TELUS IP Trunking: Connecting Cisco Unified Communications Manager 8.6 via the Cisco Unified Border Element 10.0.1 [15.4(2)T] (Enterprise Edition) using SIP

December 2014

Table of Contents

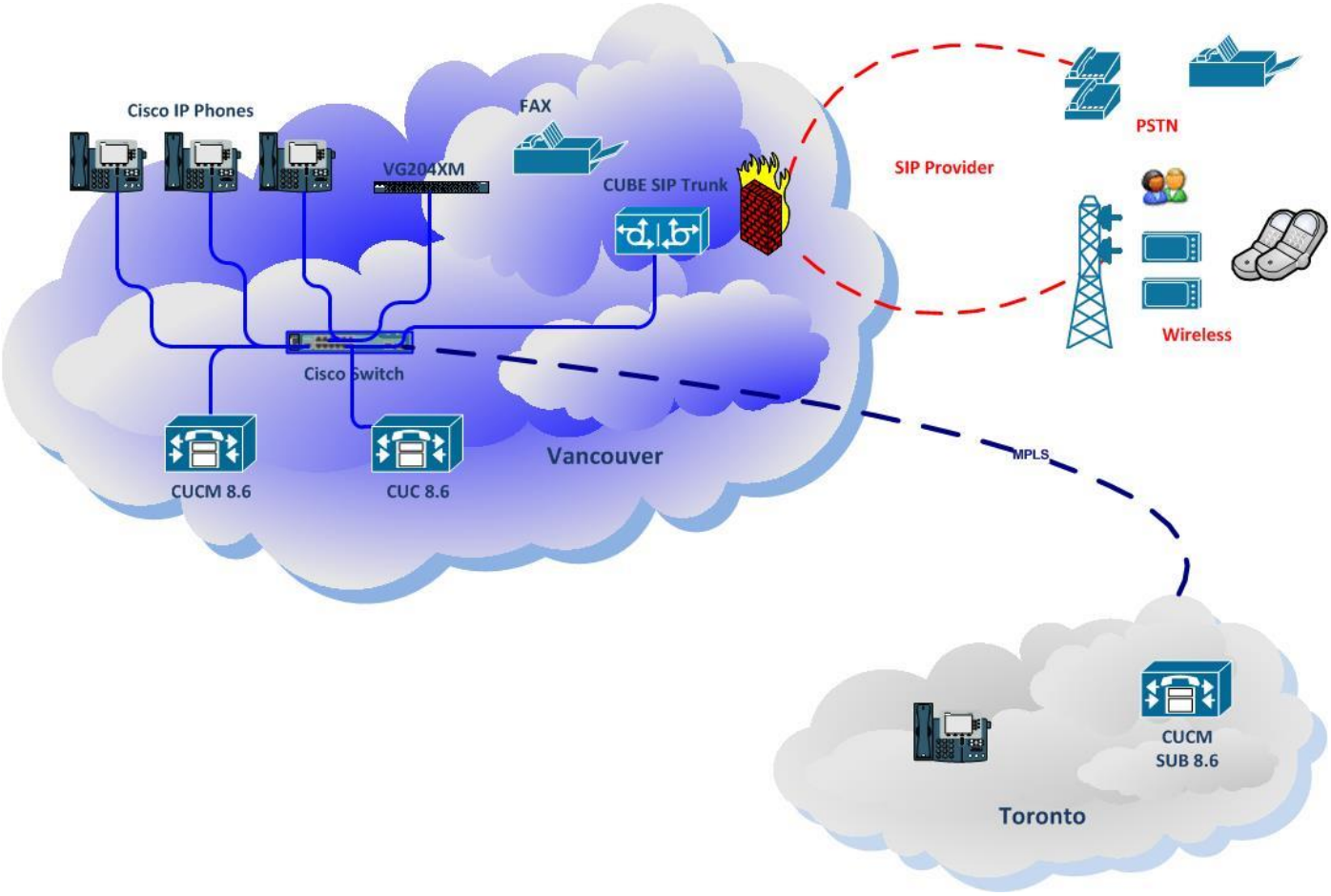
Note: Testing was conducted in Telus labs

Introduction

Service Providers today, such as TELUS, are offering alternative methods to connect to the PSTN via their IP network. Most of these services utilize SIP as the primary signaling method and a centralized IP to TDM gateway to provide on-net and off-net services. TELUS IP Trunking is a SP offering that allows connection to the PSTN and may offer the end customer a viable alternative to traditional PSTN connectivity via either Analog or T1 lines. A demarcation device between these services and customer owned services is recommended. The Cisco Unified Border Element provides demarcation, security, interworking and session management services.

- This application note describes how to configure a Cisco Unified Communications Manager (CUCM) 8.6.2.25140-1 with a Cisco Unified Border Element (CUBE) 10.0.1 for connectivity to TELUS IP Trunking SIP trunk service. The deployment model covered in this application note is CPE to PSTN. This document does not address 911 emergency outbound calls. For 911 feature service details contact TELUS directly.
- Testing was performed in accordance to TELUS test plan and all features were verified. Key features verified are: Listed under features in this document.
- The Cisco Unified Border Element configuration detailed in this document is based on a lab environment with a simple dial-plan used to ensure proper interoperability between TELUS SIP network and Cisco Unified Communications. The configuration described in this document details the important commands to have enabled for interoperability to be successful and care must be taken, by the network administrator deploying CUBE, to ensure these commands are set per each dial-peer requiring to interoperate to TELUS SIP network.
- This application note does not cover the use of Calling Search Spaces (CSS) or Partitions on Cisco Unified Communications Manager. To understand and learn how to apply CSS and Partitions refer to the cisco.com link below: http://www.cisco.com/en/US/docs/voice_ip_comm/cucm/admin/6_0_1/ccmsys/a03ptcss.html

Network Topology



System Components

Hardware Components

- Cisco 2911/K9 (Cisco 2900 family router)
- CUCM cluster with (2) Cisco MCS 7800 Series server (Cisco Unified Communications Manager)
- 4 Cisco Unified IP Phones (7965)
- VG204XM MGCP gateway for fax
- Cisco 3560C powered Ethernet switch
- Unity connection for voice mail as well as Auto Attendant
- Fax machine G3

Software Requirements

The following software is required:

- Cisco Unified Communications Manager Release 8.6. This solution was tested with 8.6.2.25140-1
- Cisco Unity Connection Release 8.6. This solution was tested with 8.6.2ES144.25140-144
- Cisco Unified Border Element Release 10.0.1 with IOS version 15.4.2T release. This configuration was tested with c2900-universalk9-mz.SPA.154-2.T.bin
- Cisco VG204XM with IOS version 15.3.2T. This configuration was tested with vg20xxm-ipvoice-mz.153-2.T.bin

Features

Features Supported

- Basic Call using G.729 and G711 (inbound and outbound).
- Calling Party Number Presentation (CLIP).
- Calling Party Number Restriction (CLIR).
- Calling Name.
- Intra-site Call Transfer (Attended and Unattended).
- Intra-site Conference.
- Call Hold and Resume.
- Call Forward All, Busy and No Answer.
- Toll-free numbers.
- Long calls durations.
- DTMF (RFC2833).
- Fax using G.711 pass-through.
- Cisco Unity Connection Auto-attendant.
- Cisco Unity Connection Voice mail.
- Calling number privacy.

Features Not Supported

- Emergency 911 calls were not tested.
- Failover was not tested.

Configuration

Configuring Cisco Unified Border Element (CUBE)

Show Version

```
Cisco IOS Software, C2900 Software (C2900-UNIVERSALK9-M), Version 15.4(2)T, RELEASE SOFTWARE (fc1)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2014 by Cisco Systems, Inc. Compiled Wed 26-Mar-14 14:14 by prod_rel_team
ROM: System Bootstrap, Version 15.0(1r)M16, RELEASE SOFTWARE (fc1)
IPT-Cert-CUBE uptime is 4 hours, 15 minutes
System returned to ROM by reload at 10:08:11 PDT Fri Sep 12 2014
System restarted at 10:09:56 PDT Fri Sep 12 2014
System image file is "flash:c2900-universalk9-mz.SPA.154-2.T.bin"
Last reload type: Normal Reload
Last reload reason: Reload Command

This product contains cryptographic features and is subject to United
States and local country laws governing import, export, transfer and
use. Delivery of Cisco cryptographic products does not imply
third-party authority to import, export, distribute or use encryption.
Importers, exporters, distributors and users are responsible for
compliance with U.S. and local country laws. By using this product you
agree to comply with applicable laws and regulations. If you are unable
to comply with U.S. and local laws, return this product immediately.

A summary of U.S. laws governing Cisco cryptographic products may be found at:
http://www.cisco.com/wwl/export/crypto/tool/stqrg.html

If you require further assistance please contact us by sending email to export@cisco.com.

Cisco CISCO2911/K9 (revision 1.0) with 475136K/49152K bytes of memory.
Processor board ID FGL174711EA
4 Gigabit Ethernet interfaces
2 terminal lines
2 Channelized (E1 or T1)/PRI ports
1 Virtual Private Network (VPN) Module
1 Internal Services Module (ISM) with Services Ready Engine (SRE)
   Cisco Unity Express 8.6.6 in slot/sub-slot 0/0
DRAM configuration is 64 bits wide with parity enabled.
255K bytes of non-volatile configuration memory.
250880K bytes of ATA System CompactFlash 0 (Read/Write)

License Info:
License UDI:
-------------------------------------------------
Device#   PID                   SN
-------------------------------------------------
*1        CISCO2911/K9          FGL174711EA


Technology Package License Information for Module:'c2900'
-----------------------------------------------------------------------
Technology    Technology-package              Technology-package
              Current          Type           Next reboot
-----------------------------------------------------------------------
ipbase        ipbasek9         Permanent      ipbasek9
security      securityk9       Permanent      securityk9
uc            uck9             Permanent      uck9
data          datak9           Permanent      datak9
NtwkEss       None             None           None
CollabPro     None             None           None

Configuration register is 0x2102
```

Show Running-Configuration

```
Current configuration : 4014 bytes
!
! Last configuration change at 14:19:18 PDT Fri Sep 12 2014 by YYYYY
! NVRAM config last updated at 14:22:23 PDT Fri Sep 12 2014 by YYYYY
!
version 15.4
service timestamps debug datetime msec localtime
service timestamps log datetime msec localtime
service password-encryption
service sequence-numbers
!
hostname IPT-Cert-CUBE
!
boot-start-marker
boot system flash c2900-universalk9-mz.SPA.154-2.T.bin
boot-end-marker
!
aqm-register-fnf
!
card type command needed for slot/vwic-slot 0/0
logging buffered 10000000
no logging rate-limit
no logging console
!
no aaa new-model
clock timezone EST -8 0
clock summer-time PDT recurring
!
no ip domain lookup
ip domain name cube.ipt.local
ip cef
no ipv6 cef
!
multilink bundle-name authenticated
!
voice-card 0
dspfarm
 dsp services dspfarm
!
voice service voip[1]
 no ip address trusted authenticate
 mode border-element license capacity 25
 allow-connections sip to sip
 redirect ip2ip
 fax protocol pass-through g711ulaw
 h323
 sip
  referto-passing
  asserted-id pai[2]
  asymmetric payload dtmf[3]
  early-offer forced[4]
  midcall-signaling passthru[5]
  privacy-policy passthru[6]
  g729 annexb-all
!
```

---

[1] This introduces the mode border-element command to distinguish between Cisco Unified Communications Manager Express and Cisco UBE configuration.

[2] Enables the P-Asserted-Identity (PAI) privacy header in incoming and outgoing SIP requests or response messages.

```
voice class codec 1
 codec preference 1 g729r8
 codec preference 2 g711ulaw
!
voice class sip-profiles 150
 request INVITE sip-header From modify "Anonymous" "IPT-Cert-Phone3-Line-1"
 request INVITE sip-header From modify "<sip:anonymous@anonymous.invalid>" "<sip:+15877569936@Z.Z.Z.Z>"
license udi pid CISCO2911/K9 sn FGL174711EA
hw-module ism 0
!
hw-module pvdm 0/0
!
username YYYYY privilege 15 secret XXXXXXXXXXXXX
!
redundancy
!
interface Embedded-Service-Engine0/0
 no ip address
 shutdown
!
interface GigabitEthernet0/0
 description OUTSIDE CUBE Interface
 ip address X.X.X.X 255.255.255.252
 duplex auto
 speed auto
!
interface ISM0/0
 no ip address
 shutdown
 !Application: CUE Running on ISM
!
interface GigabitEthernet0/1
 description INSIDE CUBE Interface
 ip address X.X.X.X 255.255.255.0
 duplex auto
 speed auto
!
interface GigabitEthernet0/2
 no ip address
 shutdown
 duplex auto
 speed auto
!
interface ISM0/1
 description Internal switch interface connected to Internal Service Module
 no ip address
!
interface Vlan1
 no ip address
!
ip forward-protocol nd
!
!
no ip http server
no ip http secure-server
!
ip route X.X.X.X 255.255.255.192 Y.Y.Y.Y
```

---

[3] Specifies that the asymmetric payload support is dual-tone multi-frequency (DTMF) only.

[4] To force a Cisco Unified Border Element (Cisco UBE) to send a SIP invite with Early-Offer (EO) on the Out-Leg (OL), use the early-offer command in SIP or dial peer configuration mode.

[5] Passes SIP messages that involve media-change from one IP leg to another IP leg.

[6] Passes the privacy values from the received message to the next call leg.

```
!
logging trap debugging
logging host X.X.X.X
!
control-plane
!
sccp local GigabitEthernet0/1
sccp ccm Z.Z.Z.Z identifier 1 version 7.0
sccp
!
sccp ccm group 1
 bind interface GigabitEthernet0/1
 associate ccm 1 priority 1
 associate profile 2 register MTP24e9b3735829
 associate profile 1 register CFB24e9b3735829
!
dspfarm profile 2 transcode
 codec g729br8
 codec g729r8
 codec g711ulaw
 codec g711alaw
 codec g729ar8
 codec g729abr8
 maximum sessions 3
 associate application SCCP
!
dspfarm profile 1 conference
 codec g711ulaw
 codec g711alaw
 codec g729ar8
 codec g729abr8
 codec g729r8
 codec g729br8
 maximum sessions 3
 associate application SCCP
!
dial-peer voice 9900 voip
 description "IPT-Cert-CUCM-DID-AB"
 destination-pattern 587756993[5-9]
 signaling forward unconditional
 session protocol sipv2
 session target ipv4:A.A.A.A[7]
 voice-class codec 1
 dtmf-relay rtp-nte
 fax-relay sg3-to-g3
 fax protocol pass-through g711ulaw
!
dial-peer voice 2000 voip
 description "TELUS LAB SIP Trunk - NA calls"
 preference 1
 destination-pattern 1.........
 signaling forward unconditional[8]
 session protocol sipv2
 session target ipv4:B.B.B.B[9]
 voice-class codec 1
 voice-class sip g729 annexb-all
 voice-class sip early-offer forced
 dtmf-relay rtp-nte
 fax-relay sg3-to-g3
 fax protocol pass-through g711ulaw
 no vad
```

[7] Cisco Unified Communication System

[8] Tunnels Generic Transparency Descriptor (GTD), payload along with QSIG or Q.931 message bodies.

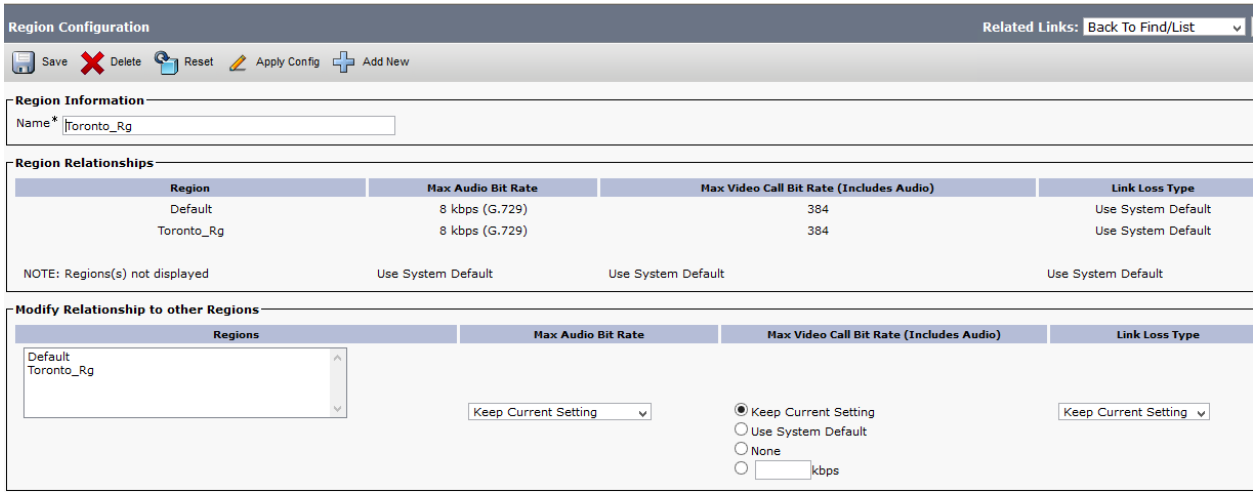
[9] Telus Main SBC IP address

```
!
!
dial-peer voice 2001 voip
 description "TELUS LAB SIP Trunk - International"
 preference 1
 destination-pattern 011T
 signaling forward unconditional
session protocol sipv2
 session target ipv4: B.B.B.B
 voice-class codec 1
 voice-class sip g729 annexb-all
 voice-class sip early-offer forced
 voice-class sip profiles 150
 dtmf-relay rtp-nte
 fax-relay sg3-to-g3
 fax protocol pass-through g711ulaw
 no vad
!
!
dial-peer voice 2002 voip
 description "TELUS LAB SIP Trunk - Operator"
 preference 1
 destination-pattern 0T
 signaling forward unconditional
 session protocol sipv2
 session target ipv4: B.B.B.B
 voice-class codec 1
 voice-class sip g729 annexb-all
 voice-class sip early-offer forced
 dtmf-relay rtp-nte
 fax-relay sg3-to-g3
 fax protocol pass-through g711ulaw
 no vad
!
!
!
!
gatekeeper
 shutdown
!
line con 0
line aux 0
line 2
 no activation-character
 no exec
 transport preferred none
 transport output lat pad telnet rlogin lapb-ta mop udptn v120 ssh
 stopbits 1
line 131
 no activation-character
 no exec
 transport preferred none
 transport input all
 transport output lat pad telnet rlogin lapb-ta mop udptn v120 ssh
 stopbits 1
line vty 0 4
 exec-timeout 0 0
 login local
 transport input ssh
!
!
scheduler allocate 20000 1000
ntp source GigabitEthernet0/1
ntp master
!
end
```

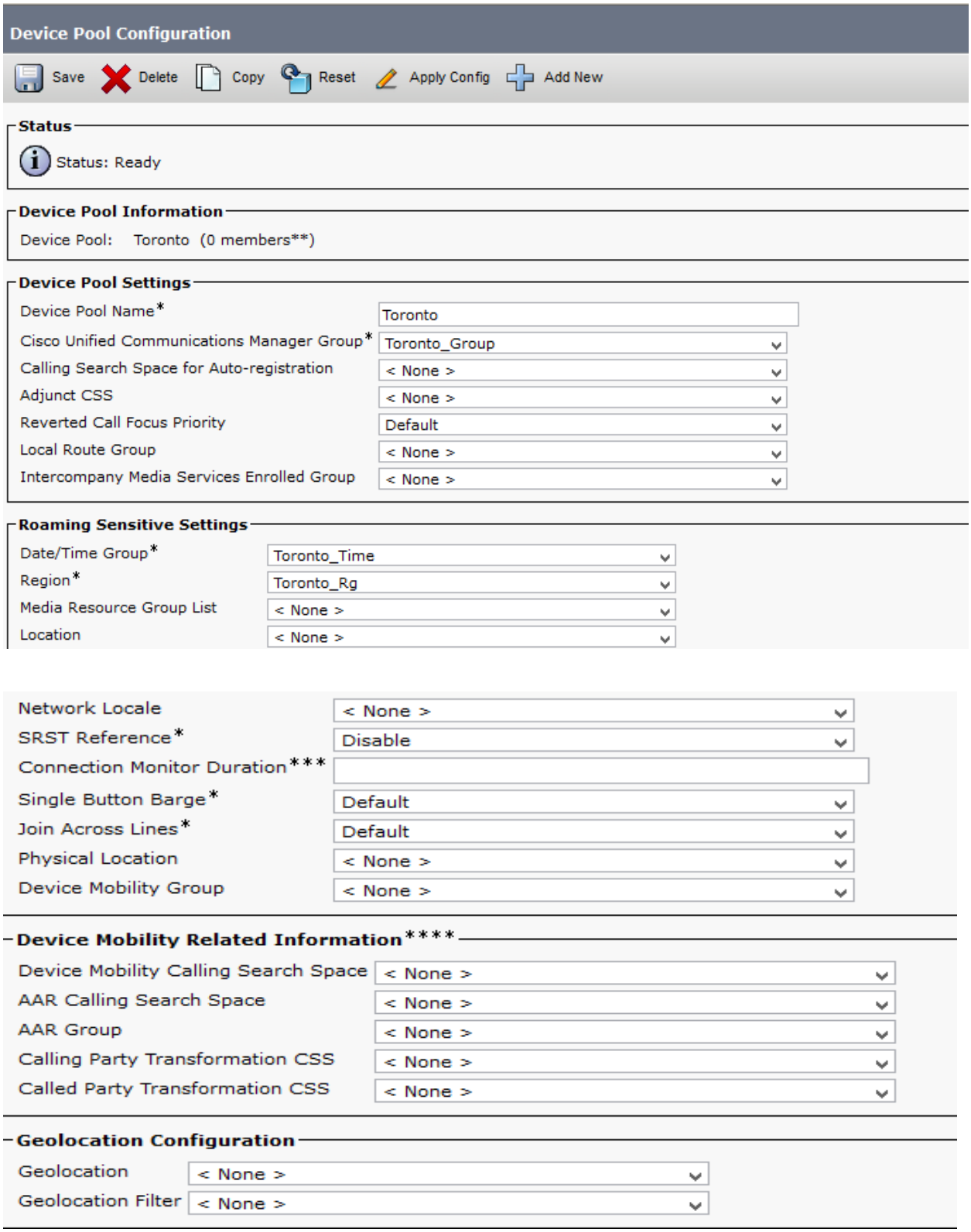
Configuring the Cisco Unified Communications Manager

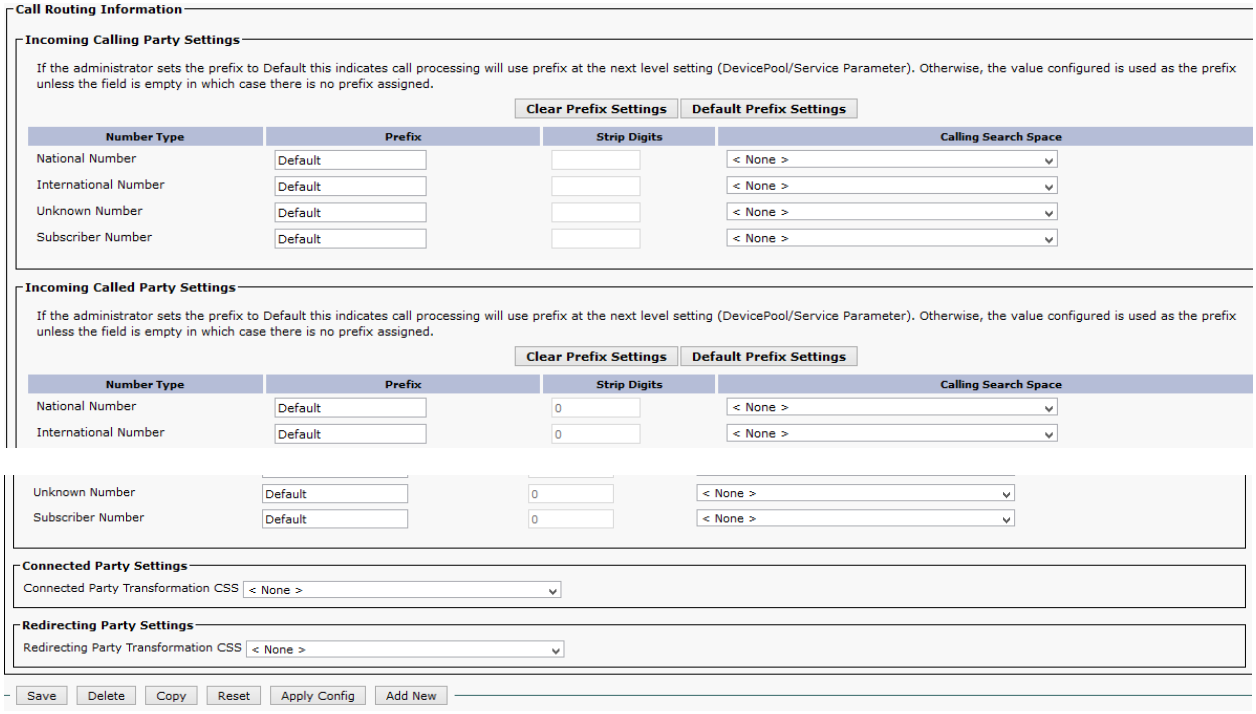
System Version

Region

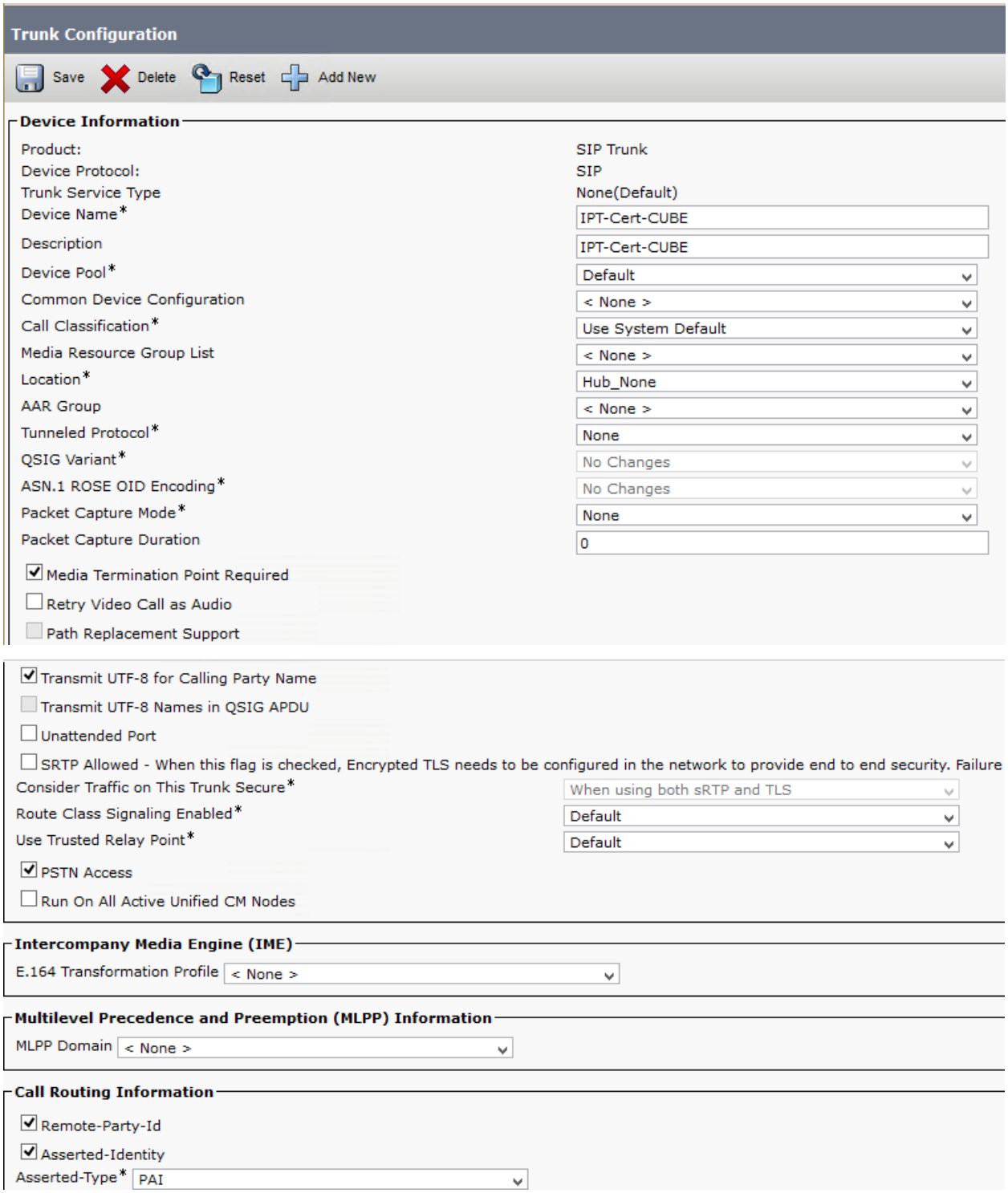


Device Pool





SIP Trunk Cisco Unified Communications Manager



SIP Privacy* Default

Inbound Calls

Significant Digits* 3
Connected Line ID Presentation* Default
Connected Name Presentation* Default
Calling Search Space < None >
AAR Calling Search Space < None >
Prefix DN 1

☐ Redirecting Diversion Header Delivery - Inbound

Incoming Calling Party Settings

If the administrator sets the prefix to Default this indicates call processing will use prefix at the next level setting (DevicePool/Service Parameter). Otherwise unless the field is empty in which case there is no prefix assigned.

Clear Prefix Settings | Default Prefix Settings

Number Type	Prefix	Strip Digits	Calling Search Space
Incoming Number	Default	0	< None >

Connected Party Settings

Connected Party Transformation CSS < None >

☑ Use Device Pool Connected Party Transformation CSS

Outbound Calls

Called Party Transformation CSS < None >

☑ Use Device Pool Called Party Transformation CSS

Calling Party Transformation CSS < None >

☑ Use Device Pool Calling Party Transformation CSS

Calling Party Selection* Originator
Calling Line ID Presentation* Default
Calling Name Presentation* Default
Caller ID DN
Caller Name

☐ Redirecting Diversion Header Delivery - Outbound

Redirecting Party Transformation CSS < None >

☑ Use Device Pool Redirecting Party Transformation CSS

SIP Information

Destination

☐ Destination Address is an SRV

SIP Information

Destination

☐ Destination Address is an SRV

	Destination Address	Destination Address IPv6	Destination Port
1*	[redacted]		5060

MTP Preferred Originating Codec*	711ulaw
Presence Group*	Standard Presence group
SIP Trunk Security Profile*	Non Secure SIP Trunk Profile
Rerouting Calling Search Space	< None >
Out-Of-Dialog Refer Calling Search Space	< None >
SUBSCRIBE Calling Search Space	< None >
SIP Profile*	CUBE - Standard SIP Profile
DTMF Signaling Method*	OOB and RFC 2833

Normalization Script

Normalization Script < None >

☐ Enable Trace

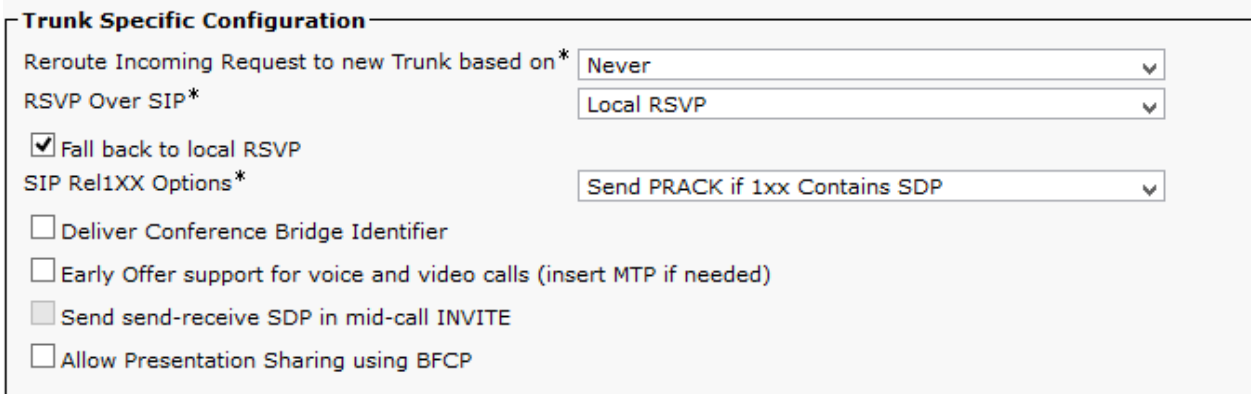
	Parameter Name	Parameter Value
1		

SIP PRACK for early-media negotiation

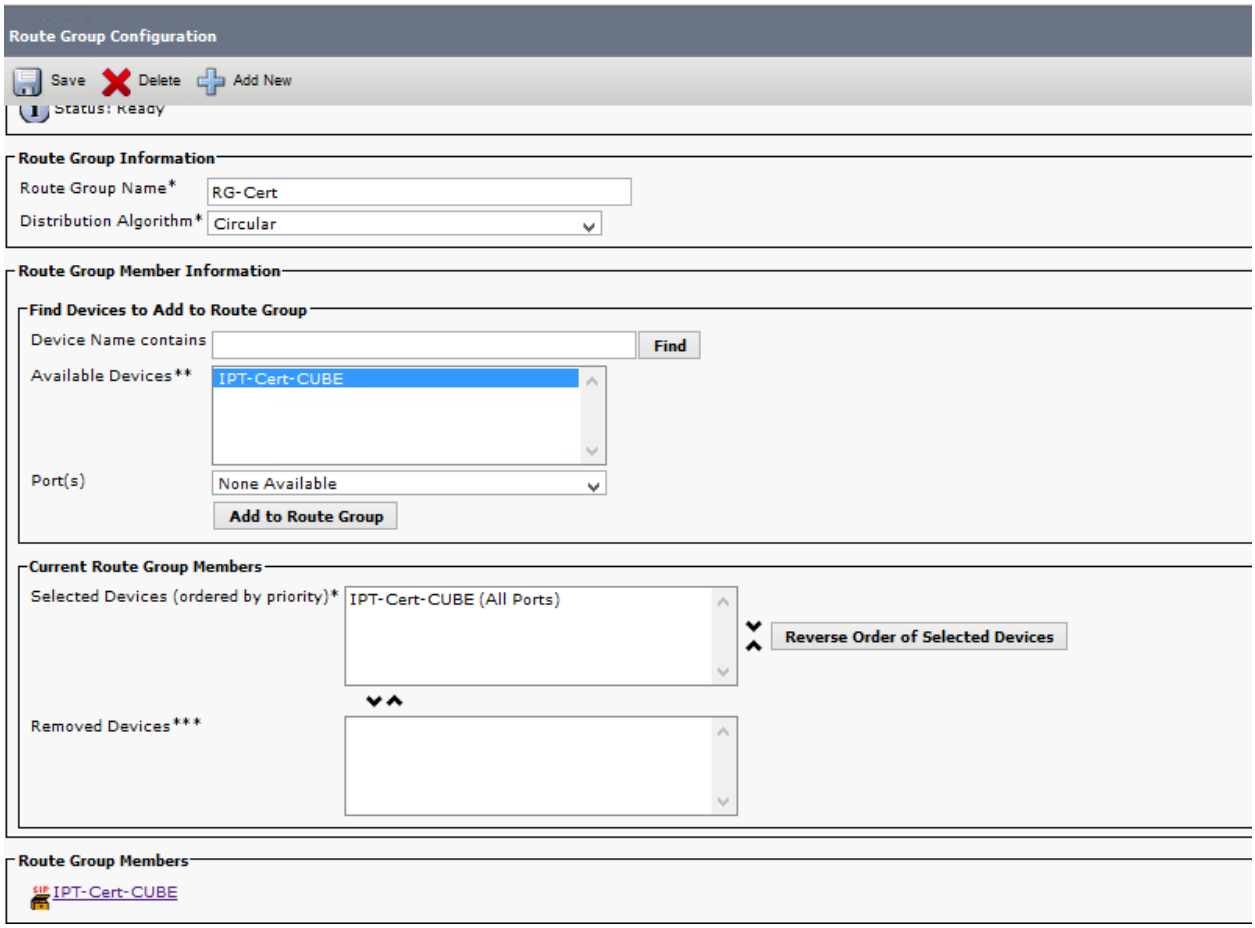
Telus Mobility requirement for compatibility with Cisco CUCM is to modify the service parameters related to two timers and enable the PRACK on SIP trunk profile in order to acknowledge SDP messages

Clusterwide Parameters (Device - SIP)

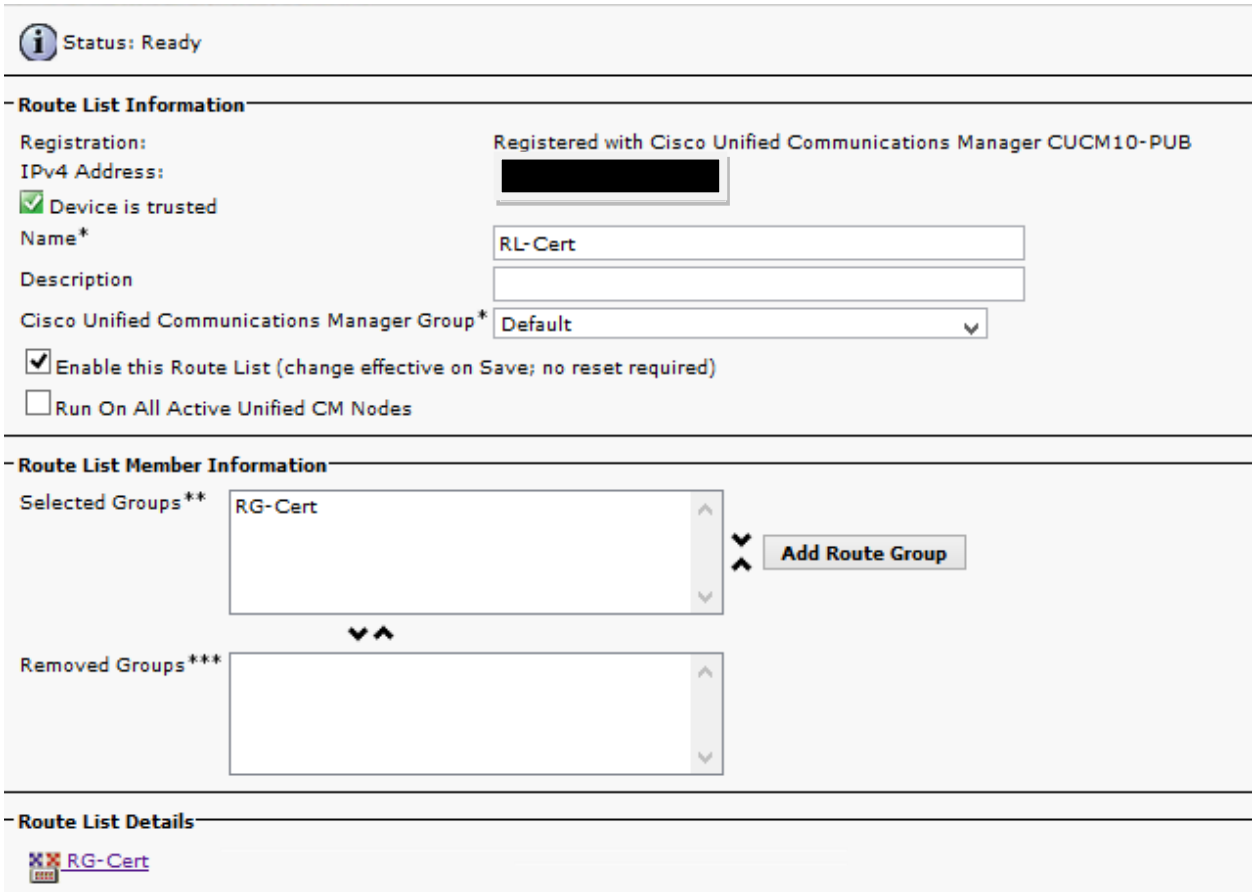
SIP Interoperability Enabled *	True	True
Retry Count for SIP Bye *	10	10
Retry Count for SIP Cancel *	10	10
Retry Count for SIP Invite *	6	6
Retry Count for SIP PRACK *	6	6
Retry Count for SIP Rel1XX *	10	10
Retry Count for SIP Publish *	6	6
Retry Count for SIP Response *	6	6
SIP Connect Timer *	500	500
SIP Disconnect Timer *	500	500
SIP Expires Timer *	180000	180000
SIP PRACK Timer *	500	500
SIP Rel1XX Timer *	500	500
SIP Trying Timer *	500	500
SIP Publish Timer *	500	500
SIP Min-SE Value *	500	1800
SIPS URI Handling *	Reject	Reject



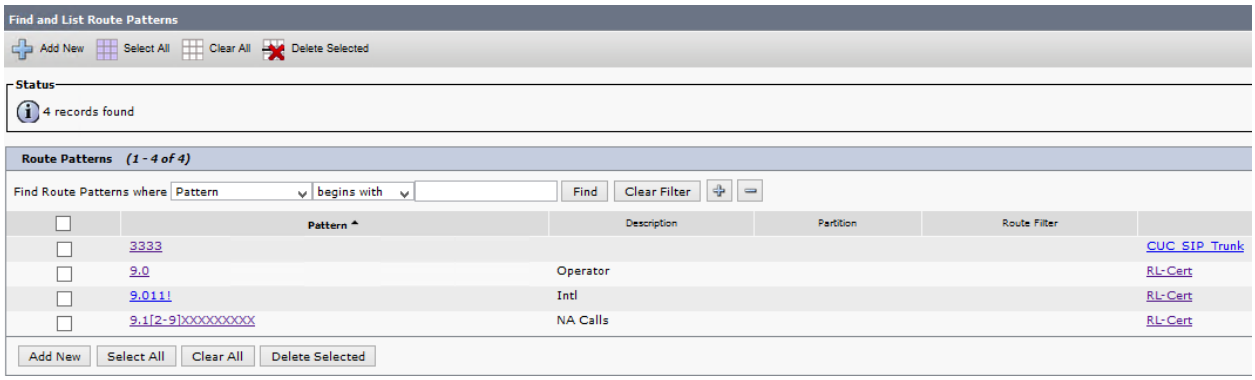
Route Group (SIP Trunk)



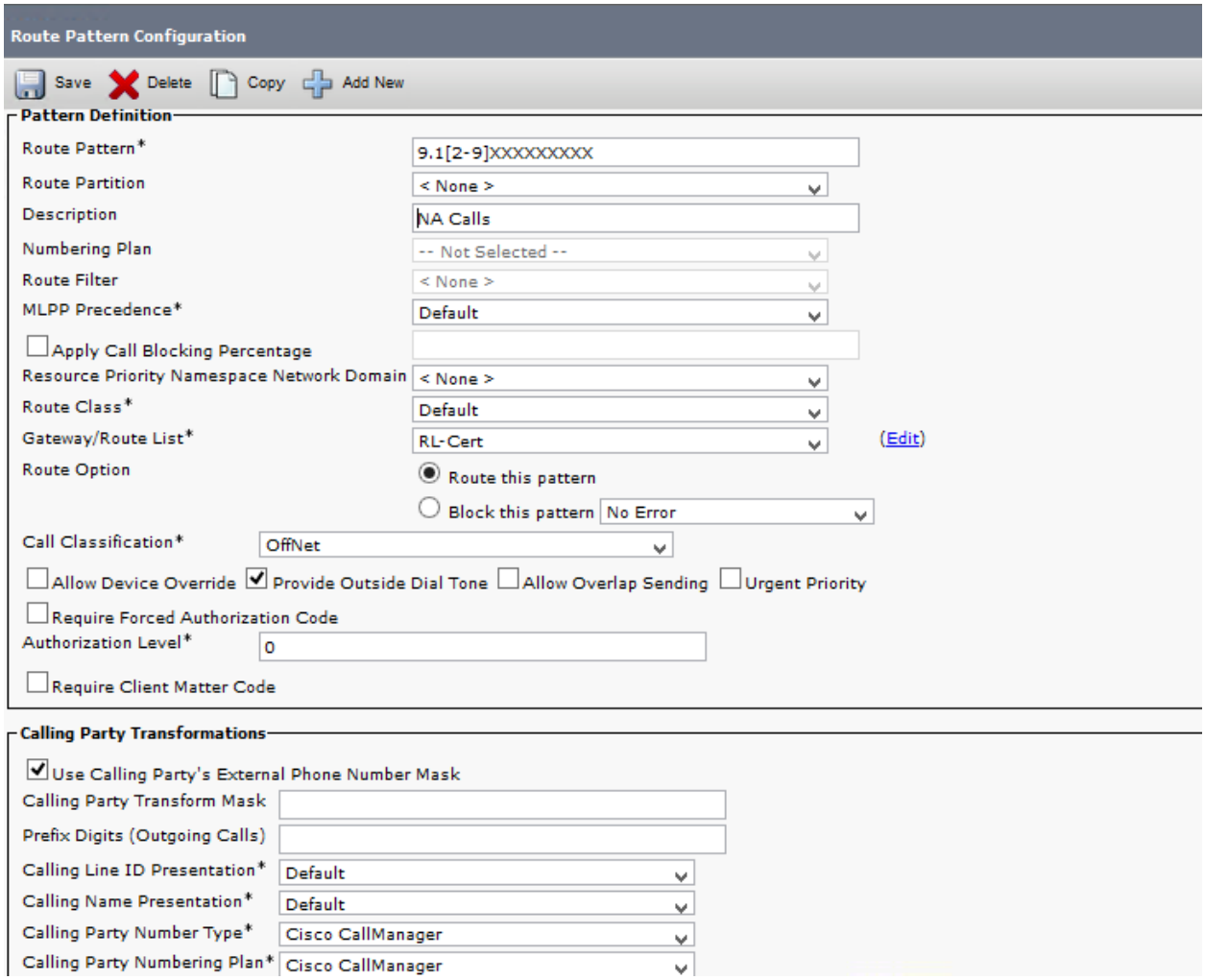
Route List (SIP Trunk)

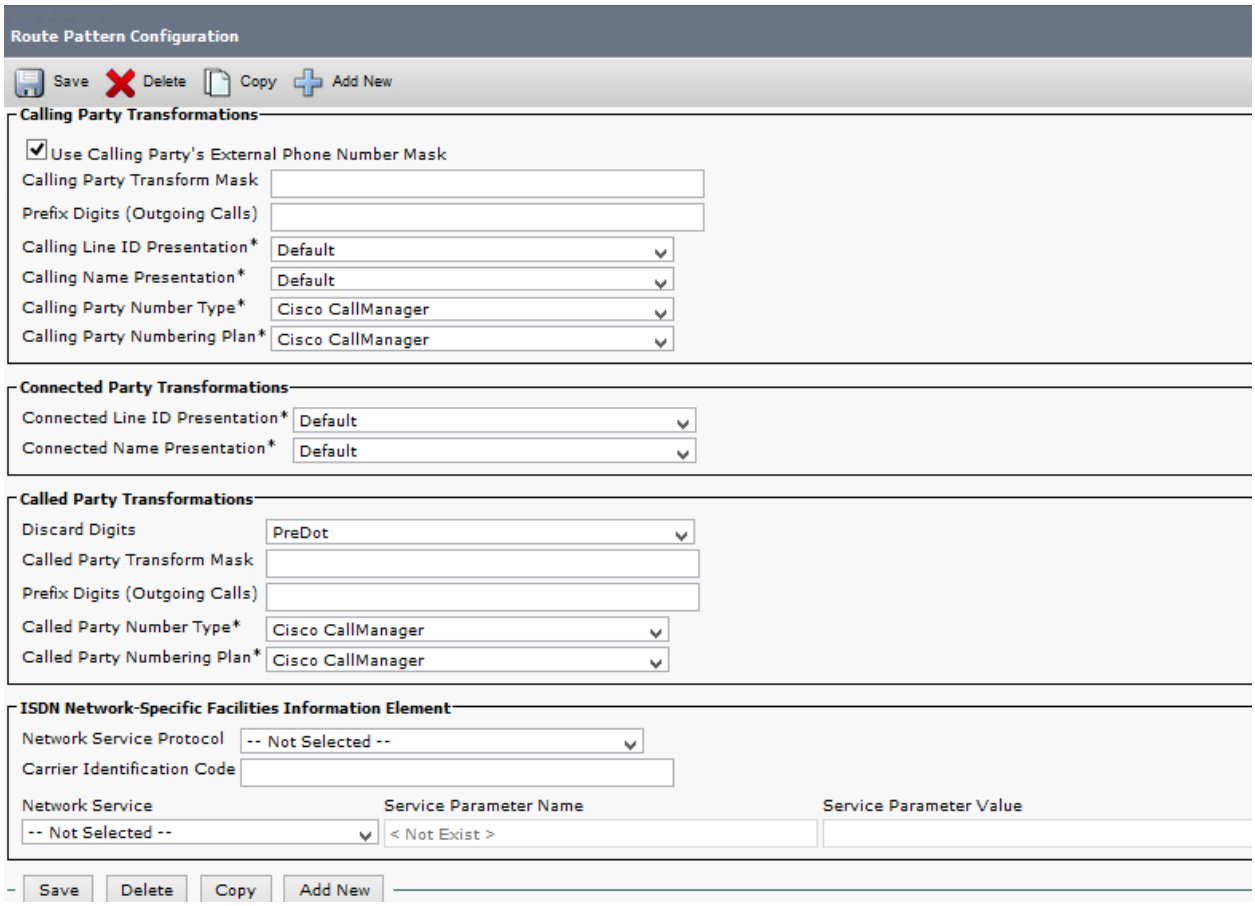


Route Pattern (SIP Trunk)

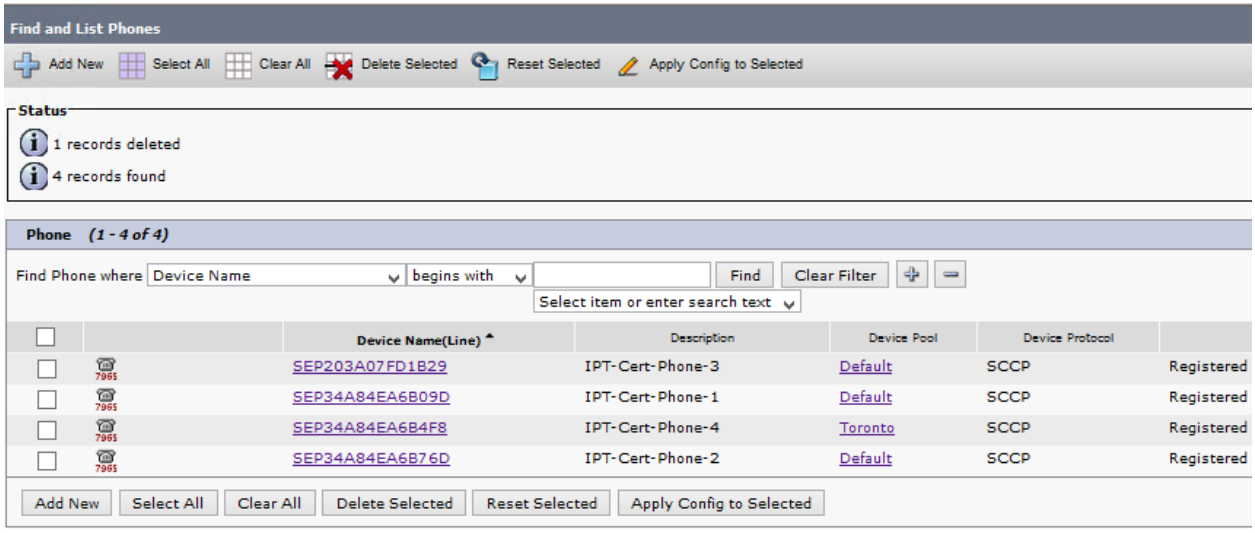


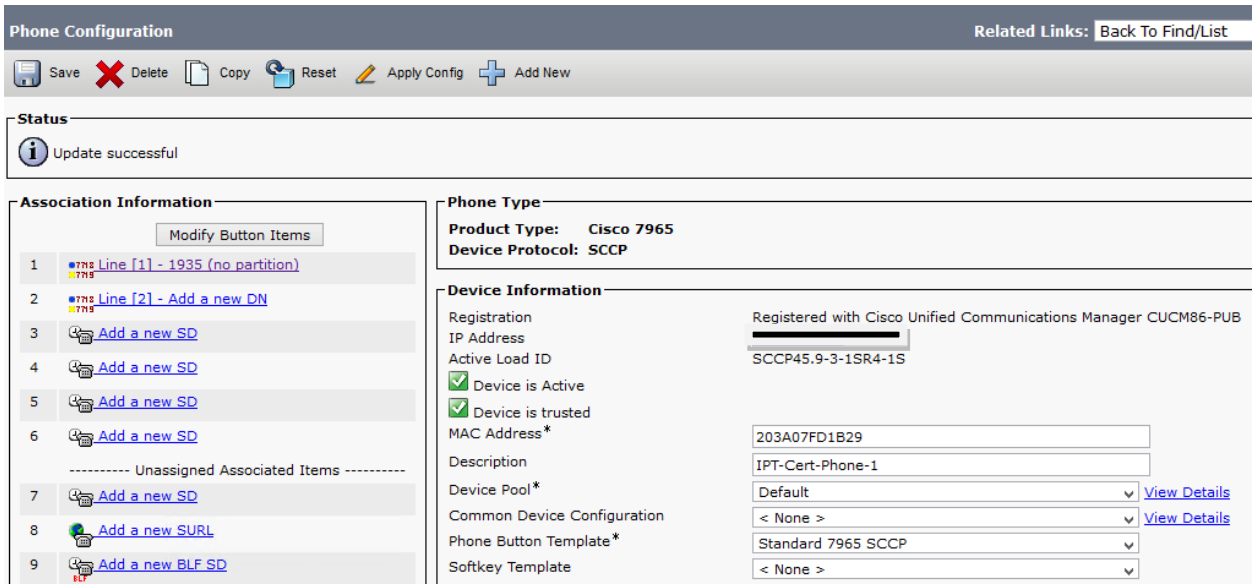
Please note that Digits 9. Predot will be discarded on all patterns on the outgoing SIP trunk. 9 was used only for route selection.

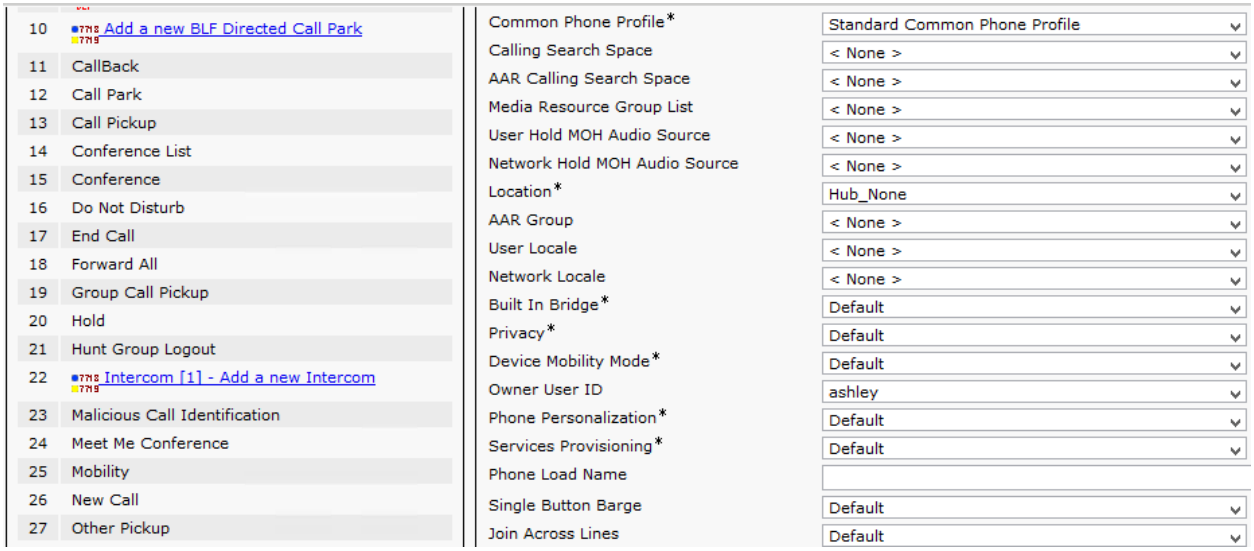




IP phone configuration







28	Quality Reporting Tool
29	Redial
30	Remove Last Participant
31	Transfer
32	Video Mode
33	Privacy
34	None

Use Trusted Relay Point*	Default
BLF Audible Alert Setting (Phone Idle)*	Default
BLF Audible Alert Setting (Phone Busy)*	Default
Always Use Prime Line*	Default
Always Use Prime Line for Voice Message*	Default
Calling Party Transformation CSS	< None >
Geolocation	< None >

- [x] Use Device Pool Calling Party Transformation CSS
- [x] Retry Video Call as Audio
- [ ] Ignore Presentation Indicators (internal calls only)
- [x] Allow Control of Device from CTI
- [x] Logged Into Hunt Group
- [ ] Remote Device
- [ ] Protected Device****
- [ ] Hot line Device*****

Protocol Specific Information

Packet Capture Mode*	None
Packet Capture Duration	0

Presence Group*	Standard Presence group
Device Security Profile*	Cisco 7965 - Standard SCCP Non-Secure Profile
SUBSCRIBE Calling Search Space	< None >

- [ ] Unattended Port
- [ ] Require DTMF Reception
- [ ] RFC2833 Disabled

Certification Authority Proxy Function (CAPF) Information

Certificate Operation*	No Pending Operation
Authentication Mode*	By Null String
Authentication String	

Generate String

Key Size (Bits)*	1024				
Operation Completes By	2014	12	21	12	(YYYY:MM:DD:HH)

Certificate Operation Status: None

Note: Security Profile Contains Addition CAPF Settings.

Expansion Module Information

Module 1	< None >

Module 1 Load Name

Module 2 < None >

Module 2 Load Name

External Data Locations Information (Leave blank to use default)

Information

Directory

Messages

Services

Authentication Server

Proxy Server

Idle

Idle Timer (seconds)

Secure Authentication URL

Secure Directory URL

Secure Idle URL

Secure Information URL

Secure Messages URL

Secure Services URL

Extension Information

☐ Enable Extension Mobility

Log Out Profile -- Use Current Device Settings --

Log in Time < None >

Log out Time < None >

MLPP Information

MLPP Domain < None >

MLPP Indication* Default

MLPP Preemption* Default

Do Not Disturb

☐ Do Not Disturb

DND Option* Use Common Phone Profile Setting

DND Incoming Call Alert < None >

Secure Shell Information

Secure Shell User	
Secure Shell Password	

Product Specific Configuration Layout

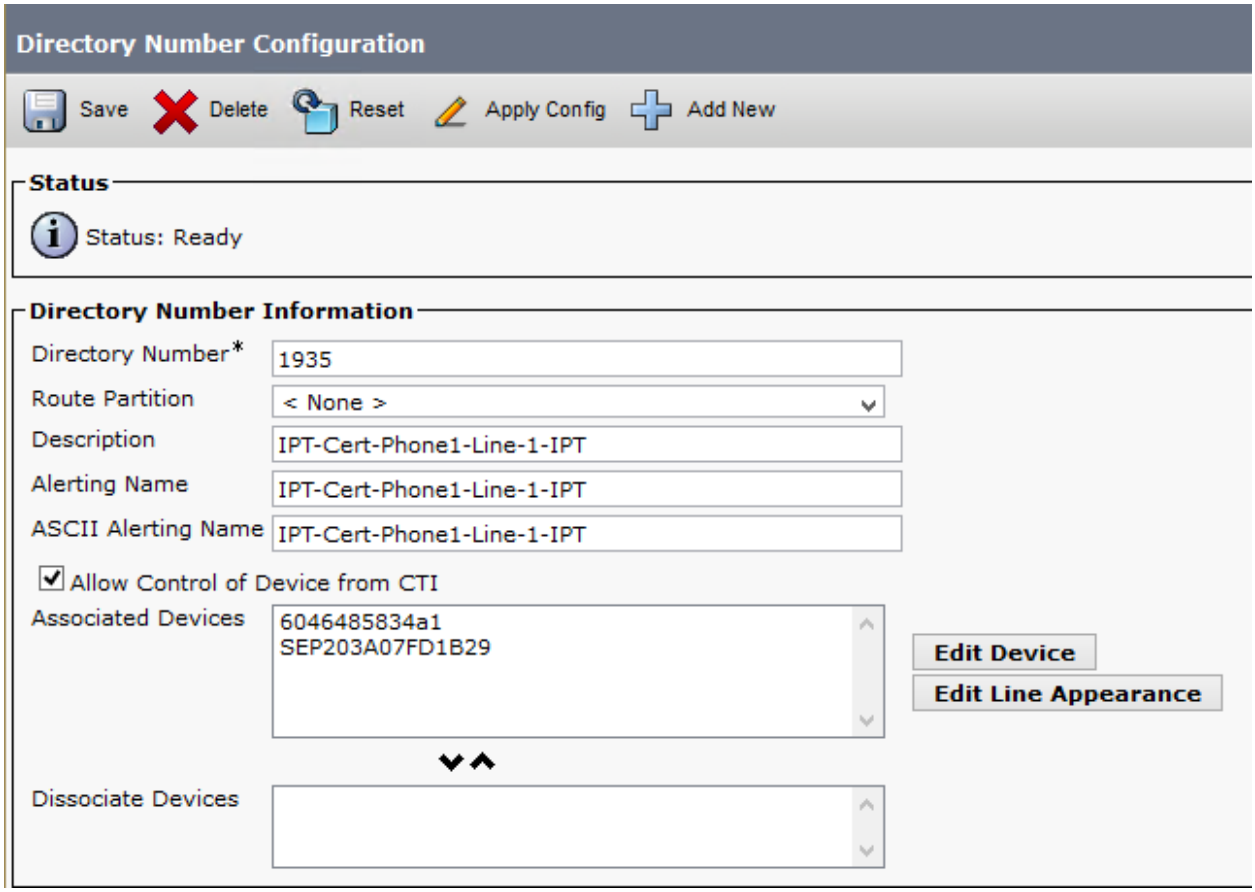
	Param
☐ Disable Speakerphone	
☐ Disable Speakerphone and Headset	
Forwarding Delay*	Disabled
PC Port *	Enabled
Settings Access*	Enabled
Gratuitous ARP*	Disabled
PC Voice VLAN Access*	Enabled
Video Capabilities*	Disabled
Auto Line Select*	Disabled
Web Access*	Disabled
Days Display Not Active	Sunday Monday Tuesday

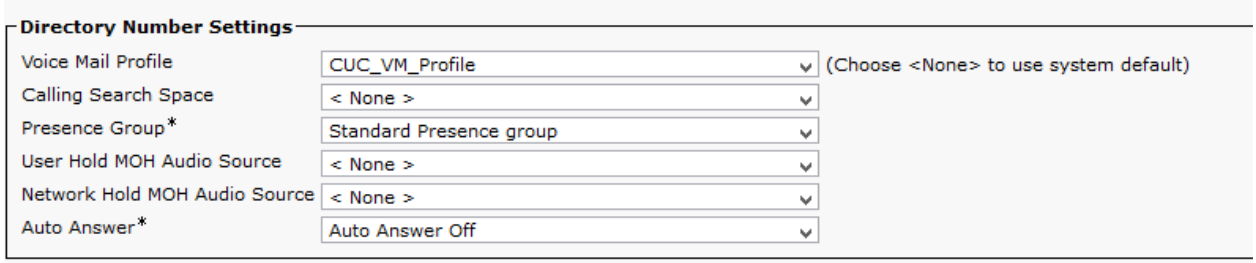
Display On Time	07:30	☐
Display On Duration	10:30	☐
Display Idle Timeout	01:00	☐
Enable Power Save Plus	Sunday Monday Tuesday	☐
Phone On Time	00:00	☐
Phone Off Time	24:00	☐
Phone Off Idle Timeout*	60	☐
☐ Enable Audible Alert		☐
EnergyWise Domain		☐
EnergyWise Endpoint Security Secret		☐
☐ Allow EnergyWise Overrides		☐
Span to PC Port*	Disabled	
Logging Display*	PC Controlled	
Load Server		☐
Recording Tone*	Disabled	
Recording Tone Local Volume*	100	
Recording Tone Remote Volume*	50	

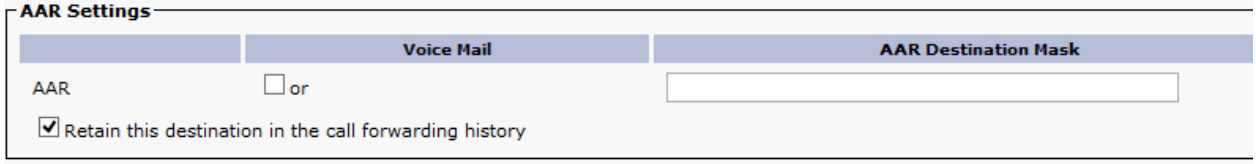
Recording Tone Duration	
Display On When Incoming Call*	Disabled
RTCP*	Disabled
"more" Soft Key Timer	5
Auto Call Select*	Enabled
Log Server	
Advertise G.722 Codec*	Use System Default
Wideband Headset UI Control*	Enabled
Wideband Headset*	Enabled
Peer Firmware Sharing*	Enabled
Cisco Discovery Protocol (CDP): Switch Port*	Enabled
Cisco Discovery Protocol (CDP): PC Port*	Enabled
Link Layer Discovery Protocol - Media Endpoint Discover (LLDP-MED): Switch Port*	Enabled
Link Layer Discovery Protocol (LLDP): PC Port*	Enabled
LLDP Asset ID	
LLDP Power Priority*	Unknown
Wireless Headset Hookswitch Control*	Disabled
IPv6 Load Server	

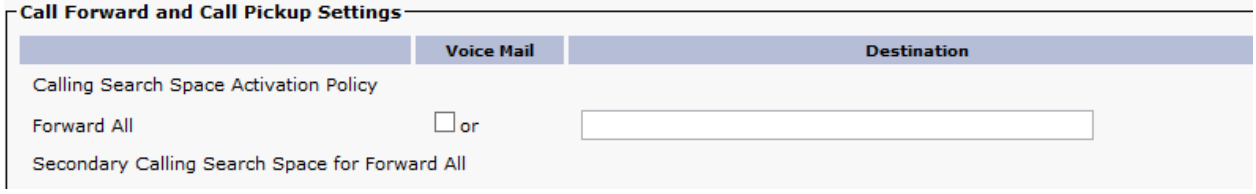
IPv6 Log Server		
802.1x Authentication*	User Controlled	☐
Detect Unified CM Connection Failure*	Normal	☐
Minimum Ring Volume*	0-Silent	
Headset Sidetone Level*	Default	
Headset Send Gain*	Default	
HTTPS Server*	http and https Enabled	☐
Handset/Headset Monitor*	Enabled	
Headset Recording*	Disabled	
Enbloc Dialing*	Enabled	
Switch Port Remote Configuration*	Disabled	☐
PC Port Remote Configuration*	Disabled	☐
Automatic Port Synchronization*	Disabled	☐
SSH Access*	Disabled	☐
LOGIN Access*	Enabled	☐
FIPS Mode*	Disabled	☐
80-bit SRTCP*	Disabled	☐

IP phone DN configuration









Forward Busy Internal	☑ or	
Forward Busy External	☑ or	
Forward No Answer Internal	☑ or	
Forward No Answer External	☑ or	
Forward No Coverage Internal	☐ or	
Forward No Coverage External	☐ or	
Forward on CTI Failure	☐ or	
Forward Unregistered Internal	☑ or	
Forward Unregistered External	☑ or	
No Answer Ring Duration (seconds)	8	
Call Pickup Group	< None >	

Park Monitoring

	Voice Mail	Destination
Park Monitoring Forward No Retrieve Destination External	☐ or	
Park Monitoring Forward No Retrieve Destination Internal	☐ or	
Park Monitoring Reversion Timer		A blank v

MLPP Alternate Party Settings

Target (Destination)	
MLPP Calling Search Space	< None >
MLPP No Answer Ring Duration (seconds)	

Line Settings for All Devices

Hold Reversion Ring Duration (seconds)	
Hold Reversion Notification Interval (seconds)	
Party Entrance Tone*	Default

Line 1 on Device SEP203A07FD1B29

Display (Internal Caller ID)	IPT-Cert-Phone1-Line-1-IPT Display t a directory number for internal calls. If you specify a number, the
ASCII Display (Internal	IPT-Cert-Phone1-Line-1-IPT

Line Text Label	1935
ASCII Line Text Label	1935
External Phone Number Mask	5877569935
Visual Message Waiting Indicator Policy*	Use System Policy
Audible Message Waiting Indicator Policy*	Default
Ring Setting (Phone Idle)*	Use System Default
Ring Setting (Phone Active)	Use System Default
Call Pickup Group Audio Alert Setting(Phone Idle)	Use System Default
Call Pickup Group Audio Alert Setting(Phone Active)	Use System Default
Recording Option*	Call Recording Disabled
Recording Profile	< None >
Monitoring Calling Search Space	< None >

☑ Log Missed Calls

Multiple Call/Call Waiting Settings on Device SEP203A07FD1B29

Note:The range to select the Max Number of calls is: 1-200

Maximum Number of Calls*	4
Busy Trigger*	1

Forwarded Call Information Display on Device SEP203A07FD1B2

- ☑ Caller Name
- ☐ Caller Number
- ☐ Redirected Number
- ☑ Dialed Number

Users Associated with Line

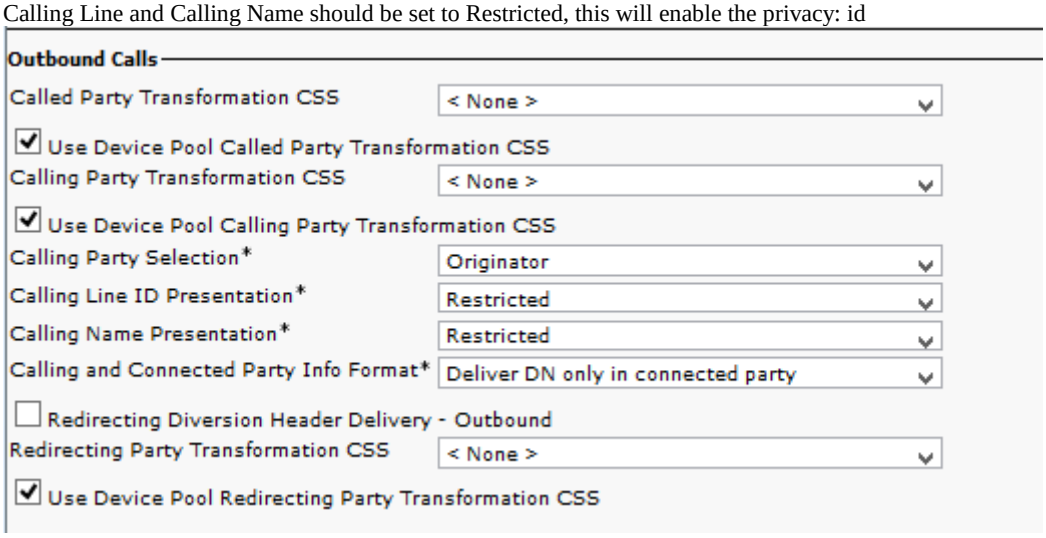
Associate End Users

Save | Delete | Reset | Apply Config | Add New

Privacy configuration

CUCM configuration privacy

Calling Line and Calling Name should be set to Restricted, this will enable the privacy: id



CUBE configuration privacy

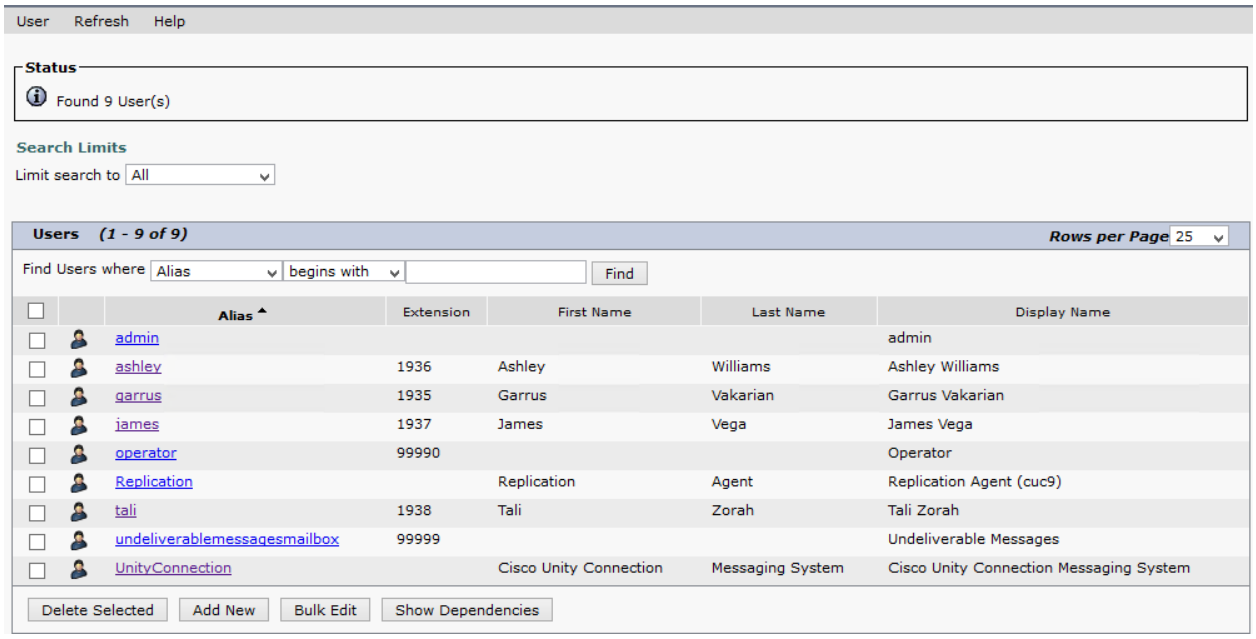
SIP header should be modified in order to replace the anonymous with valid information as the SBC expect valid information in the INVITE header. If a valid header is not present then the SBC will use the Parent DN when the call is sent out to other switches (for tracking purposes). PAI header is being used for billing and routing on the SBC.

```
voice class sip-profiles 150
 request INVITE sip-header From modify "Anonymous" "IPT-Cert-Phone3-Line-1"
 request INVITE sip-header From modify "<sip:anonymous@anonymous.invalid>" "<sip:+15877569937@172.24.0.120>"
dial-peer voice 2000 voip
  voice-class sip profiles 150
```

Configuring the Cisco Unity Connection

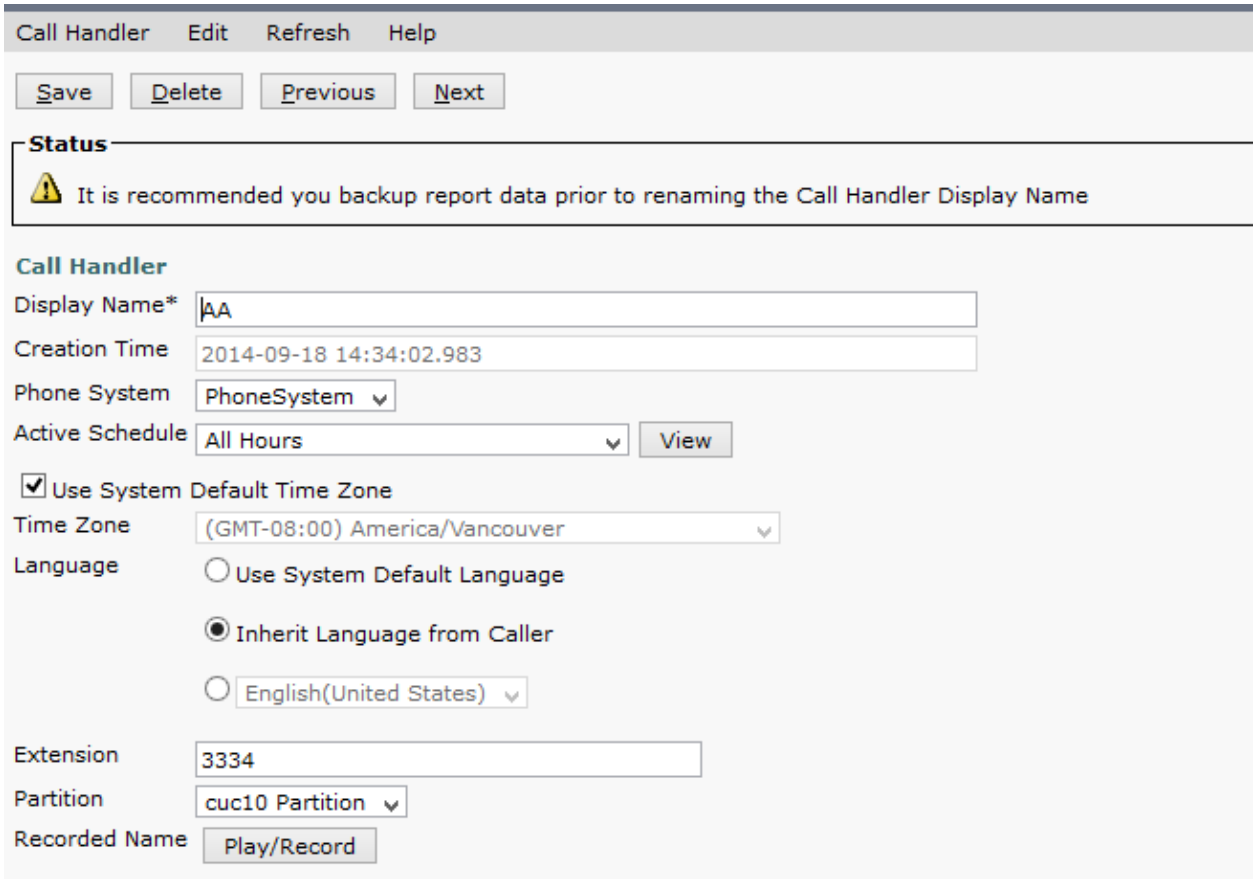
System Version

User configuration

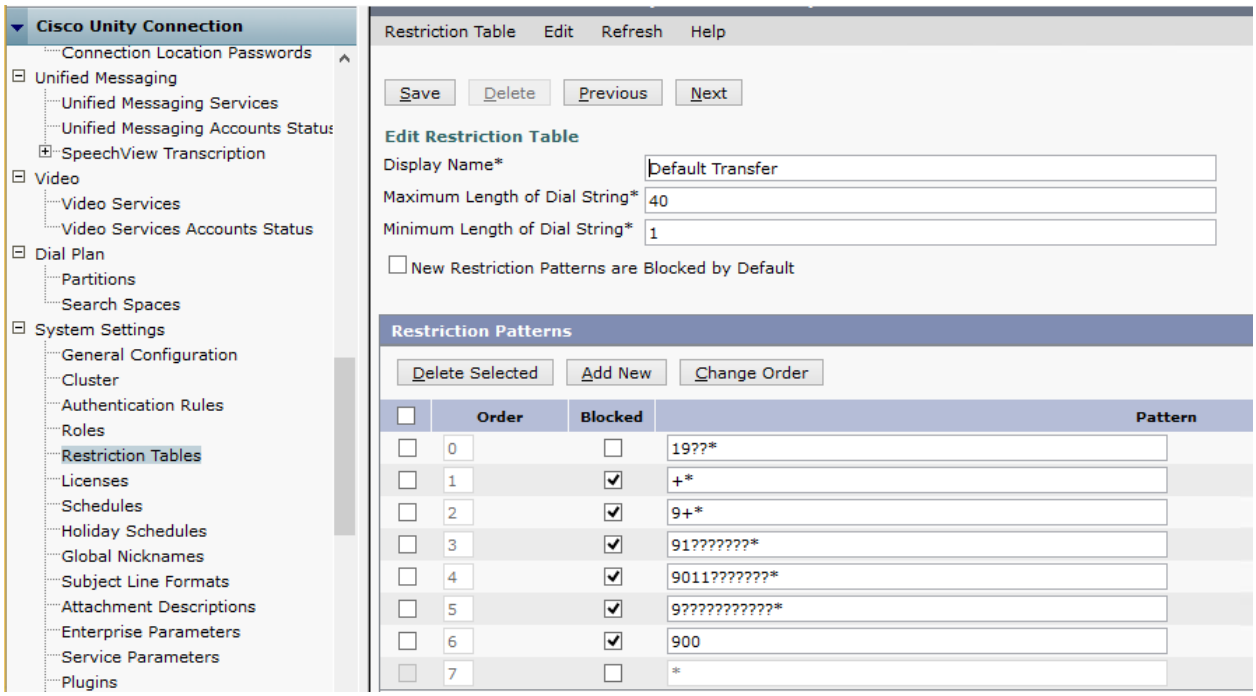


Alias	Extension	First Name	Last Name	Display Name
admin				admin
ashley	1936	Ashley	Williams	Ashley Williams
garrus	1935	Garrus	Vakarian	Garrus Vakarian
james	1937	James	Vega	James Vega
operator	99990			Operator
Replication		Replication	Agent	Replication Agent (cuc9)
tali	1938	Tali	Zorah	Tali Zorah
undeliverablemessagesmailbox	99999			Undeliverable Messages
UnityConnection		Cisco Unity Connection	Messaging System	Cisco Unity Connection Messaging System

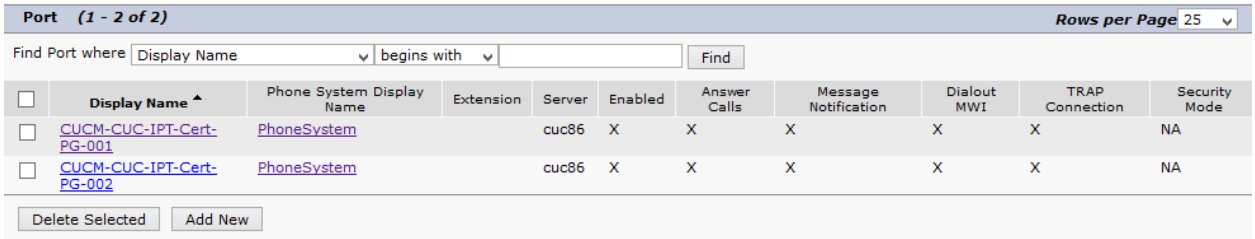
Call Handler for Auto Attendant



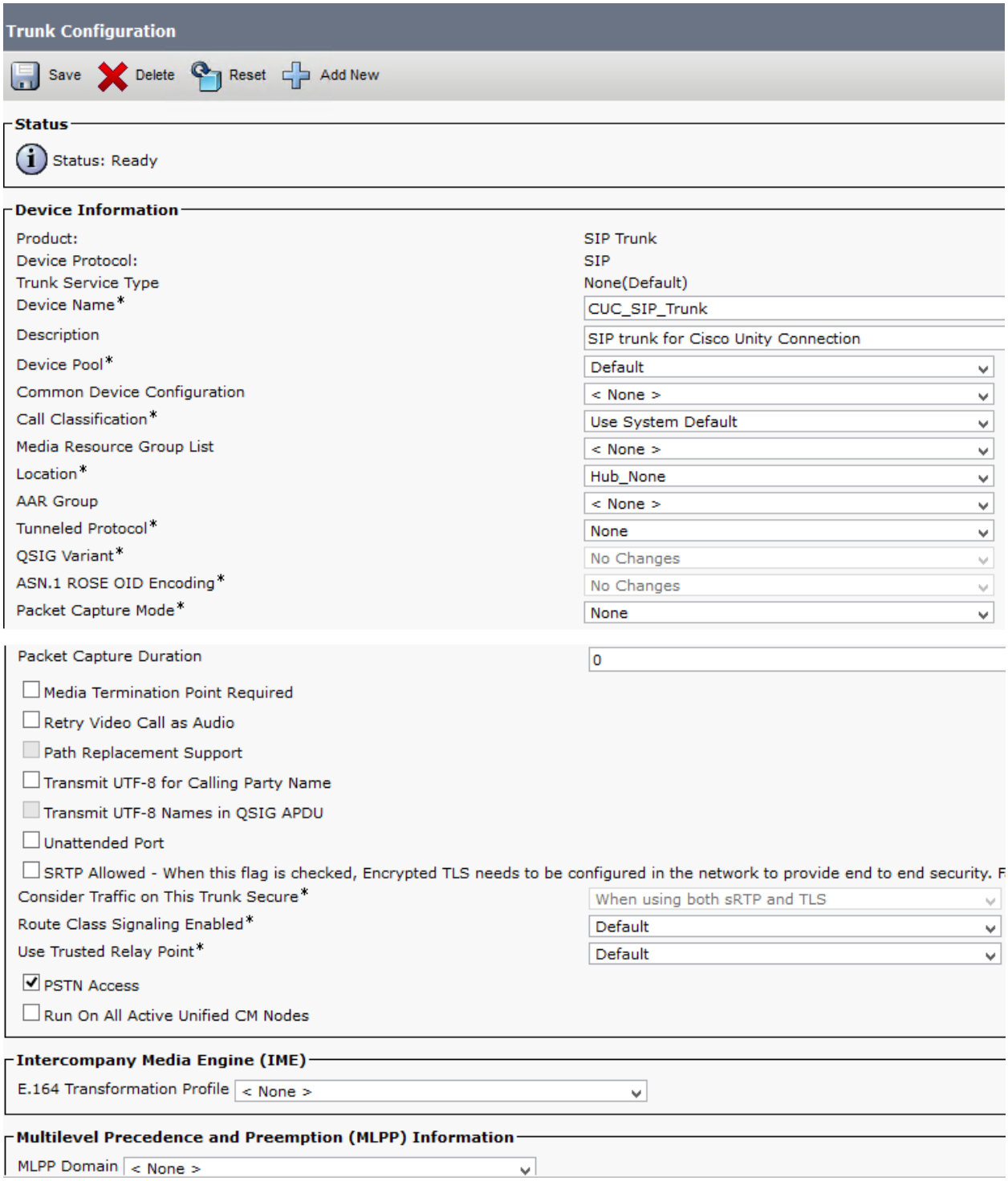
Call Routing for user extension



Cisco Unity Connection Ports



Cisco Unity Connection SIP Trunk



Call Routing Information

- [x] Remote-Party-Id
- [x] Asserted-Identity

Asserted-Type* Default

SIP Privacy* Default

Inbound Calls

Significant Digits* 3

Connected Line ID Presentation* Default

Connected Name Presentation* Default

Calling Search Space < None >

AAR Calling Search Space < None >

Prefix DN 1

- [x] Redirecting Diversion Header Delivery - Inbound

Incoming Calling Party Settings

If the administrator sets the prefix to Default this indicates call processing will use prefix at the next level unless the field is empty in which case there is no prefix assigned.

Clear Prefix Settings

Connected Party Settings

Connected Party Transformation CSS < None >

- [x] Use Device Pool Connected Party Transformation CSS

Outbound Calls

Called Party Transformation CSS < None >

- [x] Use Device Pool Called Party Transformation CSS

Calling Party Transformation CSS < None >

- [x] Use Device Pool Calling Party Transformation CSS

Calling Party Selection* Originator

Calling Line ID Presentation* Default

Calling Name Presentation* Default

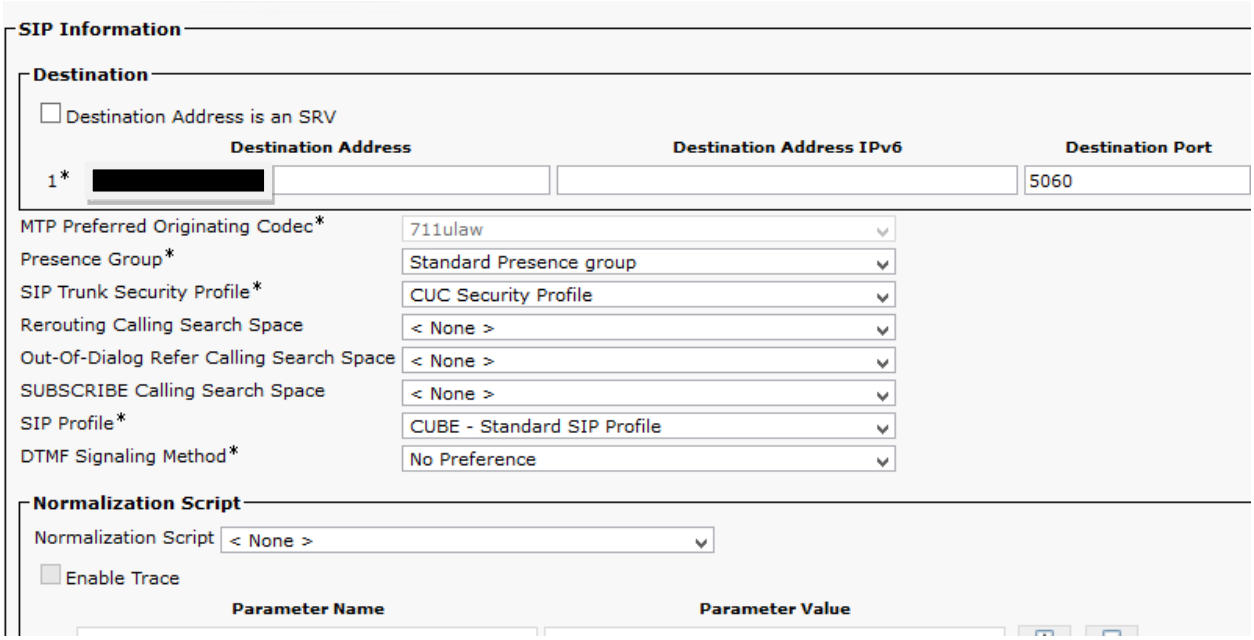
Caller ID DN

Caller Name

- [x] Redirecting Diversion Header Delivery - Outbound

Redirecting Party Transformation CSS < None >

- [x] Use Device Pool Redirecting Party Transformation CSS



Configuring Cisco Voice Gateway VG204XM

Show Version

Cisco IOS Software, VG20XXM Software (VG20XXM-IPVOICE-M), Version 15.3(2)T, RELEASE SOFTWARE (fc3)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2013 by Cisco Systems, Inc.
Compiled Thu 28-Mar-13 14:21 by prod_rel_team

ROM: System Bootstrap, Version 12.4(20r)YA2, RELEASE SOFTWARE (fc1)

VG204XM uptime is 1 hour, 1 minute
System returned to ROM by power-on
System image file is "flash:vg20xxm-ipvoice-mz.153-2.T.bin"
Last reload type: Normal Reload
Last reload reason: power-on

Cisco VG204XM (MPC8300) processor (revision 0x100) with 249856K/12288K bytes of memory.
Processor board ID FCH1807S0N8
MPC8300 CPU Rev: Part Number 0x8062, Revision ID 0x11
2 FastEthernet interfaces
4 Voice FXS interfaces
256K bytes of non-volatile configuration memory.
125496K bytes of ATA CompactFlash (Read/Write)

Show Running-Configuration

Building configuration...

Current configuration : 1942 bytes
!
! Last configuration change at 18:47:02 UTC Sun Mar 3 2002
version 15.3
no service pad
service tcp-keepalives-in
service tcp-keepalives-out
service timestamps debug datetime msec

```
service timestamps log datetime msec
service password-encryption
!
hostname VG204XM
!
boot-start-marker
boot-end-marker
!
enable secret 5 YYYYY
enable password YYYY
!
no aaa new-model
!
ip domain name ipt.local
ip cef
no ipv6 cef
!
voice-card 0
!
interface FastEthernet0/0
 ip address dhcp
 duplex auto
 speed auto
!
interface FastEthernet0/1
 ip address dhcp
 shutdown
 speed auto
 half-duplex
!
ip forward-protocol nd
!
no ip http server
!
control-plane
!
voice-port 0/0
 cptone CA
!
voice-port 0/1
 cptone CA
!
voice-port 0/2
 cptone CA
!
voice-port 0/3
 cptone CA
!
ccm-manager redundant-host Y.Y.Y.Y
ccm-manager mgcp
no ccm-manager fax protocol cisco
ccm-manager music-on-hold
ccm-manager config server X.X.X.X
ccm-manager config
!
mgcp
mgcp call-agent X.X.X.X 2427 service-type mgcp version 0.1
mgcp rtp unreachable timeout 1000 action notify
mgcp modem passthrough voip mode nse
mgcp package-capability rtp-package
mgcp package-capability sst-package
no mgcp package-capability res-package
no mgcp timer receive-rtcp
mgcp sdp simple
mgcp fax t38 inhibit
mgcp bind control source-interface FastEthernet0/0
mgcp bind media source-interface FastEthernet0/0
mgcp behavior rsip-range tgcp-only
```

```
mgcp behavior comedia-role none
mgcp behavior comedia-check-media-src disable
mgcp behavior comedia-sdp-force disable
!
mgcp profile default
!
dial-peer voice 1 pots
 service mgcpapp
 port 0/0
!
dial-peer voice 2 pots
 service mgcpapp
 port 0/1
!
dial-peer voice 3 pots
 service mgcpapp
 port 0/2
!
dial-peer voice 4 pots
 service mgcpapp
 port 0/3
!
line con 0
 no modem enable
line aux 0
line vty 0 4
 password YYYY
 login
 transport input all
!
end
```

Fax mode

Pass- through mode

Dial-peer or global configuration: fax protocol pass-through g711ulaw

Gateway Configuration

Save | Delete | Reset | Apply Config | Add New

Status

Status: Ready

Gateway Details

Product	VG204
Gateway	VG204XM.ipt.local
Protocol	MGCP
Device is not trusted	
Domain Name*	VG204XM.ipt.local
Description	[redacted]
Cisco Unified Communications Manager Group*	Default

Configured Slots, VICs and Endpoints

Module in Slot 0 ANALOG

Subunit 0 4FXS-MGCP 0/ 0 0/ 1 0/ 2 0/ 3

Product Specific Configuration Layout

Modem Passthrough*	Enable
Cisco Fax Relay*	Disable
T38 Fax Relay*	Disable
RTP Package Capability*	Enable
MT Package Capability*	Disable
RES Package Capability*	Disable
PRE Package Capability*	Enable
SST Package Capability*	Enable
RTP Unreachable OnOff*	Enable
RTP Unreachable timeout (ms)*	1000
RTCP Report Interval (secs)*	0
Simple SDP*	Enable

Acronyms

Acronym	Definitions
CODEC	Coder-Decoder (in this document a device used to digitize and un-digitize voice signals)
CUBE	Cisco Unified Border Element
CUCM	Cisco Unified Communications Manager
DN	Directory Number
IP	Internet Protocol
MGCP	Media Gateway Control Protocol
MPLS	Multiprotocol Label Switching
PSTN	Public switched telephone network
SCCP	Skinny Client Control Protocol
SIP	Session Initiation Protocol
SP	Service Provider
TDM	Time-division multiplexing
VG	Voice Gateway
VPN	Virtual Private Network

Important Information

THE SPECIFICATIONS AND INFORMATION REGARDING THE PRODUCTS IN THIS MANUAL ARE SUBJECT TO CHANGE WITHOUT NOTICE. ALL STATEMENTS, INFORMATION, AND RECOMMENDATIONS IN THIS MANUAL ARE BELIEVED TO BE ACCURATE BUT ARE PRESENTED WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED. USERS MUST TAKE FULL RESPONSIBILITY FOR THEIR APPLICATION OF ANY PRODUCTS.

IN NO EVENT SHALL CISCO OR ITS SUPPLIERS BE LIABLE FOR ANY INDIRECT, SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES, INCLUDING, WITHOUT LIMITATION, LOST PROFITS OR LOSS OR DAMAGE TO DATA ARISING OUT OF THE USE OR INABILITY TO USE THIS MANUAL, EVEN IF CISCO OR ITS SUPPLIERS HAVE BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

Note: Testing was conducted in Telus labs

Corporate Headquarters

Cisco Systems, Inc.
170 West Tasman Drive
San Jose, CA 95134-1706
USA
www.cisco.com
Tel: 408 526-4000
800 553-NETS (6387)
Fax: 408 526-4100

European Headquarters

Cisco Systems International BV
Haarlerbergpark
Haarlerbergweg 13-19
1101 CH Amsterdam
The Netherlands
www-europe.cisco.com
Tel: 31 0 20 357 1000
Fax: 31 0 20 357 1100

Americas Headquarters

Cisco Systems, Inc.
170 West Tasman Drive
San Jose, CA 95134-1706
USA
www.cisco.com
Tel: 408 526-7660
Fax: 408 527-0883

Asia Pacific Headquarters

Cisco Systems, Inc.
Capital Tower
168 Robinson Road
#22-01 to #29-01
Singapore 068912
www.cisco.com
Tel: +65 317 7777
Fax: +65 317 7799

Cisco Systems has more than 200 offices in the following countries and regions. Addresses, phone numbers, and fax numbers are listed on the Cisco Web site at www.cisco.com/go/offices.

Argentina • Australia • Austria • Belgium • Brazil • Bulgaria • Canada • Chile • China PRC • Colombia • Costa Rica • Croatia • Czech Republic • Denmark • Dubai, UAE • Finland • France • Germany • Greece • Hong Kong SAR • Hungary • India • Indonesia • Ireland • Israel • Italy • Japan • Korea • Luxembourg • Malaysia • Mexico • The Netherlands • New Zealand • Norway • Peru • Philippines • Poland • Portugal • Puerto Rico • Romania • Russia • Saudi Arabia • Scotland • Singapore • Slovakia • Slovenia • South Africa • Spain • Sweden • Switzerland • Taiwan • Thailand • Turkey Ukraine • United Kingdom • United States • Venezuela • Vietnam • Zimbabwe

Printed in the USA