Application Note

Connecting Cisco Unified Communication Manager [v11.5.1] to CableOne SIP Trunks via Cisco Unified Border Element v12.0.0 [IOS-XE 16.07.01]

May 16, 2018

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Introduction

Service Providers today, such as CableOne, 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 centralized IP to TDM POP gateways to provide on-net and off-net services.

CableOne is a service provider offering that allows connection to the PSTN and may offer the end customer a viable alternative to traditional PSTN connectivity. A demarcation device between these services and customer owned services is recommended. As an intermediary device between Cisco Unified Communications Manager (Cisco UCM) and CableOne network, Cisco Unified Border Element (Cisco UBE) ISR 4331/K9 running IOS 16.07.01 can be used. The Cisco Unified Border Element 16.07.01 provides demarcation, security, interworking and session control services for Cisco Unified Communications Manager 11.5.1 connected to CableOne IP network.

This document assumes the reader is knowledgeable with the terminology and configuration of Cisco Unified Communications Manager. Only configuration settings specifically required for CableOne interoperability are presented. Feature configuration and most importantly the dial plan are customer specific and need individual approach.

- This application note describes how to configure Cisco UCM 11.5.1, and Cisco UBE on ISR 4331/K9 [IOS – 16.07.01] for connectivity to CableOne SIP Trunking service. The deployment model covered in this application note is CPE (Cisco UCM) to PSTN (CableOne) via Cisco UBE v12.0 [IOS-XE] 16.07.01.
- Testing was performed in accordance to CableOne generic SIP Trunking test methodology and among features verified were – basic calls, DTMF transport, Music on Hold (MOH), unattended and attended transfers, call forward, conferences and High Availability.
- The Cisco UBE configuration detailed in this document is based on a lab environment with a simple dial-plan used to ensure proper interoperability between CableOne SIP network and Cisco Unified Communications. The configuration described in this document details the important configuration settings to have enabled for interoperability to be successful and care must be taken by the network administrator deploying Cisco UCM to interoperate to CableOne SIP Trunking network.

Network Topology

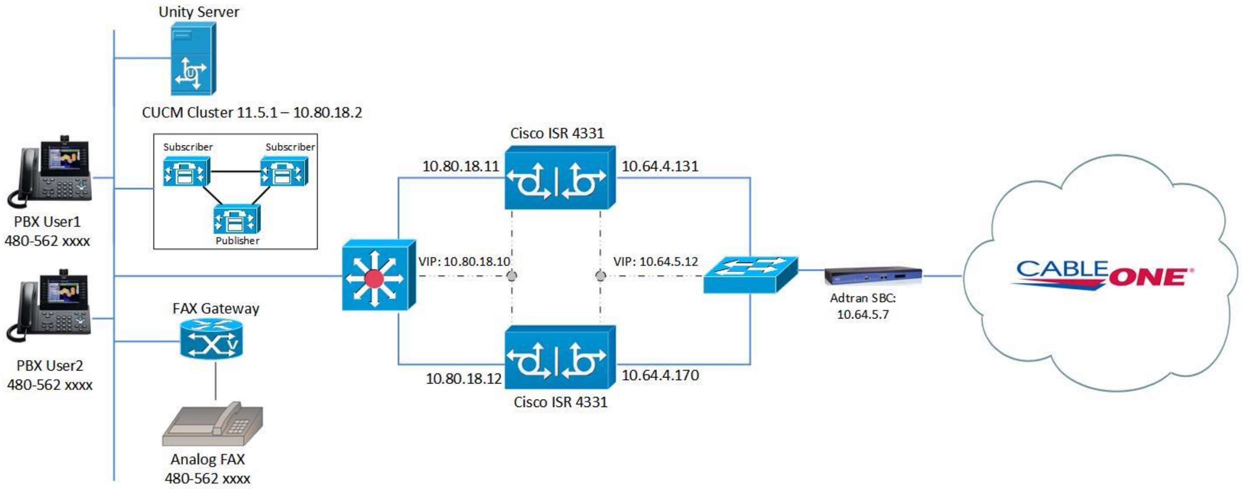


Figure 1 Network Topology

- The network topology includes the Cisco UCM Cluster, Unity Voicemail system, Cisco Fax gateway and 2 Cisco Endpoints. Cisco UCM has a trunk configured to Cisco UBE's Virtual IP Address. CableOne was used as the service provider with SIP trunk to the Cisco UBE using the WAN Virtual IP Address.
- 2 Cisco Unified Border Elements are used here for High Availability.
- SIP Trunk transport type used between Cisco UBE and Cisco UCM is TCP and to CableOne is UDP.

Cisco UCM and Cisco UBE Settings:

Setting	Value
Transport from Cisco UBE to Cisco UCM	TCP with RTP
Transport from Cisco UBE to CableOne	UDP with RTP
Voice Mail Support	YES
Session Refresh	YES

System Components

Hardware Requirements

- Cisco UBE on Cisco ISR 4331/K9 router
- CUCM cluster on UCS C240, 1 Publisher node and 2 Subscriber nodes
- Cisco 2851 with FXS ports and Analog Fax machine
- Generic Cisco IP-Phones
- Adtran NetVanta 3140

Software Requirements

- CUBE-Version: 12.0.0 running IOS-XE 16.07.01
- CUCM UCOS 11.5.1.12900-21 for 1 Publisher and 2 Subscriber
- Cisco IOS v15.1(4)M5 for the fax gateway
- ADTRAN, Inc. OS version R12.3.3.E

Features

Features Supported

- Incoming and outgoing calls using G711ulaw codec
- International Calls and digit manipulations
- Call Conference
- CPE Voice Mail support
- Call hold & Resume with and without MoH
- Unattended and Attended Call transfer
- Call forward (all, busy and no answer)
- Inband DTMF
- Fax (G711 Pass-through)
- IP-PBX Calling number privacy
- High Availability

Features Not Supported

- Cisco UCM does not support Blind Call transfer
- In HA Redundancy mode, the Primary Cisco UBE will not take over the Primary/Active role after a reboot/network outage
- CableOne does not support T.38 Fax
- G.729 Codec for voice calls is not supported by CableOne

Caveats

- Caller ID is not updated on attended and unattended transfer scenarios.
- Only one IP PBX used for the testing.
- The Cisco UBE HA tested is layer 2 box to box Cisco UBE redundancy.
- Transcoder has been enabled on Cisco UBE to support Inband DTMF.

Configuration

Configuring Cisco Unified Border Element

Network Interface

The IP address used are for illustration only, the actual IP address can vary. The Active/Standby pair share the same virtual IP address and continually exchange status messages.

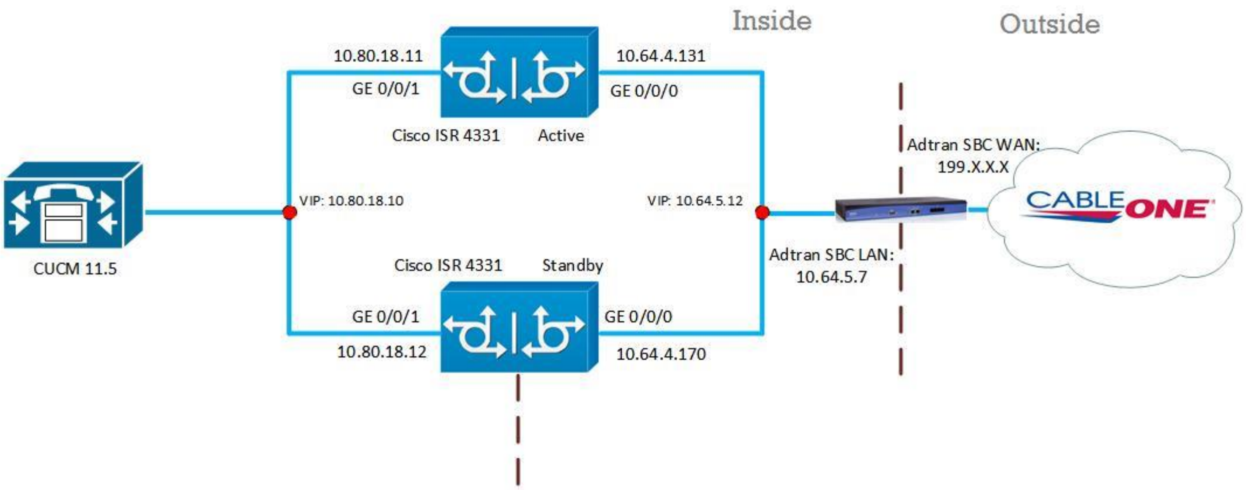


Figure 2 High Availability topology

Cisco UBE 1:

```
interface GigabitEthernet0/0/0
 description WAN
 ip address 10.64.4.131 255.255.0.0
 negotiation auto
 redundancy rii 1
 redundancy group 1 ip 10.64.5.12 exclusive
!
interface GigabitEthernet0/0/1
 description LAN
 ip address 10.80.18.11 255.255.255.0
 negotiation auto
 redundancy rii 2
 redundancy group 1 ip 10.80.18.10 exclusive
!
interface GigabitEthernet0/0/2
 description CUBE_HA
 ip address 10.89.20.12 255.255.255.0
 negotiation auto
!
interface Service-Engine0/4/0
!
interface GigabitEthernet0
 vrf forwarding Mgmt-intf
 no ip address
 shutdown
 negotiation auto
```

Cisco UBE 2:

```
interface GigabitEthernet0/0/0
 description WAN
 ip address 10.64.4.170 255.255.0.0
```

```
 negotiation auto
 redundancy rii 1
 redundancy group 1 ip 10.64.5.12 exclusive
!
interface GigabitEthernet0/0/1
 description LAN
 ip address 10.80.18.12 255.255.255.0
 negotiation auto
 redundancy rii 2
 redundancy group 1 ip 10.80.18.10 exclusive
!
interface GigabitEthernet0/0/2
 description CUBE_HA
 ip address 10.89.20.11 255.255.255.0
 negotiation auto
!
interface Service-Engine0/4/0
!
interface GigabitEthernet0
 vrf forwarding Mgmt-intf
 no ip address
 shutdown
 negotiation auto
```

Global Cisco UBE settings

In order to enable Cisco UBE IP2IP SBC functionality, following command has to be entered:

```
voice service voip
 address-hiding
 mode border-element license capacity 20
 allow-connections sip to sip
 redundancy-group 1
 no supplementary-service sip handle-replaces
 fax protocol pass-through g711ulaw
 sip
  asserted-id pai
  midcall-signaling passthru
```

Explanation

Command	**Description**
allow-connections sip to sip	Allow IP2IP connections between two SIP call legs
redundancy-group 1	Enable High Availability for the VoIP service
fax protocol	Specifies the fax protocol
asserted-id	Specifies the privacy header in the outgoing SIP requests and response messages
`midcall-signaling passthru`	Pass-through media change method optimizes or consumes mid-call, media-related signaling within the call

Codecs

G711ulaw codec is used for this testing.

```
voice class codec 1
 codec preference 1 g711ulaw!
```

Dial peer

Outbound Dial-peer to CableOne:

```
description Incoming Call from CUCM International
 session protocol sipv2
 session transport tcp
 incoming called-number .T
 voice-class codec 1
 voice-class sip bind control source-interface GigabitEthernet0/0/1
 voice-class sip bind media source-interface GigabitEthernet0/0/1
 dtmf-relay rtp-nte
 no vad
!
dial-peer voice 2 voip
 description Outgoing Call to CableOne
 destination-pattern .T
 session protocol sipv2
 session target ipv4:10.64.5.7:5060
 voice-class codec 1
 voice-class sip profiles 1
 voice-class sip bind control source-interface GigabitEthernet0/0/0
 voice-class sip bind media source-interface GigabitEthernet0/0/0
 no dtmf-interworking
 no vad
```

Inbound Dial-peer from CableOne:

```
dial-peer voice 3 voip
 description Incoming call from CableOne
 session protocol sipv2
 incoming called-number 480......
 voice-class codec 1
 voice-class sip options-keepalive
 voice-class sip bind control source-interface GigabitEthernet0/0/0
```

```
 voice-class sip bind media source-interface GigabitEthernet0/0/0
 no vad
!
dial-peer voice 4 voip
 description Outgoing to CUCM
 destination-pattern 480......
 session protocol sipv2
 session target ipv4:10.80.18.2:5060
 session transport tcp
 voice-class codec 1
 voice-class sip bind control source-interface GigabitEthernet0/0/1
 voice-class sip bind media source-interface GigabitEthernet0/0/1
 dtmf-relay rtp-nte
 no vad
```

Configuration example

The following configuration snippet contains a sample configuration of Cisco UBE with all parameters mentioned previously.

Active Cisco UBE:

```
version 16.7
service config
service timestamps debug datetime msec
service timestamps log datetime msec
platform qfp utilization monitor load 80
no platform punt-keepalive disable-kernel-core
!
hostname CUBE10Cableone
!
boot-start-marker
boot-end-marker
!
!
vrf definition Mgmt-intf
 !
 address-family ipv4
 exit-address-family
 !
 address-family ipv6
 exit-address-family
!
!
no aaa new-model
!
!
```

```
subscriber templating
multilink bundle-name authenticated
!
crypto pki trustpoint TP-self-signed-2930804041
 enrollment selfsigned
 subject-name cn=IOS-Self-Signed-Certificate-2930804041
 revocation-check none
 rsakeypair TP-self-signed-2930804041
!
crypto pki trustpoint TP-self-signed-3616943619
 enrollment selfsigned
 subject-name cn=IOS-Self-Signed-Certificate-3616943619
 revocation-check none
 rsakeypair TP-self-signed-3616943619
!
!
crypto pki certificate chain TP-self-signed-2930804041
crypto pki certificate chain TP-self-signed-3616943619
!
voice service voip
 address-hiding
 mode border-element license capacity 20
 allow-connections sip to sip
 redundancy-group 1
 no supplementary-service sip handle-replaces
 fax protocol pass-through g711ulaw
 sip
  asserted-id pai
  midcall-signaling passthru
```

```
!
voice class codec 1
 codec preference 1 g711ulaw
!
voice class sip-profiles 1
 request ANY sip-header Diversion modify "sip:(.*)@" "sip:480562\1@"
!
voice-card 0/4
 dsp services dspfarm
 no watchdog
!
license udi pid ISR4331/K9 sn FDO21381F17
diagnostic bootup level minimal
spanning-tree extend system-id
!
redundancy
 mode none
 application redundancy
  group 1
   name voice-HA
   priority 150 failover threshold 75
   timers delay 30 reload 60
   control GigabitEthernet0/0/2 protocol 1
   data GigabitEthernet0/0/2
   track 1 shutdown
   track 2 shutdown
!
track 1 interface GigabitEthernet0/0/0 line-protocol
track 2 interface GigabitEthernet0/0/1 line-protocol
```

```
interface GigabitEthernet0/0/0
 description WAN
 ip address 10.64.4.131 255.255.0.0
 negotiation auto
 redundancy rii 1
 redundancy group 1 ip 10.64.5.12 exclusive
!
interface GigabitEthernet0/0/1
 description LAN
 ip address 10.80.18.11 255.255.255.0
 negotiation auto
 redundancy rii 2
 redundancy group 1 ip 10.80.18.10 exclusive
!
interface GigabitEthernet0/0/2
 description CUBE_HA
 ip address 10.89.20.12 255.255.255.0
 negotiation auto
!
interface Service-Engine0/4/0
!
interface GigabitEthernet0
 vrf forwarding Mgmt-intf
 no ip address
 shutdown
 negotiation auto
!
ip forward-protocol nd
ip http server
```

```
ip http authentication local
ip http secure-server
ip http client source-interface GigabitEthernet0/0/0
ip tftp source-interface GigabitEthernet0/0/0
ip route 0.0.0.0 0.0.0.0 10.64.1.1
ip route 10.80.18.0 255.255.255.0 10.80.18.1
!
ip ssh server algorithm encryption aes128-ctr aes192-ctr aes256-ctr
ip ssh client algorithm encryption aes128-ctr aes192-ctr aes256-ctr
control-plane
!
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
!
dspfarm profile 50 transcode
 codec g711ulaw
 maximum sessions 12
 associate application CUBE
!
dial-peer voice 1 voip
 description Incoming Call from CUCM International
 session protocol sipv2
 session transport tcp
 incoming called-number .T
 voice-class codec 1
 voice-class sip bind control source-interface GigabitEthernet0/0/1
```

```
 voice-class sip bind media source-interface GigabitEthernet0/0/1
 dtmf-relay rtp-nte
 no vad
!
dial-peer voice 2 voip
 description Outgoing Call to CableOne
 destination-pattern .T
 session protocol sipv2
 session target ipv4:10.64.5.7:5060
 voice-class codec 1
 voice-class sip profiles 1
 voice-class sip bind control source-interface GigabitEthernet0/0/0
 voice-class sip bind media source-interface GigabitEthernet0/0/0
 no dtmf-interworking
 no vad
!
dial-peer voice 3 voip
 description Incoming call from CableOne
 session protocol sipv2
 incoming called-number 480......
 voice-class codec 1
 voice-class sip options-keepalive
 voice-class sip bind control source-interface GigabitEthernet0/0/0
 voice-class sip bind media source-interface GigabitEthernet0/0/0
 no vad
!
dial-peer voice 4 voip
 description Outgoing to CUCM
 destination-pattern 480......
```

```
 session protocol sipv2
 session target ipv4:10.80.18.2:5060
 session transport tcp
 voice-class codec 1
 voice-class sip bind control source-interface GigabitEthernet0/0/1
 voice-class sip bind media source-interface GigabitEthernet0/0/1
 dtmf-relay rtp-nte
 no vad
!
!
sip-ua
 connection-reuse
!
!
line con 0
 exec-timeout 0 0
 password XXXXXXXX
 login
 transport input none
 stopbits 1
line aux 0
 stopbits 1
line vty 0 4
 exec-timeout 0 0
 password XXXXXXXXXX
 login
 transport input telnet
!
end
```

Standby Cisco UBE:

```
version 16.7
service timestamps debug datetime msec
service timestamps log datetime msec
platform qfp utilization monitor load 80
no platform punt-keepalive disable-kernel-core
!
hostname CUBE8Cableone
!
boot-start-marker
boot-end-marker
!
!
vrf definition Mgmt-intf
 !
 address-family ipv4
 exit-address-family
 !
 address-family ipv6
 exit-address-family
!
no aaa new-model
!
subscriber templating
multilink bundle-name authenticated
!
crypto pki trustpoint TP-self-signed-3616943619
 enrollment selfsigned
 subject-name cn=IOS-Self-Signed-Certificate-3616943619
```

```
 revocation-check none
 rsakeypair TP-self-signed-3616943619
!
crypto pki certificate chain TP-self-signed-3616943619
!
voice service voip
 no ip address trusted authenticate
 address-hiding
 mode border-element license capacity 20
 allow-connections sip to sip
 redundancy-group 1
 no supplementary-service sip handle-replaces
 fax protocol pass-through g711ulaw
 sip
  midcall-signaling passthru
!
voice class codec 1
 codec preference 1 g711ulaw
!
!
voice class sip-profiles 1
 request ANY sip-header Diversion modify "sip:(.*)@" "sip:480562\1@"
!
voice-card 0/4
 dsp services dspfarm
 no watchdog
!
license udi pid ISR4331/K9 sn FDO21381FEY
no license smart enable
```

```
diagnostic bootup level minimal
!
spanning-tree extend system-id
!
redundancy
 mode none
 application redundancy
  group 1
   name voice-HA
   priority 150 failover threshold 75
   timers delay 30 reload 60
   control GigabitEthernet0/0/2 protocol 1
   data GigabitEthernet0/0/2
   track 1 shutdown
   track 2 shutdown
!
track 1 interface GigabitEthernet0/0/0 line-protocol
track 2 interface GigabitEthernet0/0/1 line-protocol
!
interface GigabitEthernet0/0/0
 description WAN
 ip address 10.64.4.170 255.255.0.0
 negotiation auto
 redundancy rii 1
 redundancy group 1 ip 10.64.5.12 exclusive
!
interface GigabitEthernet0/0/1
 description LAN
 ip address 10.80.18.12 255.255.255.0
```

```
 negotiation auto
 redundancy rii 2
 redundancy group 1 ip 10.80.18.10 exclusive
!
interface GigabitEthernet0/0/2
 description CUBE_HA
 ip address 10.89.20.11 255.255.255.0
 negotiation auto
!
interface Service-Engine0/4/0
!
interface GigabitEthernet0
 vrf forwarding Mgmt-intf
 no ip address
 shutdown
 negotiation auto
!
ip forward-protocol nd
ip http server
ip http authentication local
ip http secure-server
ip http client source-interface GigabitEthernet0/0/0
ip tftp source-interface GigabitEthernet0/0/0
ip route 0.0.0.0 0.0.0.0 10.64.1.1
ip route 10.80.18.0 255.255.255.0 10.80.18.1
!
control-plane
!
!
```

```
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
!
dspfarm profile 50 transcode
 codec g711ulaw
 maximum sessions 12
 associate application CUBE
!
dial-peer voice 1 voip
 description Incoming Call from CUCM International
 session protocol sipv2
 session transport tcp
 incoming called-number .T
 voice-class codec 1
 voice-class sip bind control source-interface GigabitEthernet0/0/1
 voice-class sip bind media source-interface GigabitEthernet0/0/1
 dtmf-relay rtp-nte
 no vad
!
dial-peer voice 2 voip
 description Outgoing Call to CableOne
 destination-pattern .T
 session protocol sipv2
 session target ipv4:10.64.5.7:5060
 voice-class codec 1
```

```
 voice-class sip profiles 1
 voice-class sip bind control source-interface GigabitEthernet0/0/0
 voice-class sip bind media source-interface GigabitEthernet0/0/0
 no dtmf-interworking
 no vad
!
dial-peer voice 3 voip
 description Incoming call from CableOne
 session protocol sipv2
 incoming called-number 480......
 voice-class codec 1
 voice-class sip options-keepalive
 voice-class sip bind control source-interface GigabitEthernet0/0/0
 voice-class sip bind media source-interface GigabitEthernet0/0/0
 no vad
!
dial-peer voice 4 voip
 description Outgoing to CUCM
 destination-pattern 480......
 session protocol sipv2
 session target ipv4:10.80.18.2:5060
 session transport tcp
 voice-class codec 1
 voice-class sip bind control source-interface GigabitEthernet0/0/1
 voice-class sip bind media source-interface GigabitEthernet0/0/1
 dtmf-relay rtp-nte
 no vad
!
!
```

```
sip-ua
 connection-reuse
!
!
line con 0
 exec-timeout 0 0
 password XXXXXXXXXX
 login
 transport input none
 stopbits 1
line aux 0
 stopbits 1
line vty 0 4
 exec-timeout 0 0
 password XXXXXXXXXX
 login
!
wsma agent exec
!
wsma agent config
!
wsma agent filesys
!
wsma agent notify
!
!
end

CUBE8Cableone#
```

Configuring Cisco UCM 11.5 Cluster

Cisco UCM Version

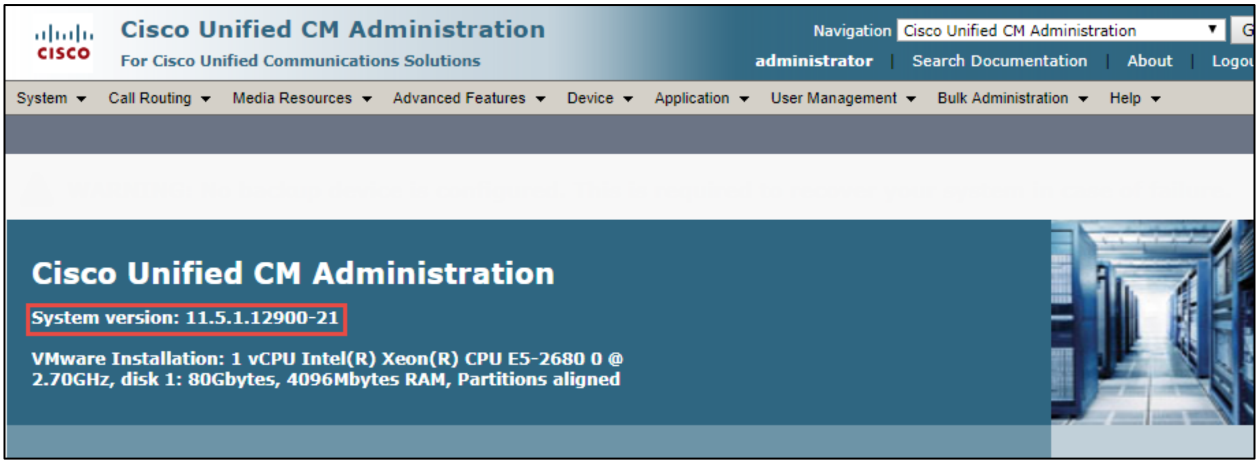


Figure 3: Cisco UCM Version

Cisco Call Manager Service Parameters

Navigation: System → Service Parameters

- Select Server* = Clus28pub--CUCM Voice/Video (Active)
- Select Service*= Cisco CallManager (Active)
- Duplex Streaming Enabled* = True
- All other fields are set to default values

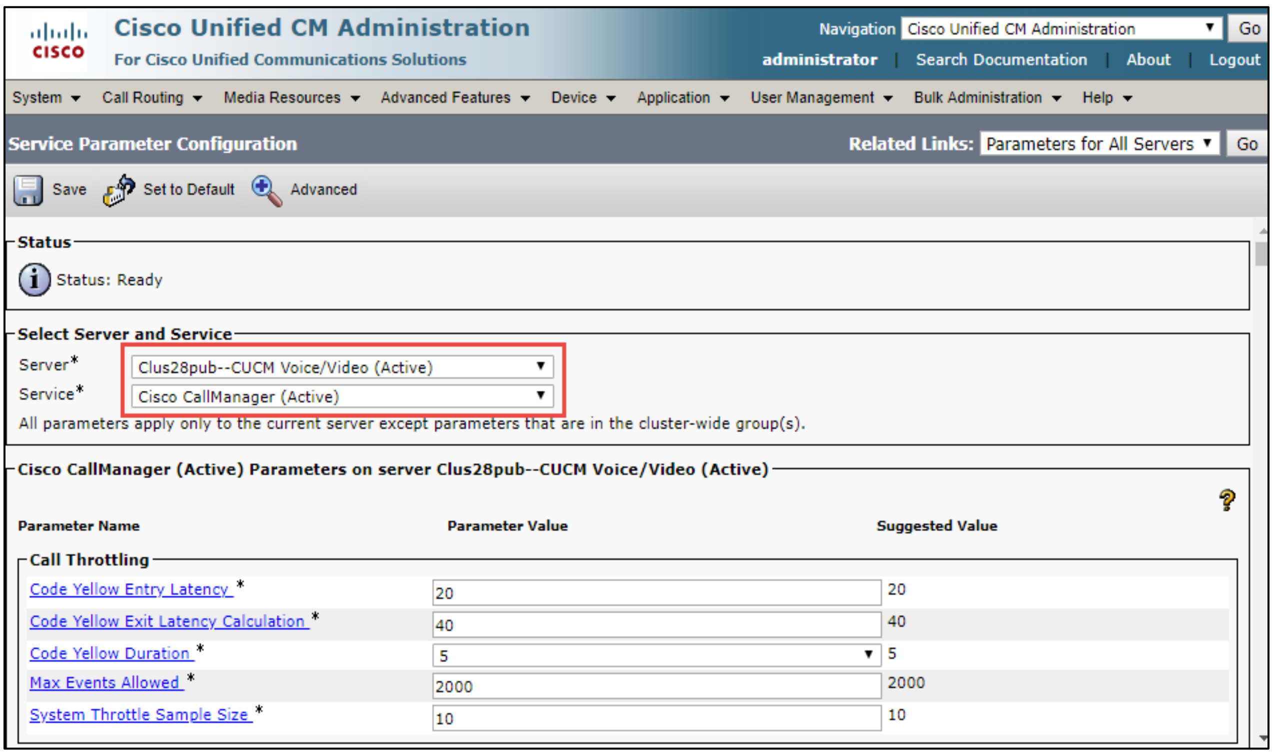
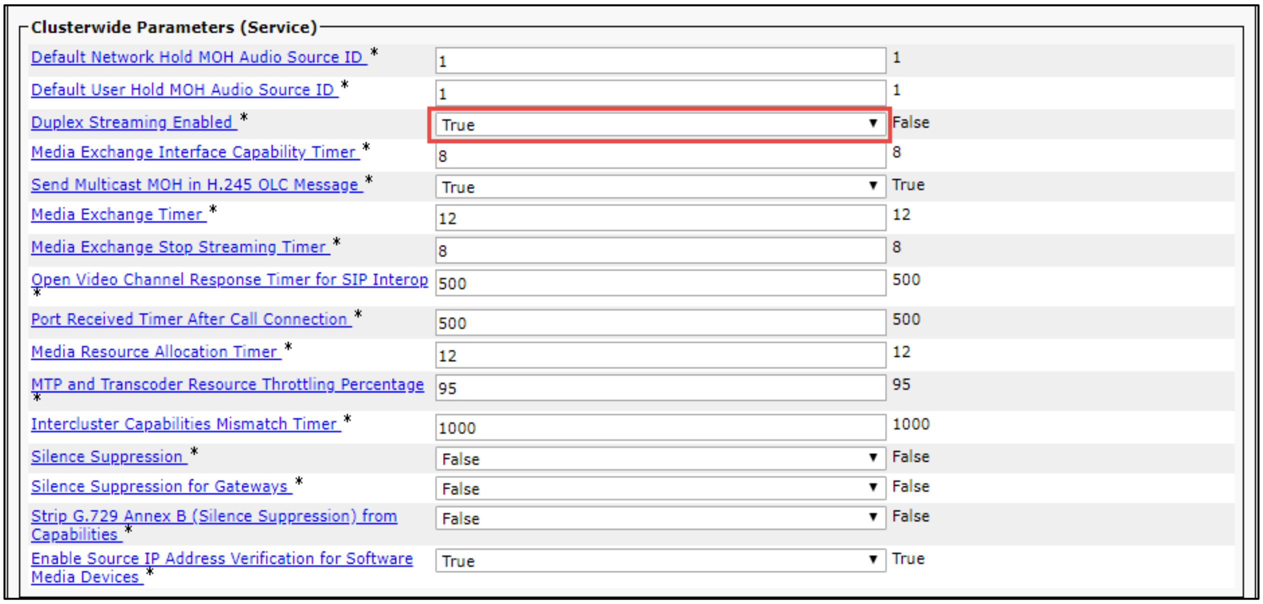


Figure 4: Service Parameters



Clusterwide Parameters (Service)

Default Network Hold MOH Audio Source ID *	1	1
Default User Hold MOH Audio Source ID *	1	1
Duplex Streaming Enabled *	True	False
Media Exchange Interface Capability Timer *	8	8
Send Multicast MOH in H.245 OLC Message *	True	True
Media Exchange Timer *	12	12
Media Exchange Stop Streaming Timer *	8	8
Open Video Channel Response Timer for SIP Interop *	500	500
Port Received Timer After Call Connection *	500	500
Media Resource Allocation Timer *	12	12
MTP and Transcoder Resource Throttling Percentage *	95	95
Intercluster Capabilities Mismatch Timer *	1000	1000
Silence Suppression *	False	False
Silence Suppression for Gateways *	False	False
Strip G.729 Annex B (Silence Suppression) from Capabilities *	False	False
Enable Source IP Address Verification for Software Media Devices *	True	True

Figure 5: Service Parameters (Cont.)

SIP Trunk Security Profile

Navigation: System → Security → SIP Trunk Security Profile

- Name*= **Non Secure SIP Trunk Profile** is used as an example
- Description = **Non Secure SIP Trunk Profile authenticated by null String** is used as an example
- Device Security Mode = **Non Secure**
- Incoming Transport Type* = **TCP + UDP**
- Outgoing Transport Type = **TCP**

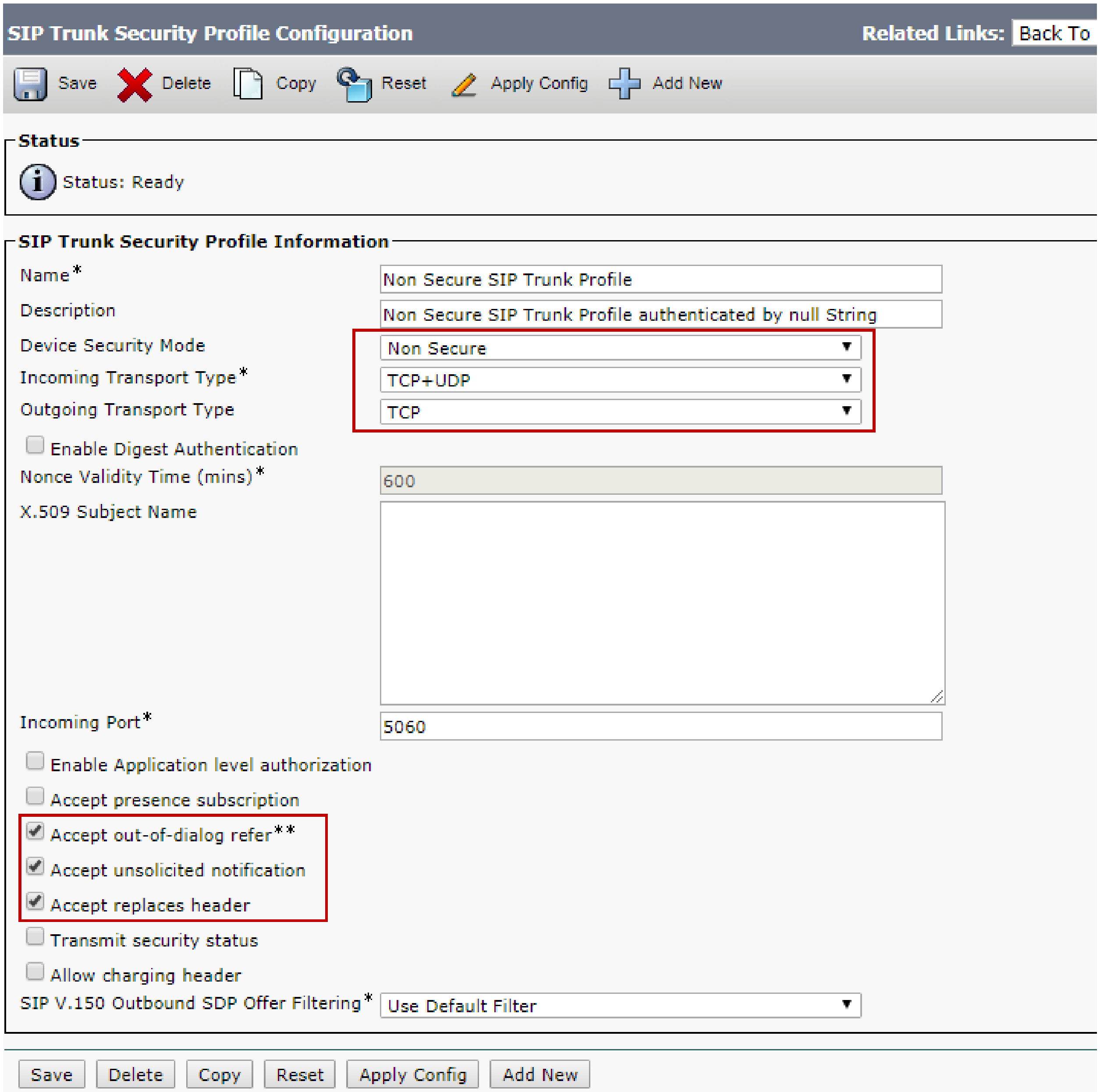


Figure 6: SIP Trunk Security Profile

SIP Profile

Navigation: Device → Device Settings → SIP Profile

- Name*= **CableOne SIP Profile** is used as an example
- **SIP Rel1XX Options**: Send PRACK if 1XX contains SDP is selected for this example

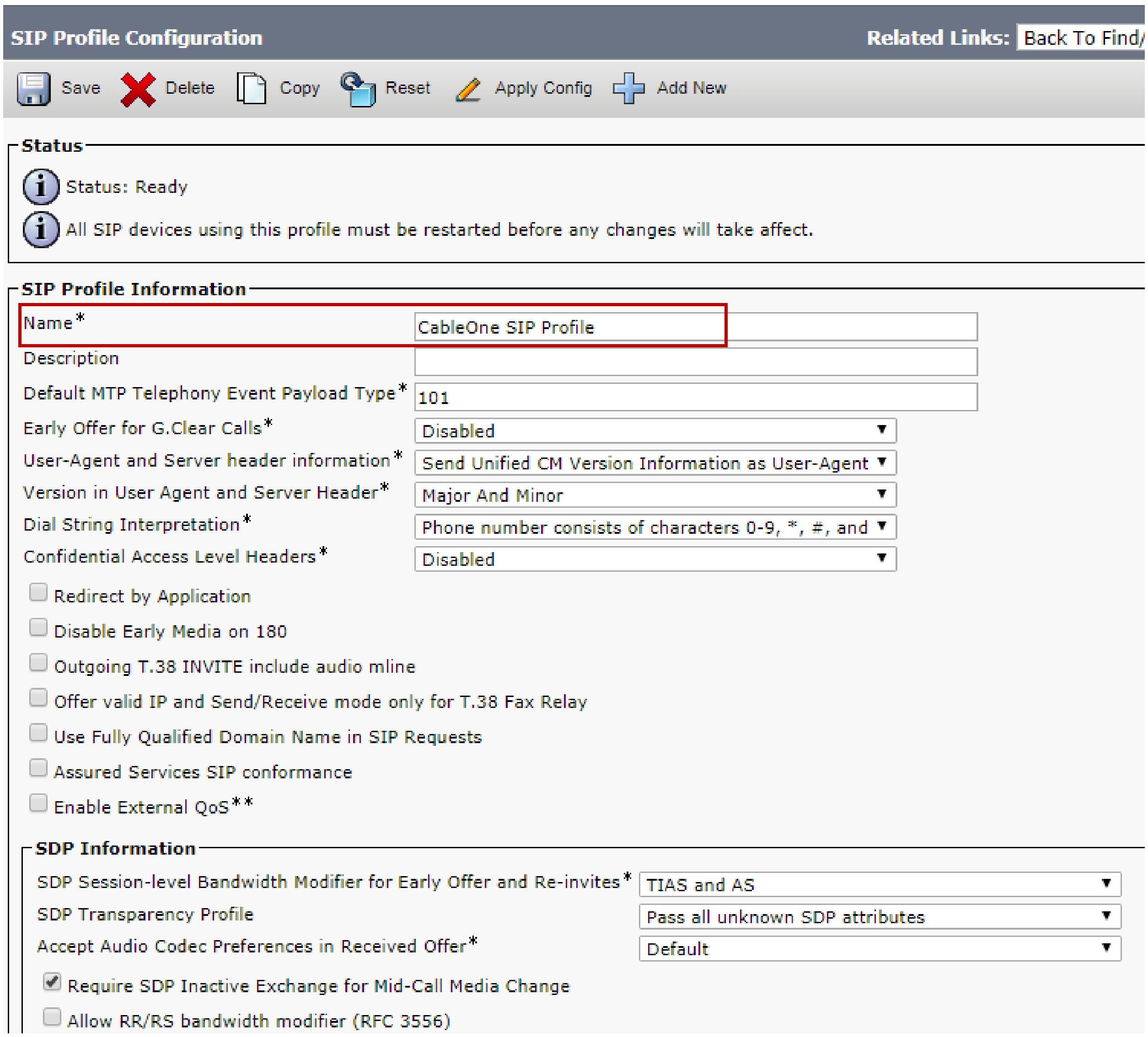


Figure 7: SIP Profile

Parameters used in Phone

Timer Invite Expires (seconds)*	180
Timer Register Delta (seconds)*	5
Timer Register Expires (seconds)*	3600
Timer T1 (msec)*	500
Timer T2 (msec)*	4000
Retry INVITE*	6
Retry Non-INVITE*	10
Media Port Ranges	(selected) Common Port Range for Audio and Video Separate Port Ranges for Audio and Video
Start Media Port*	16384
Stop Media Port*	32766
DSCP for Audio Calls	Use System Default
DSCP for Video Calls	Use System Default
DSCP for Audio Portion of Video Calls	Use System Default
DSCP for TelePresence Calls	Use System Default
DSCP for Audio Portion of TelePresence Calls	Use System Default
Call Pickup URI*	x-cisco-serviceuri-pickup
Call Pickup Group Other URI*	x-cisco-serviceuri-opickup
Call Pickup Group URI*	x-cisco-serviceuri-gpickup
Meet Me Service URI*	x-cisco-serviceuri-meetme
User Info*	None
DTMF DB Level*	Nominal
Call Hold Ring Back*	Off
Anonymous Call Block*	Off
Caller ID Blocking*	Off
Do Not Disturb Control*	User
Telnet Level for 7940 and 7960*	Disabled
Resource Priority Namespace	< None >
Timer Keep Alive Expires (seconds)*	120
Timer Subscribe Expires (seconds)*	120
Timer Subscribe Delta (seconds)*	5
Maximum Redirections*	70
Off Hook To First Digit Timer (milliseconds)*	15000

Figure 8: SIP Profile (Cont.)

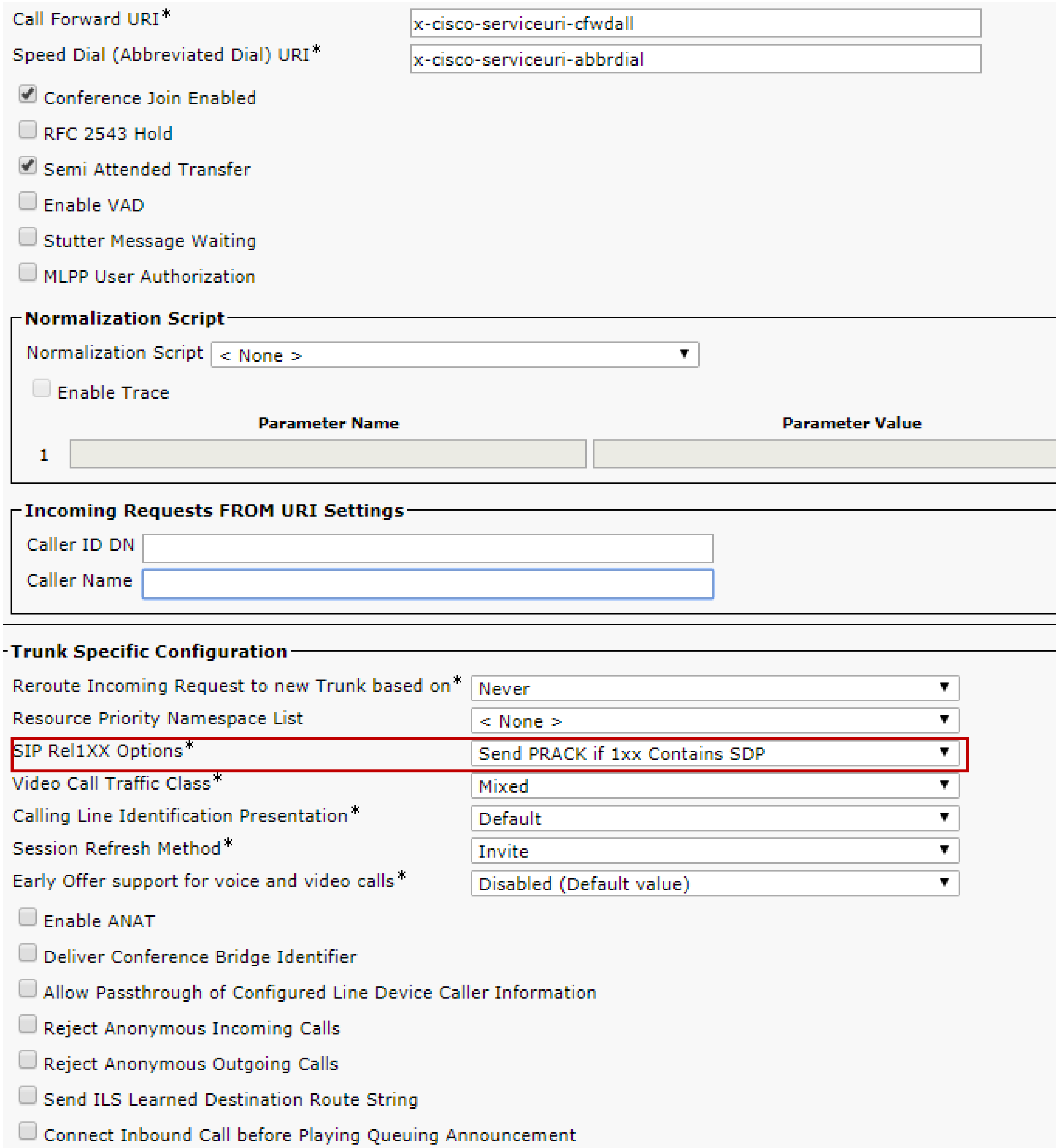


Figure 9: SIP Profile (Cont.)

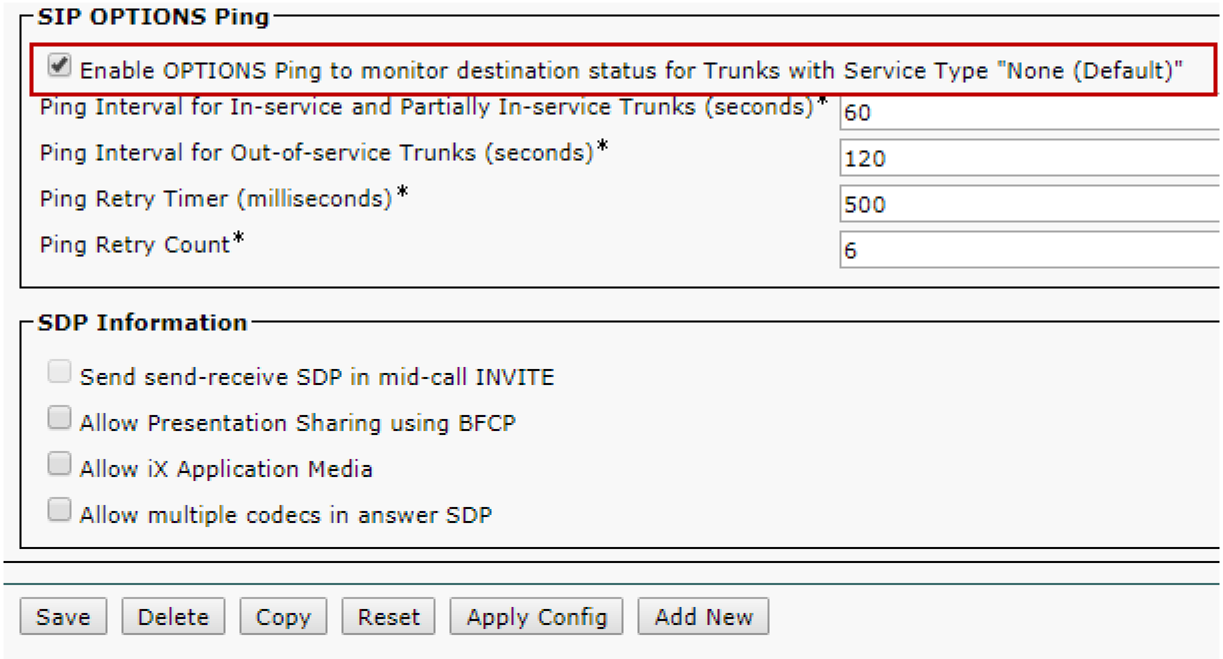


Figure 10: SIP Profile (Cont.)

Trunk configuration

Trunk configuration from Cisco UCM to the LAN side of the Cisco UBE:

Navigation: Device → Trunk → Add New

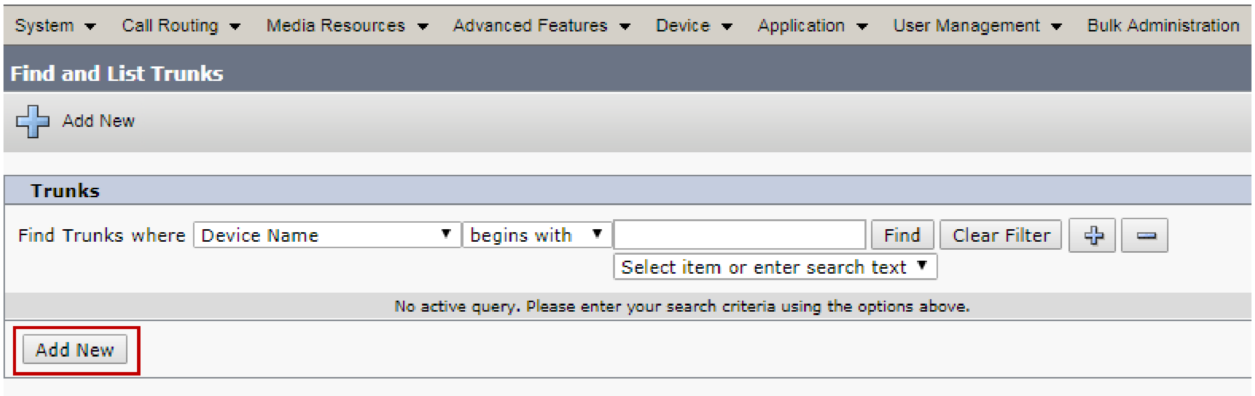


Figure 11: Add New Trunk to Cisco UBE

- Select 'Trunk Type' as SIP Trunk and 'Device Protocol' as SIP and select 'Next' as shown below.
- Set **Device Name**: CableOne is given for this example
- Set **Description**: CableOne SIP Trunk Certification is given for this example
- Select **Device Pool**: "Default" is selected for this example.
- Set Significant Digits: 4
- Under Destination:
- Set **Destination Address**: 10.80.18.12 is given for this example. This is the CUBE LAN side VIP IP address.
- Set **Destination Port**: 5060
- Set **BLF Presence Group**: Standard presence group is selected from dropdown menu
- Set **SIP Trunk security profile**: Non-Secured SIP trunk Profile is elected from drop down menu
- Set **SIP Profile**: CableOne SIP Profile is selected from drop down menu

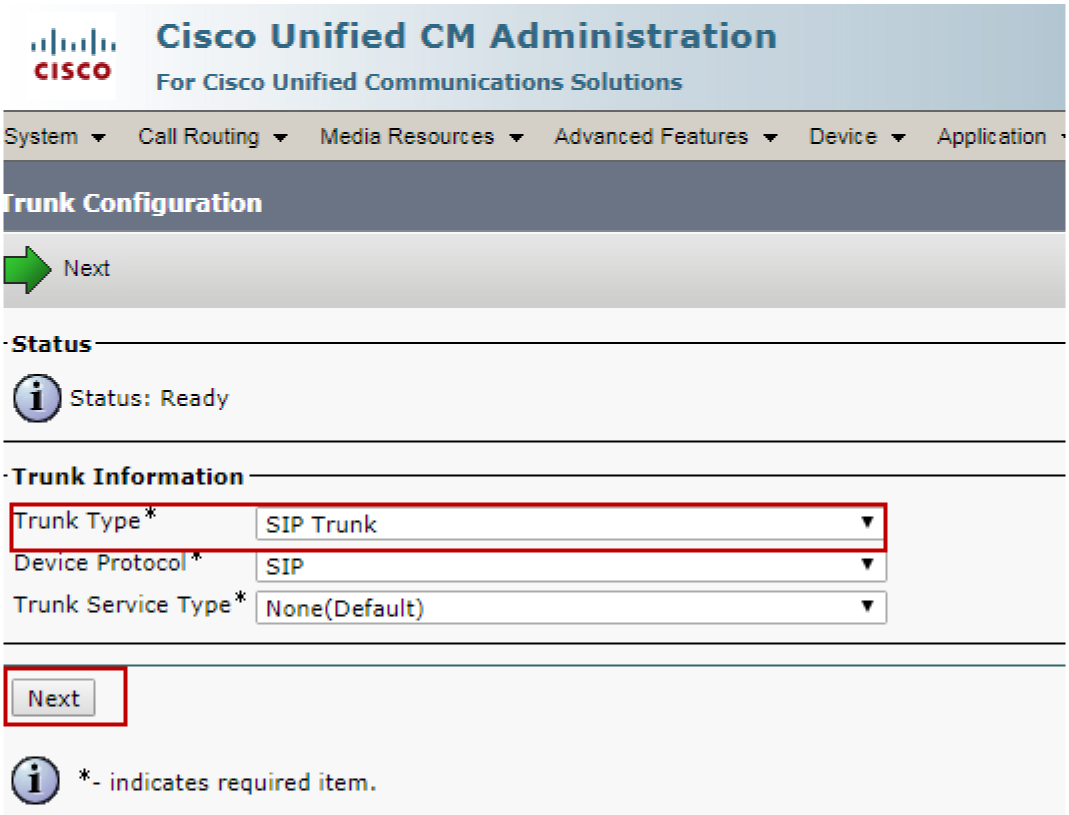


Figure 12: Add SIP Trunk Type

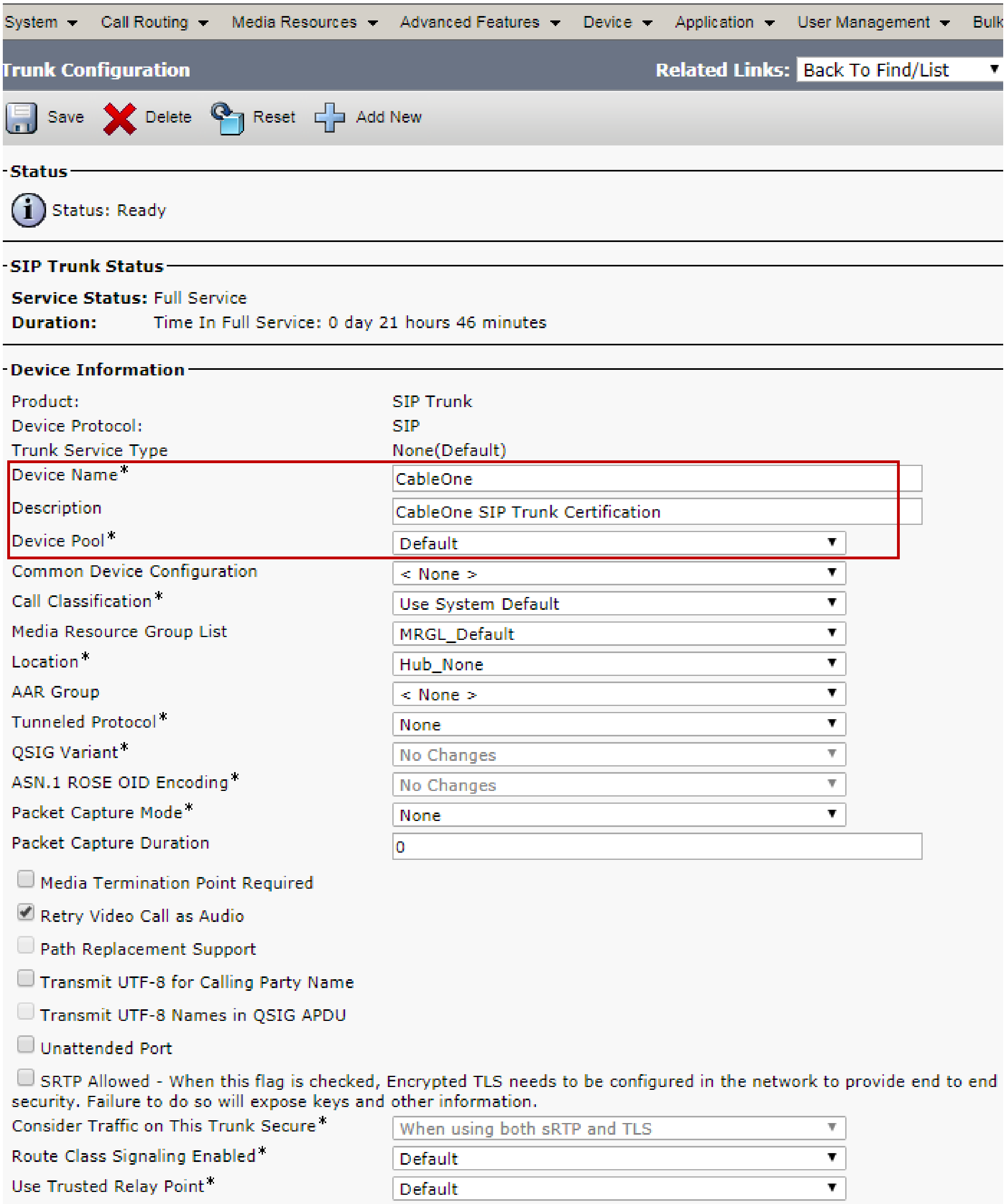


Figure 13: SIP Trunk to Cisco UBE

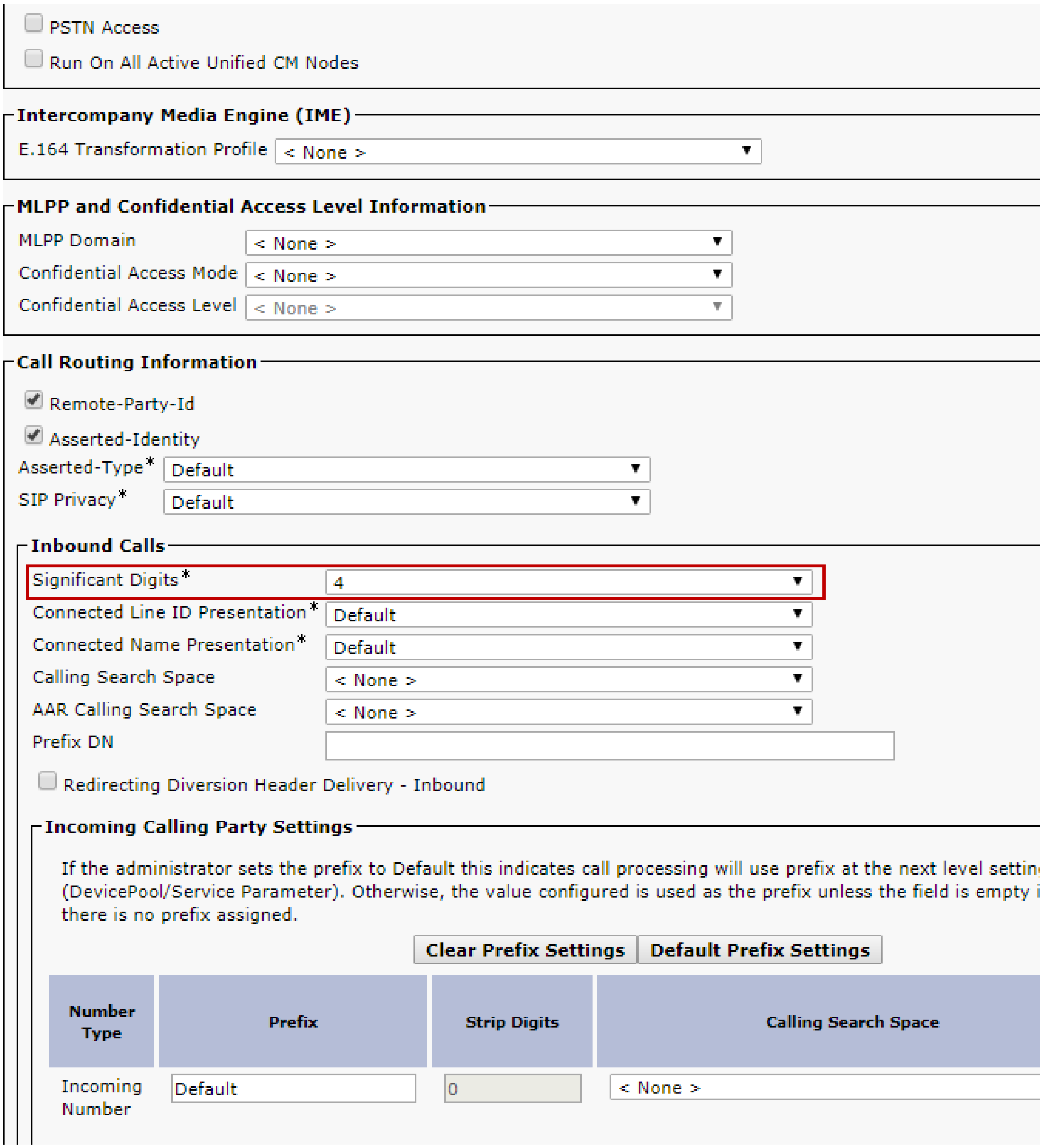


Figure 14: SIP Trunk to Cisco UBE (Cont.)

- Configure the Virtual LAN IP address of the Cisco UBE and the Destination Port
- Configure the SIP Trunk Security Profile and SIP Profile as shown below
- The rest of the configuration is all default

- Click Save and Reset after completion

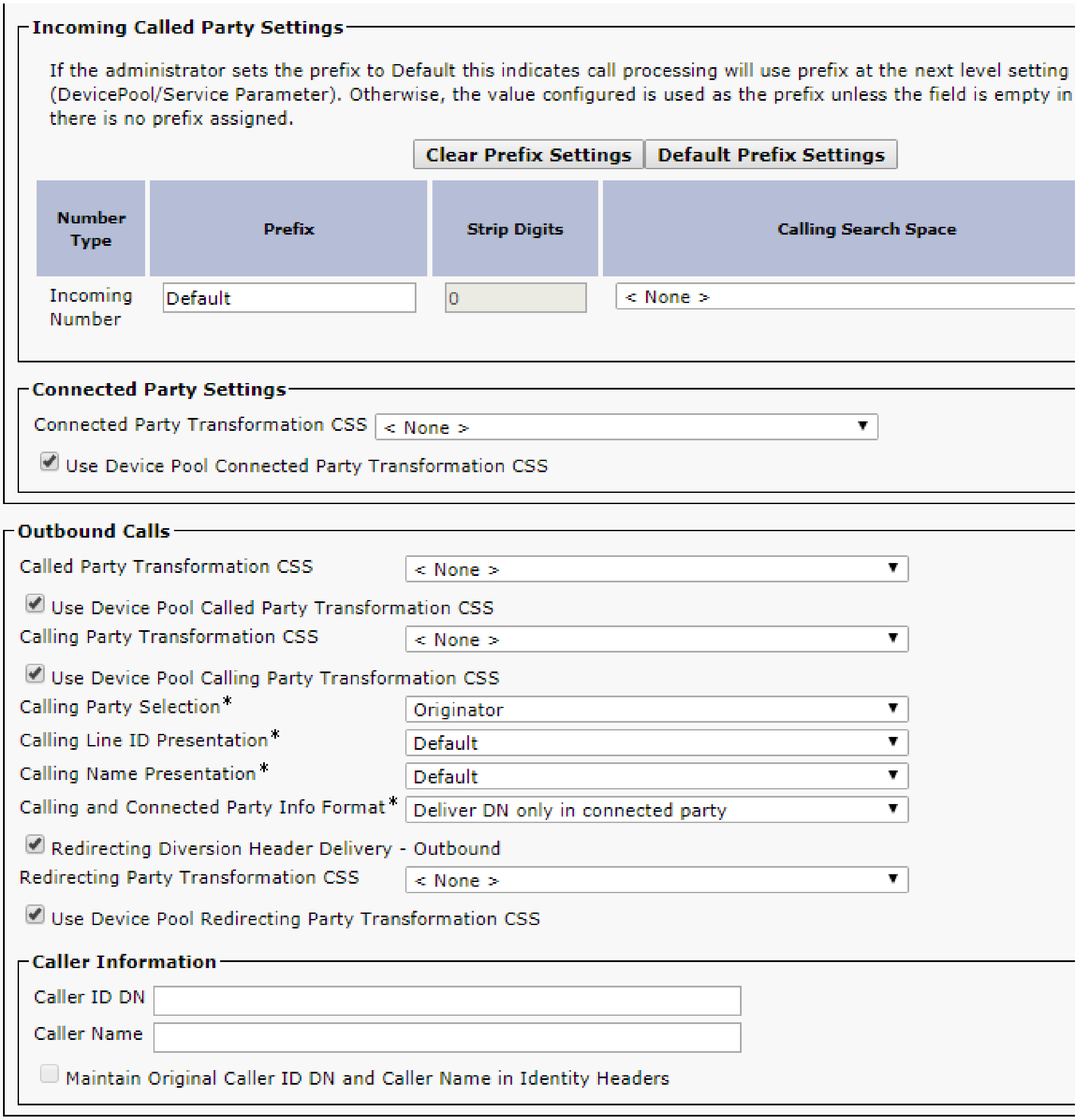


Figure 15: SIP Trunk to Cisco UBE (Cont.)

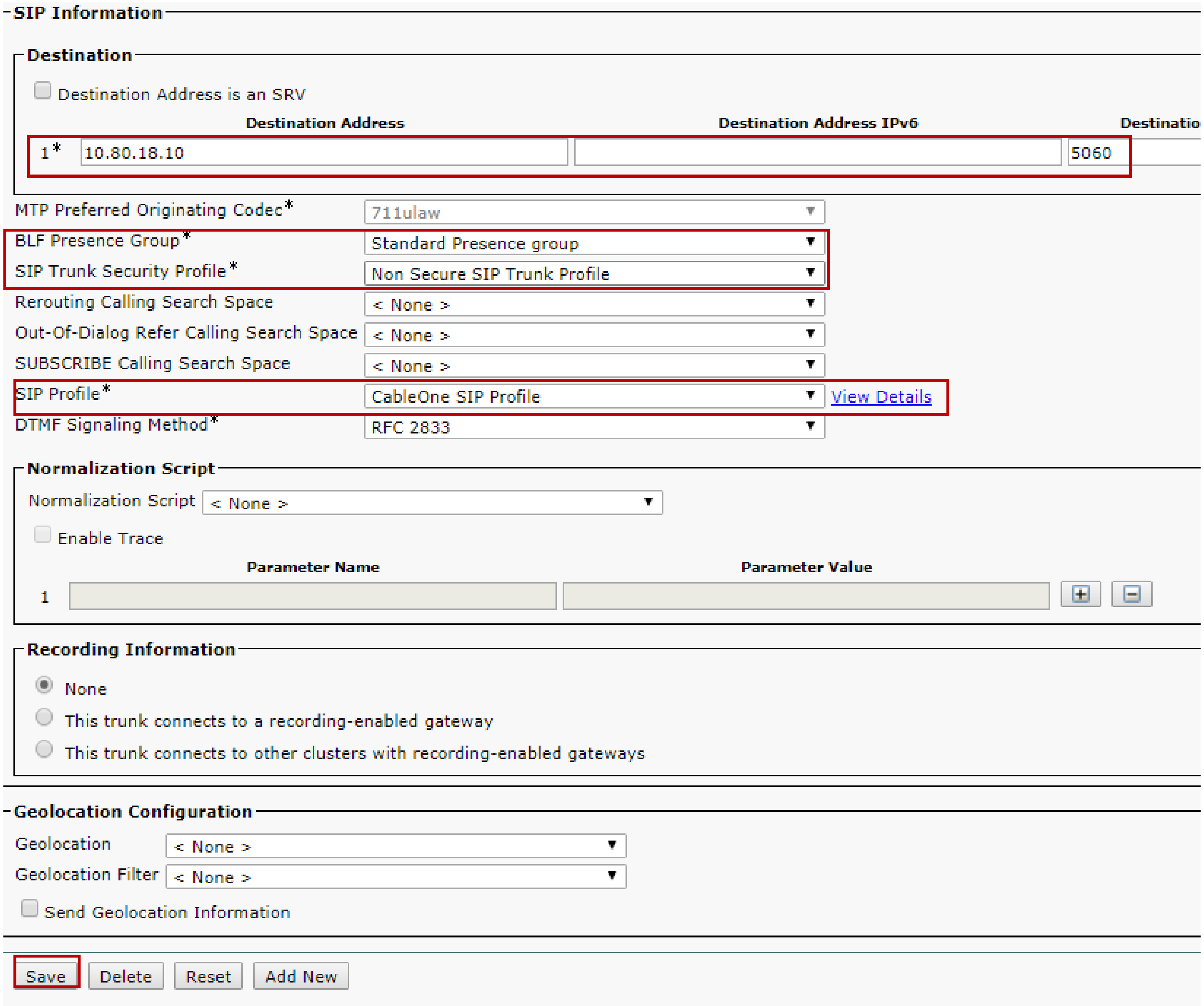


Figure 16: SIP Trunk to Cisco UBE (Cont.)

Routing configuration

Route Pattern for Cisco UBE:

Navigation: Call Routing → Route/Hunt → Route Pattern → Add New

Route patterns are configured as below:
Cisco IP phone dial “11” 10 digits number to access PSTN via Cisco UBE

- “1” is removed before sending to Cisco UBE
- The rest of the number is sent to Cisco UBE and to Cable One Network

- *6 is used to dial the outbound calls with caller ID blocking

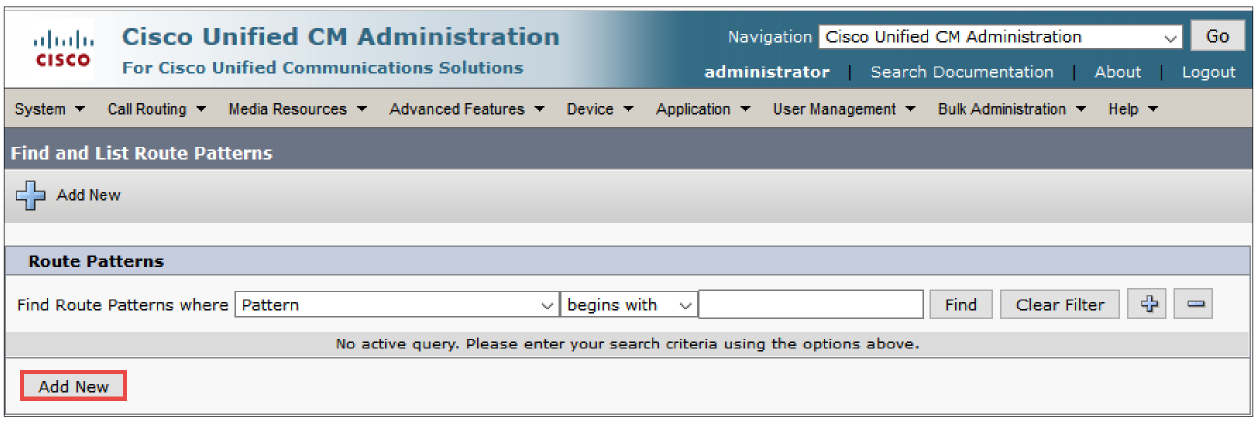


Figure 17: Add New Route Pattern for Cisco UBE

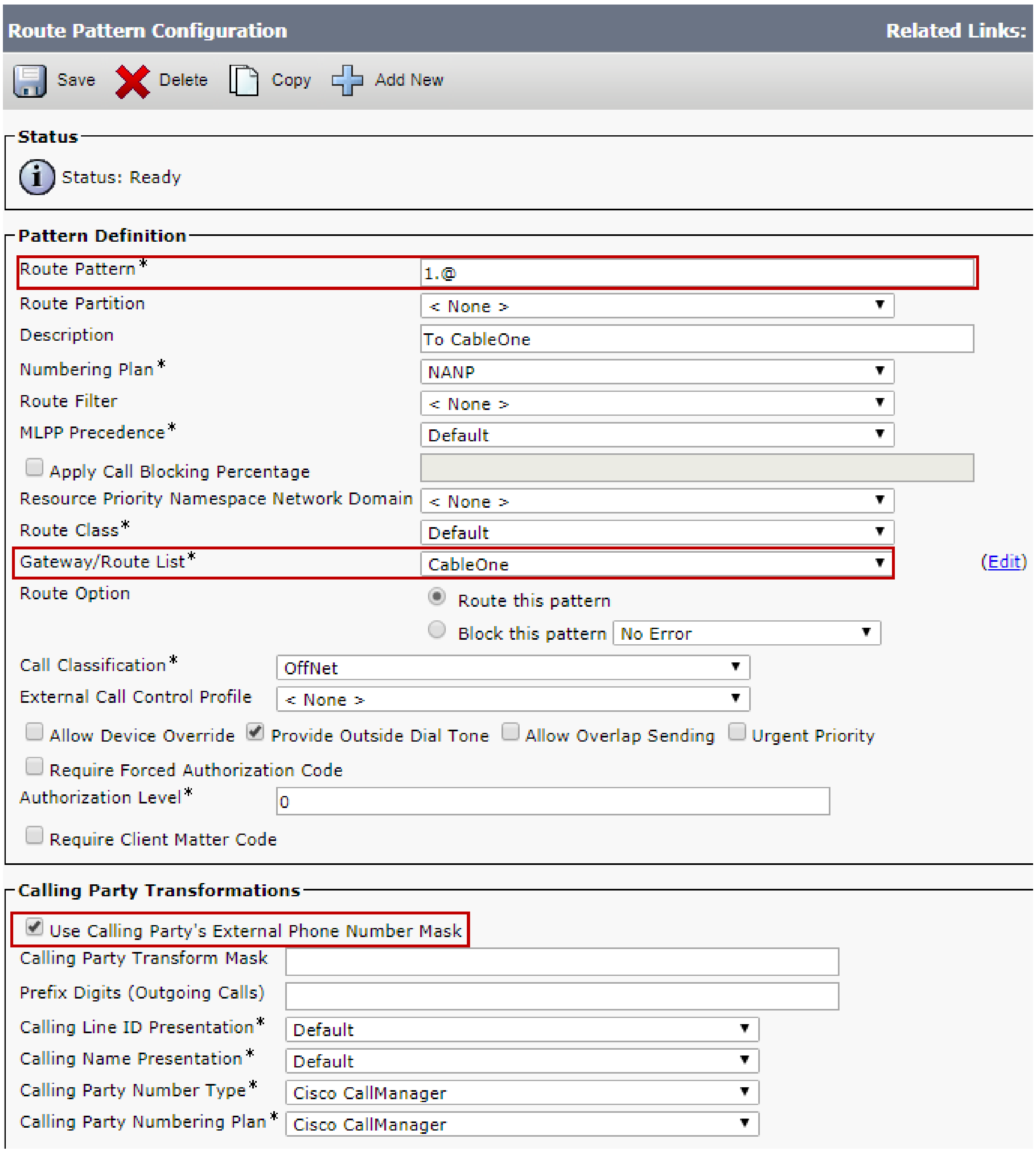


Figure 18: Route Pattern Configuration for Cisco UBE-PSTN Access

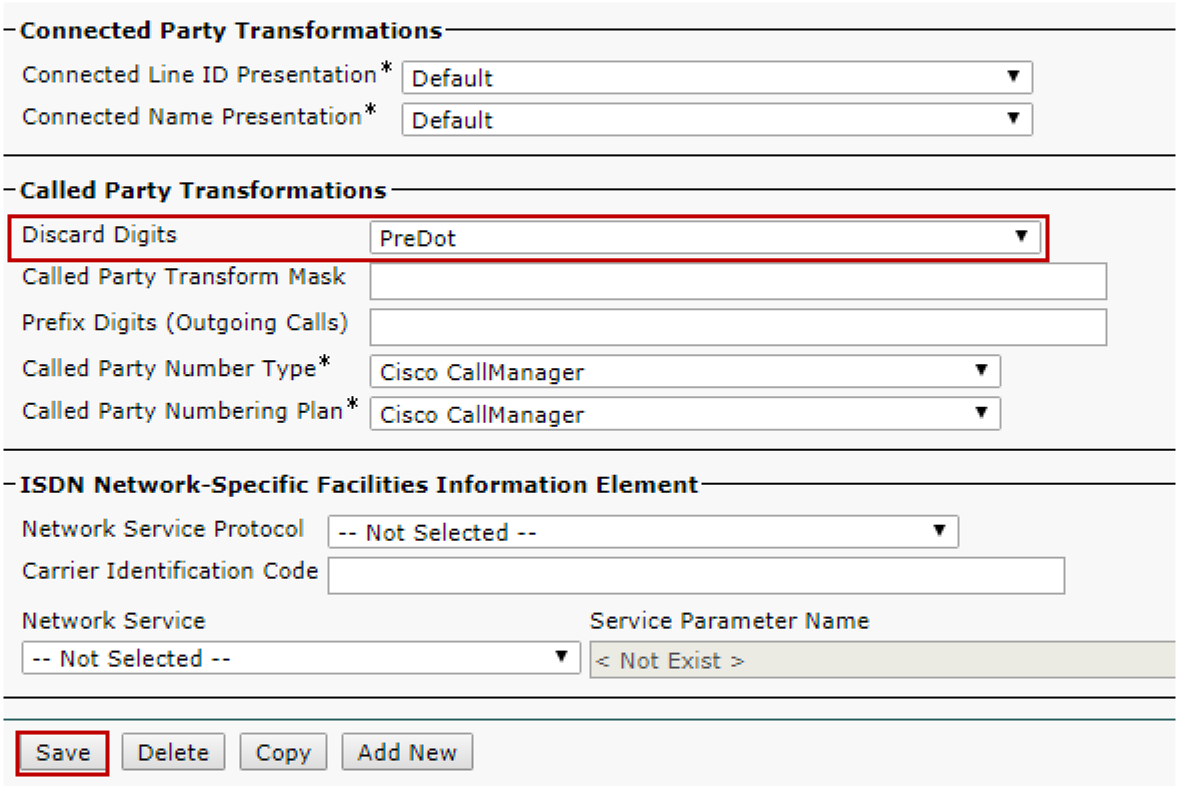


Figure 19: Route Pattern Configuration for Cisco UBE-PSTN Access (Cont.)

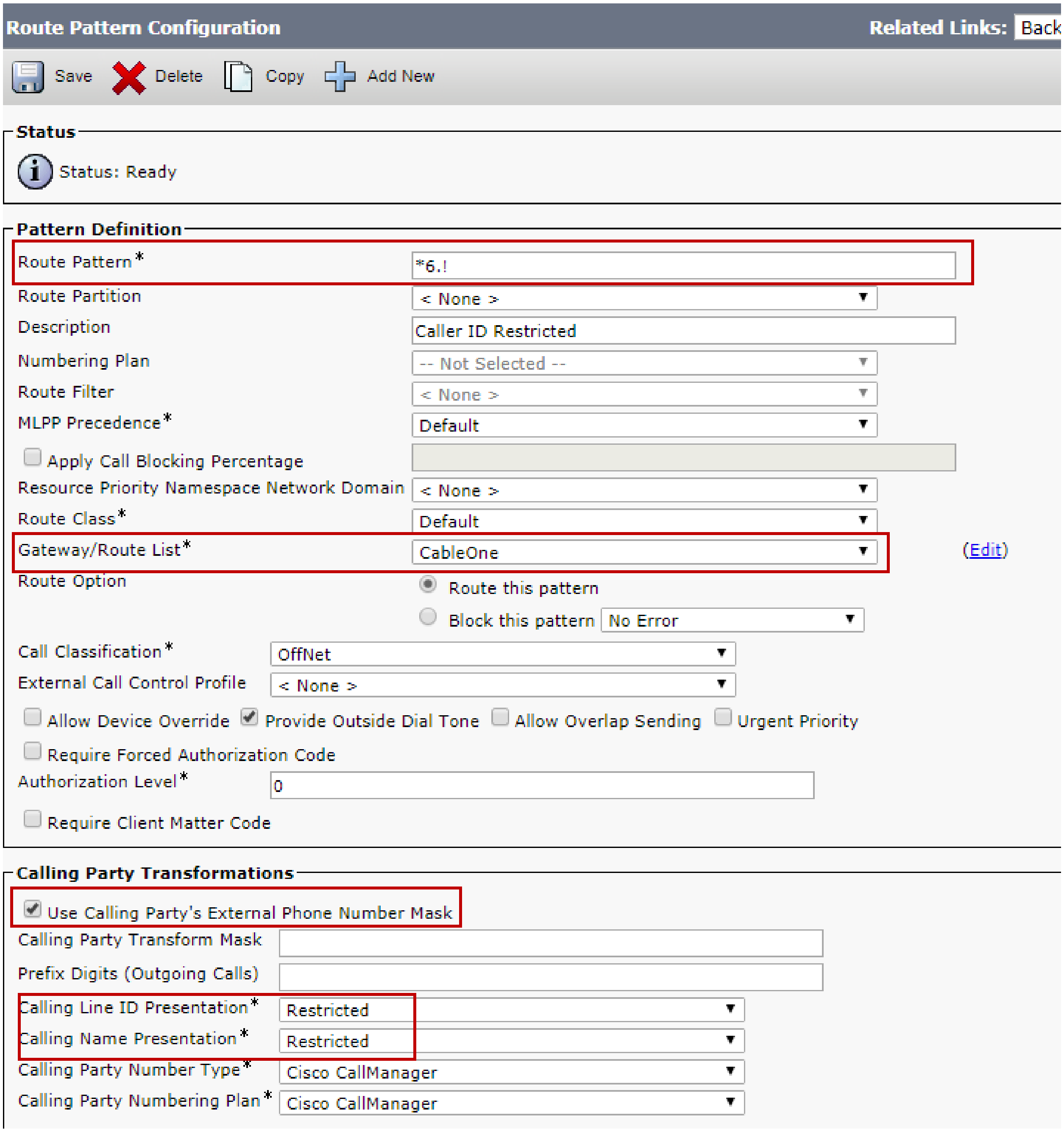


Figure 20: Route Pattern Configuration for Cisco UBE-PSTN Access - Anonymous Call

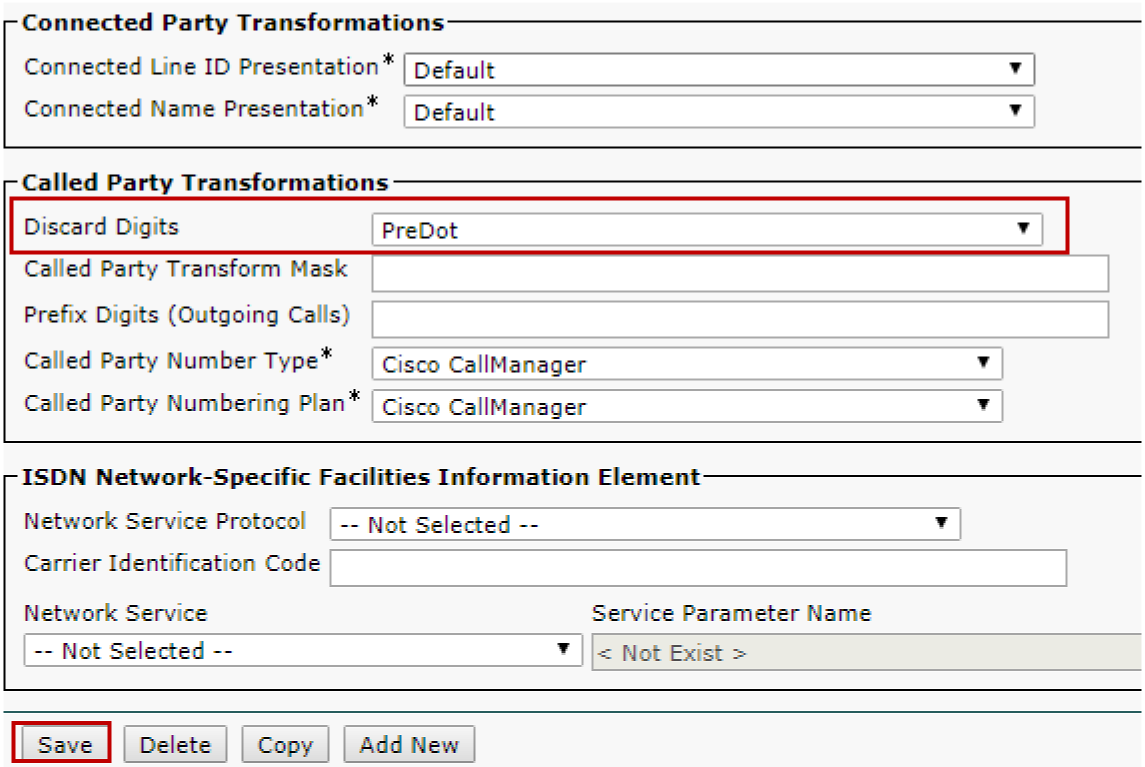


Figure 21: Route Pattern Configuration for Cisco UBE-PSTN Access - Anonymous Call (Cont.)

Acronyms

Acronym	Definitions
CPE	Customer Premise Equipment
Cisco UBE	Cisco Unified Border Element
Cisco UCM	Cisco Unified Communications Manager
MTP	Media Termination Point
POP	Point of Presence
PSTN	Public Switched Telephone Network
ESBC	Enterprise Session Border Controller
SCCP	Skinny Client Control Protocol
SIP	Session Initiation Protocol

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