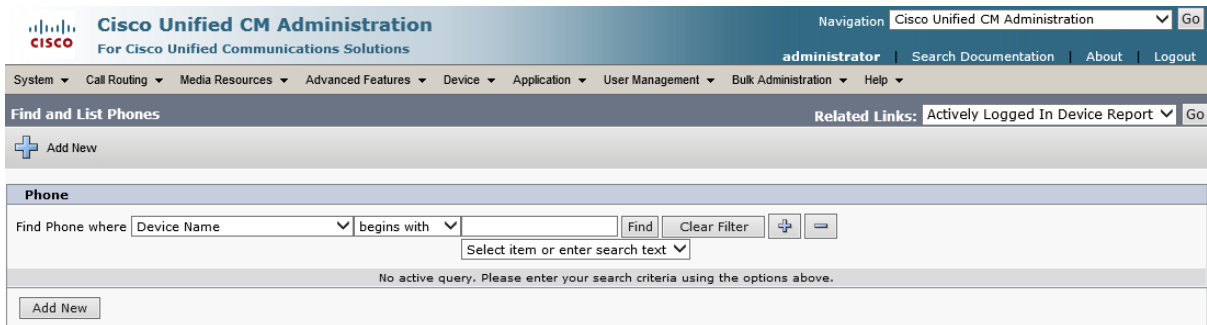**Confirm Digest Credentials:** S3cr3tW0rd [must match Digest Credentials]

Add a Phone for the Softphone

a) In the top menu, click Device, Phone, then click Add New.

b) In the Phone Type drop-down, select Third-party SIP Device (Basic) and click Next.

c) Enter the following information on the Phone Configuration screen and click Save, then OK in the dialog prompting you to apply the configuration. You should see Status: Add successful.

MAC Address: This field is actually ignored in our setup and can be any unique 12-digit hex number (0-9, A-F) without punctuation; the actual MAC address of the computer on which you will run the softphone can be determined by pressing Windows+R, typing cmd <enter>, then typing ipconfig /all <enter> and noting the Physical Address for the network connection currently in use

Description: Softphone 1

Device Pool: Default

Phone Button Template: Third-party SIP Device (Basic)

Owner User ID: softphone1 *[CUCM 9.1 and above only]*

Device Security Profile: Third-party SIP Device Basic - Digest Authentication

SIP Profile: Standard SIP Profile

Digest User: softphone1

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Phone Configuration

💾 Save

Status
ℹ️ Status: Ready

Phone Type
Product Type:　Third-party SIP Device (Basic)
Device Protocol:　SIP

Device Information
⚠️ Device is not trusted

MAC Address*	FEDCBA987654	
Description	Softphone 1	
Device Pool*	Default	View Details
Common Device Configuration	< None >	View Details
Phone Button Template*	Third-party SIP Device (Basic)	
Common Phone Profile*	Standard Common Phone Profile	View Details
Calling Search Space	< None >	
AAR Calling Search Space	< None >	
Media Resource Group List	< None >	
Location*	Hub_None	
AAR Group	< None >	
Device Mobility Mode*	Default	View Current Device Mobility Settings
Owner	⦿ User ◯ Anonymous (Public/Shared Space)	
Owner User ID*	softphone1	
Use Trusted Relay Point*	Default	
Always Use Prime Line*	Default	
Always Use Prime Line for Voice Message*	Default	
Geolocation	< None >	

☐ Ignore Presentation Indicators (internal calls only)
☑ Logged Into Hunt Group
☐ Remote Device

Number Presentation Transformation

Caller ID For Calls From This Phone
Calling Party Transformation CSS　< None >
☑ Use Device Pool Calling Party Transformation CSS (Caller ID For Calls From This Phone)

Remote Number
Calling Party Transformation CSS　< None >
☑ Use Device Pool Calling Party Transformation CSS (Device Mobility Related Information)

Protocol Specific Information

BLF Presence Group*	Standard Presence group
MTP Preferred Originating Codec*	711ulaw
Device Security Profile*	Third-party SIP Device Basic - Digest Authenticatic
Rerouting Calling Search Space	< None >
SUBSCRIBE Calling Search Space	< None >
SIP Profile*	Standard SIP Profile
Digest User	softphone1

View Details

☐ Media Termination Point Required
☐ Unattended Port
☐ Require DTMF Reception

MLPP and Confidential Access Level Information

MLPP Domain	< None >
Confidential Access Mode	< None >
Confidential Access Level	< None >

Save

Add a Directory Number (DN) for the Softphone

a) In the Association Information panel on the left of the screen, click Line [1] - Add a new DN.
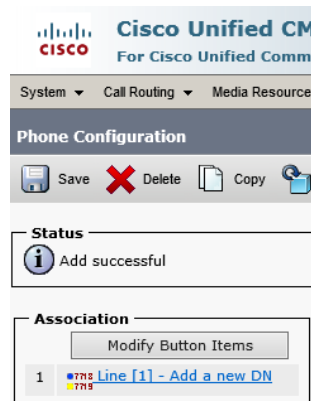
b) Enter the following information on the Directory Number Configuration screen and click Save. You should see a new Associated Devices list appear with a single entry representing the softphone which you have just added.

Directory Number: 101 [or any other convenient unused extension number]
Description: Softphone 1

c) Finally, click Apply Config and OK in the popup window which appears.

Register the Softphone to CUCM

a) It should now be possible to register a softphone to CUCM. For this example we will use the free PhonerLite application. Download the application from http://www.phoner.de/PhonerLite.zip, extract the contents of the zip file and run PhonerLite.exe (no installation is required). A wizard will appear prompting you to enter the details of your SIP server. Ensure manual configuration is selected in the list on the left and enter the following information, clicking the green 'next' arrow to confirm each page and the green tick to finish. In the status bar at the bottom of the

PhonerLite window you should see a green light and a message that it has registered to the CUCM server.
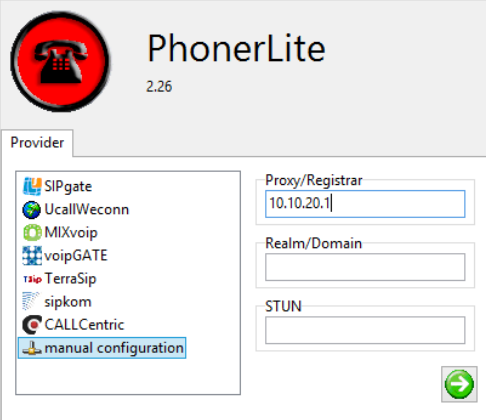
Proxy/Registrar: <IP address of CUCM installation>
User name: 101 [must match Directory Number associated with softphone Phone on CUCM above]
Authentication name: softphone1
Password: S3cr3tW0rd [must match Digest Credentials associated with softphone End User on CUCM above]
'with the profile name': CUCM

b) Click the Configuration tab, then the Codecs tab, scroll down in the list of codecs to find G.722 WB, select it and use the up arrow to move it to the top of the list. Then uncheck all codecs in the list except G.722 WB, G.711 A-Law and G.711 u-Law. Click Save.
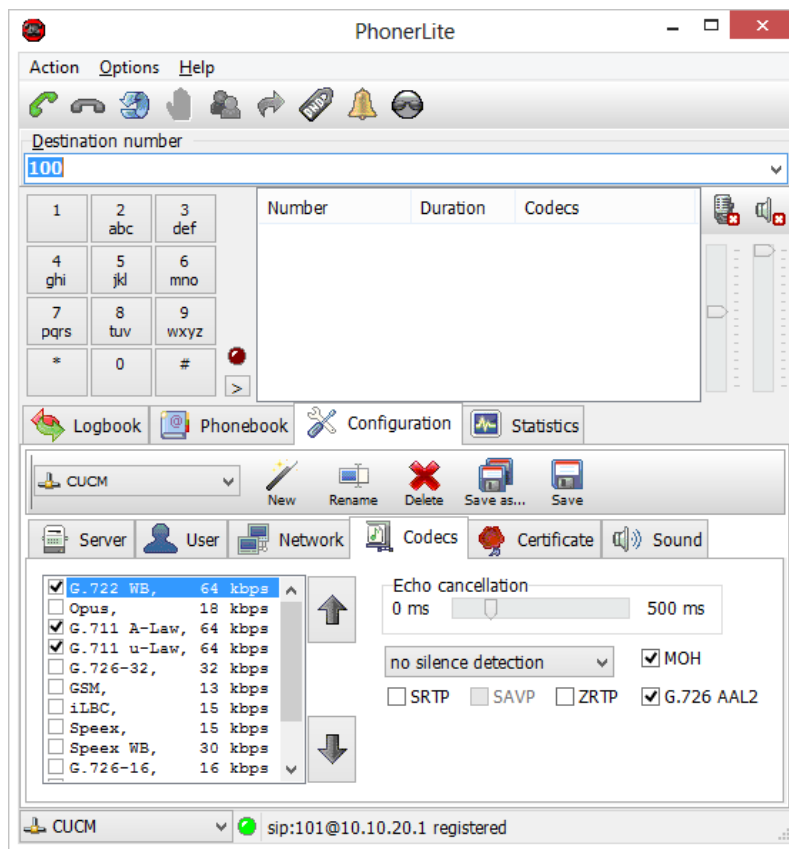
c) In the Destination number field, enter 100 (or whichever Directory Number you associated with STAC-VIP on CUCM above) and press Enter. STAC-VIP should indicate an incoming call on the first of the lines associated with CUCM. Answer the call by putting it on air to confirm that everything is working as expected.
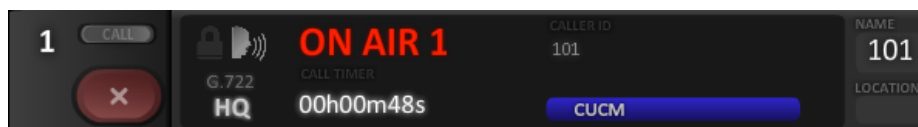
d) To test the conferencing of multiple calls on STAC-VIP via CUCM, repeat the following steps using a different PC as the softphone client:

    Add an End User for the Softphone (using a different User ID and Last name)

    Add a Phone for the Softphone (using a different MAC Address, Description, Owner User ID *[CUCM 9.1 and above only]* and Digest User)

    Add a Directory Number (DN) for the Softphone (using a different Directory Number and Description)

    Register the Softphone to CUCM (using the different User name and Authentication name)

NOTES

- Each Third-party SIP Device configured in CUCM requires a different Digest User, so a different End User must be set up for each, as we have done above.

- The crucial difference between CUCM's Basic and Advanced Third-party SIP Device is that the former allows a maximum of two concurrent calls, while the latter allows up to 16. It is for this reason that the Advanced version has to be used for STAC-VIP. Note that the Basic Device consumes three Device Licence Units and the Advanced Device consumes six Device Licence Units.

- If you wish to register to the server a SIP device which does not provide support for separate username and authentication user, the User ID of the End User (which is selected as the Digest User in the Phone Configuration screen) can be made the same as the Directory Number assigned to the device.

- If you wish to associate a caller ID name with the STAC-VIP or a softphone to be displayed to the callee, you should configure this on CUCM. In the top menu, click Device, Phone. In the 'Find Phone where' filter, select Description, begins with, enter the description set on the STAC-VIP / relevant softphone in the empty field and click Find. Click the link in the Device Name(Line) column, then in the Association Information panel on the left of the screen, click Line [1] - ... . Enter the name in the Display (Caller ID) *[CUCM 10.5]* or Display (Internal Caller ID) *[CUCM 9.1 and below]* field on the Directory Number Configuration screen in the 'Line 1 on Device SEP...' section. Click Save, then Apply Config and OK in the popup window which appears.

- *[CUCM 9.1 and below only]*
If you wish to associate a caller ID number with the STAC-VIP to be displayed to the callee, you should configure this on the STAC-VIP. Browse to the IP address of your STAC-VIP Mainframe, log in, click Configure and log in again. Click Line Configuration, VoIP Providers, CUCM, Show Advanced, Outgoing Caller ID Number, enter the number and click Save Setting. Note that the Outgoing Caller ID Name setting does not apply for registrations to CUCM (it is overridden by the Display (Internal Caller ID) setting in CUCM; see above). Click Back, then Restart (Apply Changes) and OK in the confirmation dialog.

- To associate different Directory Numbers with different lines on the STAC-VIP, repeat the following sections:

Add an End User for STAC-VIP (using a different User ID and Last name)
Add a Phone for STAC-VIP (using a different MAC Address, Description, Owner User ID *[CUCM 9.1 and above only]* and Digest User)
Add a Directory Number (DN) for STAC-VIP (using a different Directory Number and Description)
Register STAC-VIP to CUCM (using a different Name, the different Account username and Auth Username and different lines for the new Provider in Line Assignments)

- We have configured CUCM to authenticate the SIP devices above (STAC-VIP and softphones) using a username and password. CUCM's default behaviour, however, is not to check the password, since Cisco proprietary IP phones send their MAC address when registering and this is validated by the server. If security is of no concern, when configuring STAC-VIP on CUCM, you can omit the creation of a secure SIP profile (the entirety of the Add a Phone Security Profile for STAC-VIP section), omit Digest Credentials and Confirm Digest Credentials in the Add an End User for STAC-VIP section and use Device Security Profile: Third-party SIP Device Advanced - Standard SIP Non-Secure Profile in the Add a Phone for STAC-VIP section. Any value can then be used for the STAC-VIP Account password setting in the Register STAC-VIP to CUCM section (but note that STAC-VIP will fail to register unless some value is entered).
Similarly, when configuring the softphone on CUCM, you can omit the creation of a secure SIP profile (the entirety of the Add a Phone Security Profile for the Softphone section), omit Digest Credentials and Confirm Digest Credentials in the Add an End User for the Softphone section and use Device Security Profile: Third-party SIP Device Basic - Standard SIP Non-Secure Profile in the Add a Phone for the Softphone section. Any value can then be used for the PhonerLite Password setting in the Register the Softphone to CUCM section (but note that PhonerLite will fail to register unless some value is entered).

- Occasionally, after clicking Apply Config and OK on the Directory Number Configuration screen for either STAC-VIP or a softphone, the device whose configuration has been changed will not be able to make a call via CUCM - the call will proceed to the SIP 'ringing' stage and then be cleared around half a second later by the server, which reports the problem as 'Temporary failure'. The solution is simply to wait a couple of minutes and retry.

REFERENCES

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