



# **Network Based Recording Configuration Guide**

## **Cisco Unified Communications Manager (CUCM) and Cisco Unified Border Element (CUBE)**

**August 2022**

## Document History

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# 1 Audience

This document is intended for technical staff and Value Added Resellers (VAR) with installation and operational responsibilities. This configuration guide provides steps for configuring Network Based Recording using **Cisco Unified Communications Manager (CUCM)** and **Cisco Unified Border Element (CUBE)** to connect to **Amazon Chime Voice Connector** for streaming audio to Amazon Kinesis Video Streams (KVS).

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## 1.1 Amazon Chime Voice Connector

Amazon Chime Voice Connector is a pay-as-you-go service that enables companies to make or receive secure phone calls over the internet or AWS Direct Connect using their existing telephone system or session border controller (SBC). The service has no upfront fees, elastically scales based on demand, supports calling both landline and mobile phone numbers in over 100 countries, and gives customers the option to enable inbound calling, outbound calling, or both.

Amazon Chime Voice Connector uses the industry-standard Session Initiation Protocol (SIP). Amazon Chime Voice Connector does not require dedicated data circuits. A company can use their existing Internet connection or AWS Direct Connect public virtual interface for SIP connectivity to AWS. Voice connectors can be configured in minutes using the AWS Management Console or Amazon Chime API. Amazon Chime Voice Connector offers cost-effective rates for inbound and outbound calls. Calls into Amazon Chime meetings, as well as calls to other Amazon Chime Voice Connector customers are at no additional cost. With Amazon Chime Voice Connector, companies can reduce their voice calling costs without having to replace their on-premises phone system.

## 2 SIP Trunking Network Components

The network for the Network Based Recording (NBR) reference configuration is illustrated below and is representative of Cisco UCM with Cisco UBE configuration.

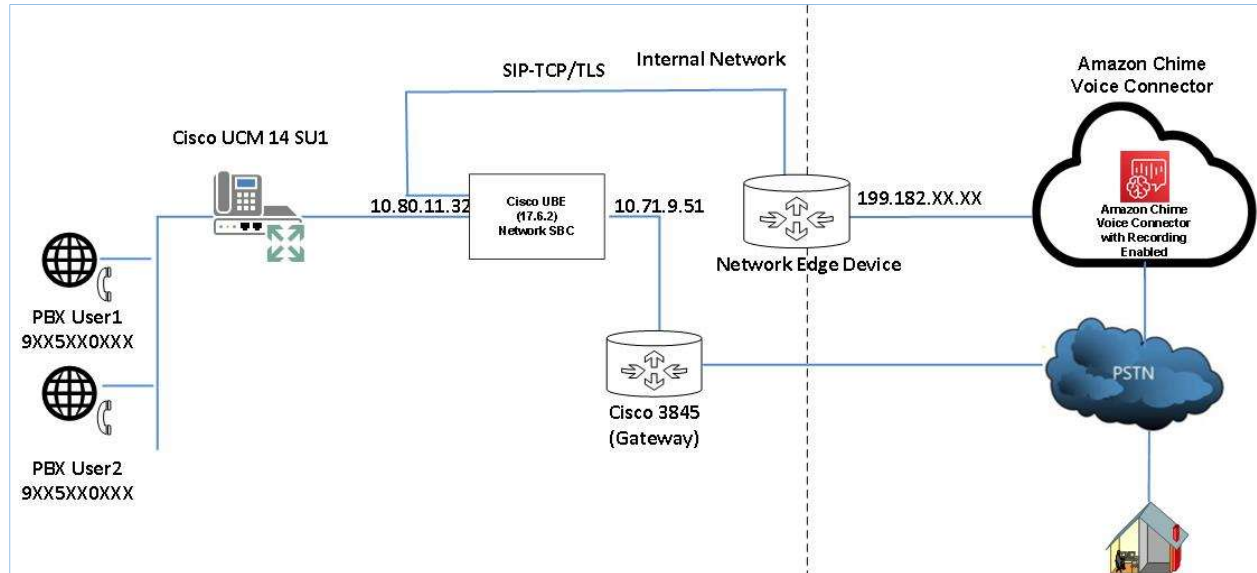


Figure 1 Network Topology

### 2.1 Hardware Components

- UCS-C240 VMWare server running ESXi 5.5 or later used for the following virtual machines
  - Cisco Unified Communications Manager (CUCM)
- Cisco UBE (CUBE) on Cisco ISR 4321 router
- Cisco IP Phone(s)-7841

### 2.2 Software Requirements

- Cisco UCM : 14.0.1.11900-132
- Cisco UBE: 14.4 running on IOS-XE 17.6.2(isr4300-universalk9.17.06.02.SPA.bin)

## 3 Features

### **3.1 Features Supported**

- Inbound call
- Outbound Call
- Call Hold
- Attended Transfer
- Semi-Attended transfer

### **3.2 Features Not Supported**

- None

### **3.3 Features Not Tested**

- None

### **3.4 Caveats and Limitations**

- None

## 4 Configuration

The specific values listed in this guide are used in the lab configuration described in this document and are for illustrative purposes only. You must obtain and use the appropriate values for your deployment. Encryption is always recommended if supported.

### 4.1 Configuration Checklist

In this section we present an overview of the steps that are required to configure **Cisco UCM** and **Cisco UBE** for SIP Trunking with **Amazon Chime Voice Connector**.

*Table 1 – PBX Configuration Steps*

Steps	Description	Reference
Step 1	Cisco UCM Configuration	<a href="#">Section 4.3</a>
Step 2	Cisco UBE Configuration	<a href="#">Section 4.4</a>

### 4.2 Cisco UCM Configuration

This section with screen shots taken from Cisco UCM used for the interoperability testing gives a general overview of the PBX configuration.

#### 4.2.1 Cisco UCM Login and Version

Open an instance of a web browser and connect to the CUCM, Log in using an appropriate user ID and password. Verify the system version being tested.



*Figure 2: Cisco UCM software version*

#### 4.2.2 Cisco UCM SIP Profile Configuration

1. Navigate to **Device** -> **Device Settings**-> **SIP Profile**.

2. On the screen that appears, copy the **“Standard SIP Profile”** and save the SIP Profile with the name **Standard SIP Profile-AWS** and configure the SIP Profile as below.
3. Then click **Save** and then **Apply Config**

**Cisco Unified CM Administration**  
For Cisco Unified Communications Solutions

Navigation: Cisco Unified CM Administration Go  
administrator | About | Logout

System | Call Routing | Media Resources | Advanced Features | Device | Application | User Management | Bulk Administration | Help

**SIP Profile Configuration** Related Links: Back To Find/List Go

Save Delete Copy Reset Apply Config Add New

**SIP Profile Information**

Name*	Standard SIP Profile-AWS
Description	Default SIP Profile
Default MTP Telephony Event Payload Type*	101
Early Offer for G.Clear Calls*	Disabled
User-Agent and Server header information*	Send Unified CM Version Information as User-Agen
Version in User Agent and Server Header*	Major And Minor
Dial String Interpretation*	Phone number consists of characters 0-9, *, #, anc
Confidential Access Level Headers*	Disabled

Redirect by Application  
 Disable Early Media on 180  
 Outgoing T.38 INVITE include audio mline  
 Offer valid IP and Send/Receive mode only for T.38 Fax Relay  
 Use Fully Qualified Domain Name in SIP Requests  
 Assured Services SIP conformance  
 Enable External QoS\*\*

Figure 3 Cisco UCM SIP Profile

**Cisco Unified CM Administration** For Cisco Unified Communications Solutions

Navigation Cisco Unified CM Administration Go

administrator About Logout

System Call Routing Media Resources Advanced Features Device Application User Management Bulk Administration Help

**SIP Profile Configuration** Related Links: Back To Find/List Go

Save Delete Copy Reset Apply Config Add New

**SDP Information**

SDP Session-level Bandwidth Modifier for Early Offer and Re-invites\* TIAS and AS

SDP Transparency Profile < None >

Accept Audio Codec Preferences in Received Offer\* Default

Require SDP Inactive Exchange for Mid-Call Media Change

Allow RR/RS bandwidth modifier (RFC 3556)

**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

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

Figure 4 Cisco UCM SIP Profile Contd.,

**Cisco Unified CM Administration**  
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Navigation Cisco Unified CM Administration Go  
administrator About Logout

System Call Routing Media Resources Advanced Features Device Application User Management Bulk Administration Help

**SIP Profile Configuration** Related Links: Back To Find/List Go

Save Delete Copy Reset Apply Config Add New

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
Call Forward URI*	x-cisco-serviceuri-cfwdall
Speed Dial (Abbreviated Dial) URI*	x-cisco-serviceuri-abbrdial

Figure 5 Cisco UCM SIP Profile Contd.,

**Cisco Unified CM Administration**  
For Cisco Unified Communications Solutions

Navigation: Cisco Unified CM Administration Go  
administrator | About | Logout

System | Call Routing | Media Resources | Advanced Features | Device | Application | User Management | Bulk Administration | Help

**SIP Profile Configuration** Related Links: Back To Find/List Go

Save Delete Copy Reset Apply Config Add New

Conference Join Enabled  
 RFC 2543 Hold  
 Semi Attended Transfer  
 Enable VAD  
 Stutter Message Waiting  
 MLPP User Authorization

**Normalization Script**

Normalization Script: < None >

Enable Trace

	Parameter Name	Parameter Value	
1	<input type="text"/>	<input type="text"/>	+ -

**External Presentation Information**

Anonymous External Presentation

External Presentation Number:

External Presentation Name:

Figure 6 Cisco UCM SIP Profile Contd.,

**Cisco Unified CM Administration**  
For Cisco Unified Communications Solutions

Navigation: Cisco Unified CM Administration Go  
administrator | About | Logout

System | Call Routing | Media Resources | Advanced Features | Device | Application | User Management | Bulk Administration | Help

**SIP Profile Configuration** Related Links: Back To Find/List Go

Save Delete Copy Reset Apply Config Add New

**Trunk Specific Configuration**

Reroute Incoming Request to new Trunk based on\*: Never

Resource Priority Namespace List: < None >

SIP Rel1XX Options\*: Disabled

Video Call Traffic Class\*: Mixed

Calling Line Identification Presentation\*: Default

Session Refresh Method\*: Invite

Early Offer support for voice and video calls\*: Disabled (Default value)

Enable ANAT  
 Deliver Conference Bridge Identifier  
 Enable External Presentation Name and Number  
 Reject Anonymous Incoming Calls  
 Reject Anonymous Outgoing Calls  
 Send ILS Learned Destination Route String  
 Connect Inbound Call before Playing Queuing Announcement

Figure 7 Cisco UCM SIP Profile Contd.,

**SIP OPTIONS Ping**

Enable OPTIONS Ping to monitor destination status for Trunks with Service Type "None (Default)"

Ping Interval for In-service and Partially In-service Trunks (seconds)\*

Ping Interval for Out-of-service Trunks (seconds)\*

Ping Retry Timer (milliseconds)\*

Ping Retry Count\*

---

**SDP Information**

Send send-receive SDP in mid-call INVITE

Allow Presentation Sharing using BFCP

Allow iX Application Media

Allow multiple codecs in answer SDP

---

\*- indicates required item.

\*\*- setting only takes effect if the External QoS Enabled Service Parameter is set to true.

Figure 8 Cisco UCM SIP Profile Contd.,

## 4.2.3 Cisco UCM Device Pool Configuration

### 4.2.3.1 Codec Preference list

1. Navigate to **System** → **Region Information** → **Audio Codec Preference List**
2. Click **Add New**
3. Provide a Name and Description: **G711\_Preferred Codec List** was used in this test
4. Prioritize codecs as shown below

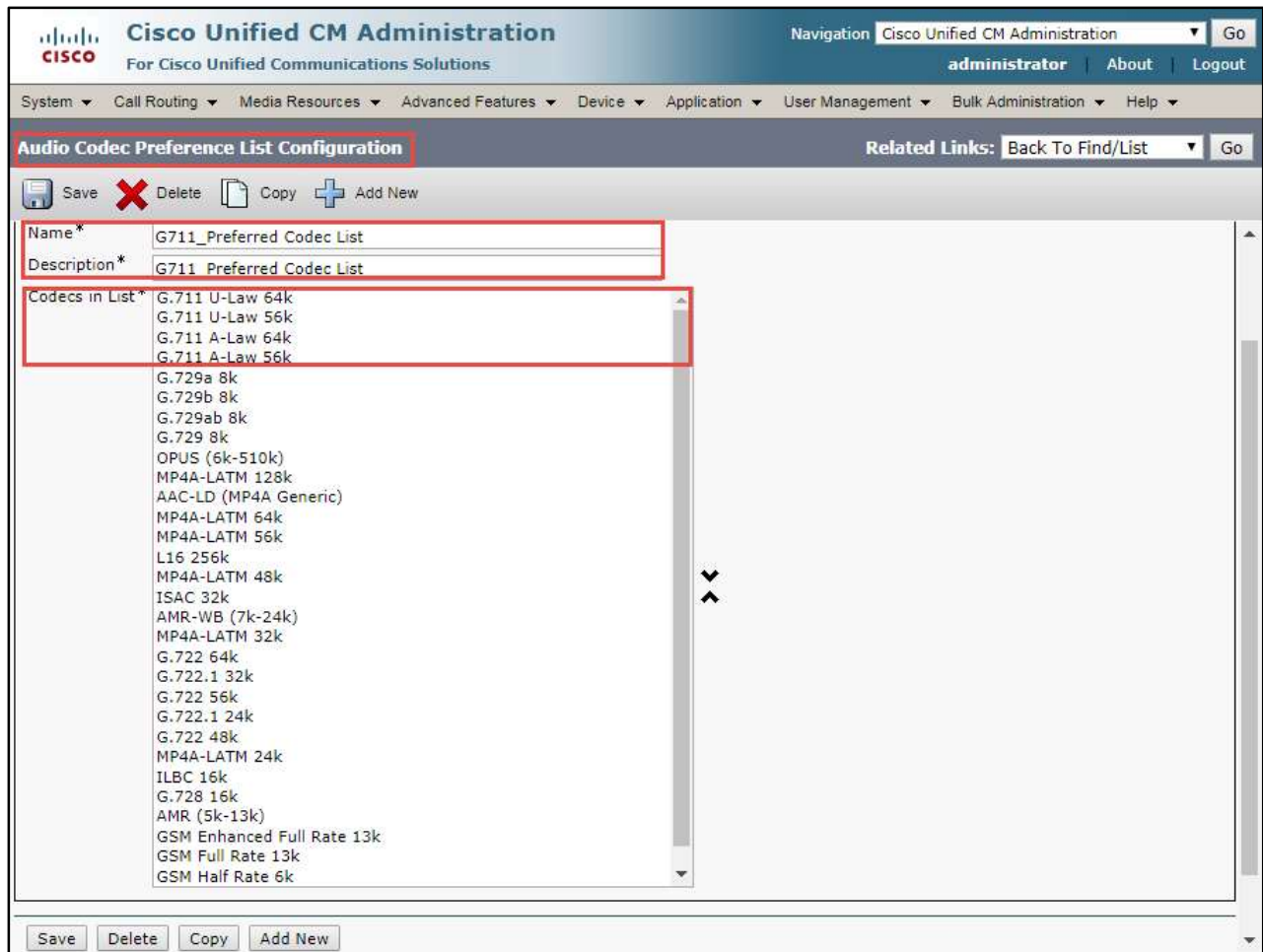


Figure 9 Cisco UCM Audio Codec Preference List

#### 4.2.3.2 Region

1. Navigate to **System** → **Region information** → **Region**
2. Click **Add New**
3. Provide a Name: **G711\_Region** was used in this test
4. Associate the codec preference list **G711\_Preferred Codec List** to this Region

The screenshot shows the Cisco Unified CM Administration interface. At the top, the navigation bar includes the Cisco logo, the title "Cisco Unified CM Administration For Cisco Unified Communications Solutions", and a navigation dropdown menu set to "Cisco Unified CM Administration" with a "GO" button. Below this is a secondary navigation bar with a dropdown menu showing "System", "Call Routing", "Media Resources", "Advanced Features", "Device", "Application", "User Management", "Bulk Administration", and "Help".

The main content area is titled "Region Configuration" and includes a "Related Links" section with a dropdown menu set to "Back To Find/List" and a "Go" button. Below this are action buttons: "Save", "Delete", "Reset", "Apply Config", and "Add New".

The "Region Information" section contains a form with a "Name\*" field containing the text "G711\_Region".

The "Region Relationships" section contains a table with the following data:

Region	Audio Codec Preference List	Maximum Audio Bit Rate	Maximum Session Bit Rate for Video Calls	Maximum Session Bit Rate for Immersive Video Calls
Default	G711_PREFERRED Codec List	64 kbps (G.722, G.711)	Use System Default (384 kbps)	Use System Default (2000000000 kbps)
G711_Region	G711_PREFERRED Codec List	64 kbps (G.722, G.711)	Use System Default (384 kbps)	Use System Default (2000000000 kbps)

Figure 10 Cisco UCM Region

#### 4.2.3.3 Device Pool

1. Navigate to **System** → **Device Pool**
2. Click **Add New**
3. Provide a Device Pool Name: **G711\_pool** was used in this test
4. Associate the Region: **G711\_Region** to this Device Pool
5. Associate the Media resource Group List: **MRGL\_SW\_No\_MTP**
6. Leave all other parameters at their default settings
7. Click **Save**

**Cisco Unified CM Administration**  
For Cisco Unified Communications Solutions

Navigation Cisco Unified CM Administration Go  
administrator About Logout

System Call Routing Media Resources Advanced Features Device Application User Management Bulk Administration Help

**Device Pool Configuration** Related Links: Back To Find/List Go

Save Delete Copy Reset Apply Config Add New

**Device Pool Settings**

Device Pool Name*	G711_pool
Cisco Unified Communications Manager Group*	Default
Calling Search Space for Auto-registration	< None >
Adjunct CSS	< None >
Reverted Call Focus Priority	Default
Intercompany Media Services Enrolled Group	< None >
MRA Service Domain	< None >

**Roaming Sensitive Settings**

Date/Time Group*	CMLocal
Region*	G711_Region
Media Resource Group List	MRGL_SW_No_MTP
Location	< None >
Network Locale	< None >
SRST Reference*	Disable
Connection Monitor Duration***	
Single Button Barge*	Default
Join Across Lines*	Default
Physical Location	< None >
Device Mobility Group	< None >
Wireless LAN Profile Group	< None > <a href="#">View Details</a>

**Local Route Group Settings**

Standard Local Route Group	< None >
----------------------------	----------

Figure 11 Cisco UCM Device Pool

**Cisco Unified CM Administration**  
For Cisco Unified Communications Solutions

Navigation Cisco Unified CM Administration Go  
administrator | About | Logout

System Call Routing Media Resources Advanced Features Device Application User Management Bulk Administration Help

**Device Pool Configuration** Related Links: Back To Find/List Go

Save Delete Copy Reset Apply Config Add New

**Device Mobility Related Information\*\*\*\***

Device Mobility Calling Search Space < None >  
 AAR Calling Search Space < None >  
 AAR Group < None >  
 Calling Party Transformation CSS < None >  
 Called Party Transformation CSS < None >

**Geolocation Configuration**

Geolocation < None >  
 Geolocation Filter < None >

**Call Routing Information**

**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, the value configured is used as the prefix 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
National Number	Default	<input type="checkbox"/>	< None >
International Number	Default	<input type="checkbox"/>	< None >
Unknown Number	Default	<input type="checkbox"/>	< None >
Subscriber Number	Default	<input type="checkbox"/>	< None >

Figure 12 Cisco UCM Device Pool Contd.,

**Cisco Unified CM Administration**  
For Cisco Unified Communications Solutions

Navigation Cisco Unified CM Administration Go  
administrator About Logout

System Call Routing Media Resources Advanced Features Device Application User Management Bulk Administration Help

**Device Pool Configuration** Related Links: Back To Find/List Go

Save Delete Copy Reset Apply Config Add New

**Incoming Called 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, the value configured is used as the prefix 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
National Number	Default	0	< None >
International Number	Default	0	< None >
Unknown Number	Default	0	< None >
Subscriber Number	Default	0	< None >

**Phone Settings**

**Caller ID For Calls From This Phone**

Calling Party Transformation CSS < None >

**Connected Party Settings**

Connected Party Transformation CSS < None >

**Redirecting Party Settings**

Redirecting Party Transformation CSS < None >

Save Delete Copy Reset Apply Config Add New

\*- indicates required item.

Figure 13 Cisco UCM Device Pool Contd.,

## 4.2.4 Media Resources

### 4.2.4.1 Media Resources Group

1. Navigate to Media Resources -> Media Resource Group.
2. Add New.
3. Provide a Name: **MRG With SW\_NOMTP** was used in this test
4. Select Media Resources from the Available Media Resources

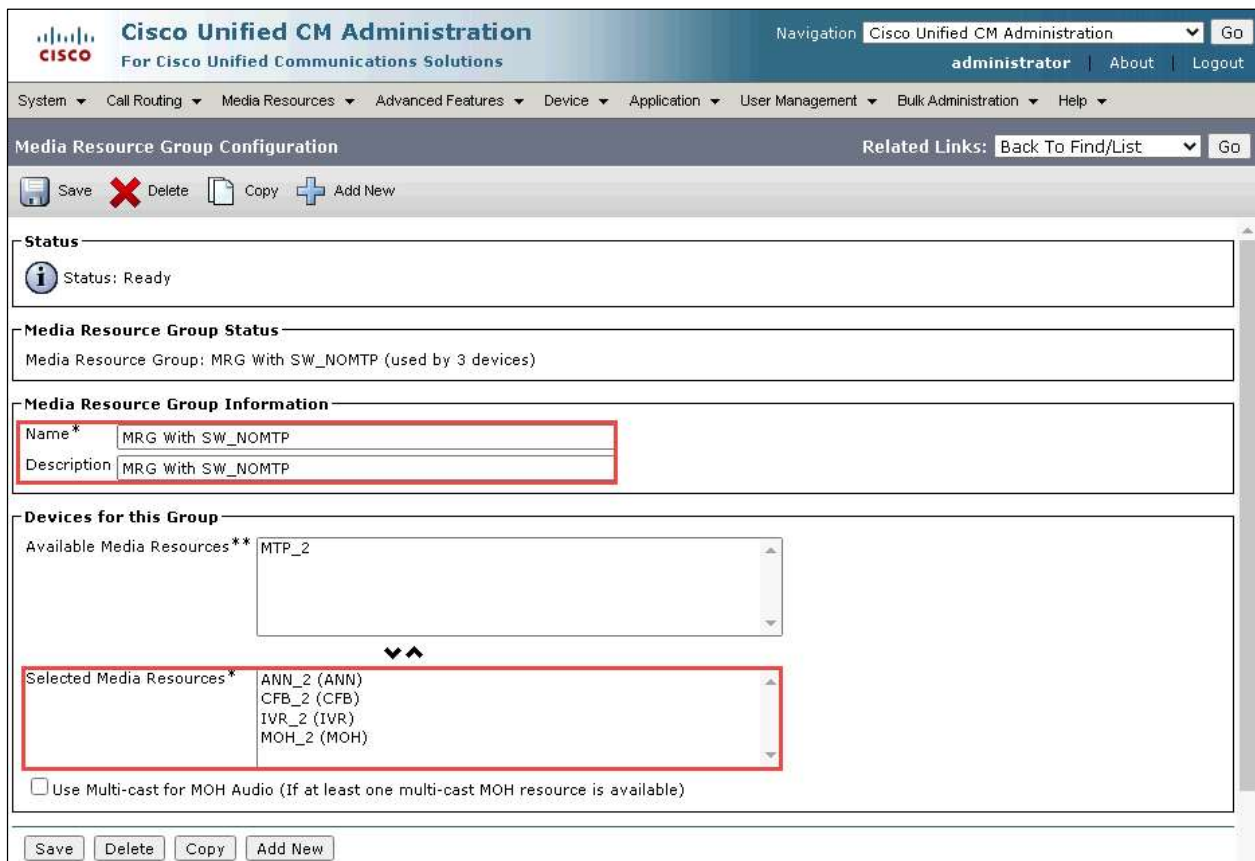


Figure 14 Cisco UCM Media Resources Group

#### 4.2.4.2 Media Resources Group List

1. Navigate to **Media Resources** -> **Media Resource Group List**
2. **Add New**
3. Provide a Name: **MRGL\_SW\_No\_MTP** was used in this test
4. Select the media resource group from the list of Available Media Resource Groups
5. Click on **Save**

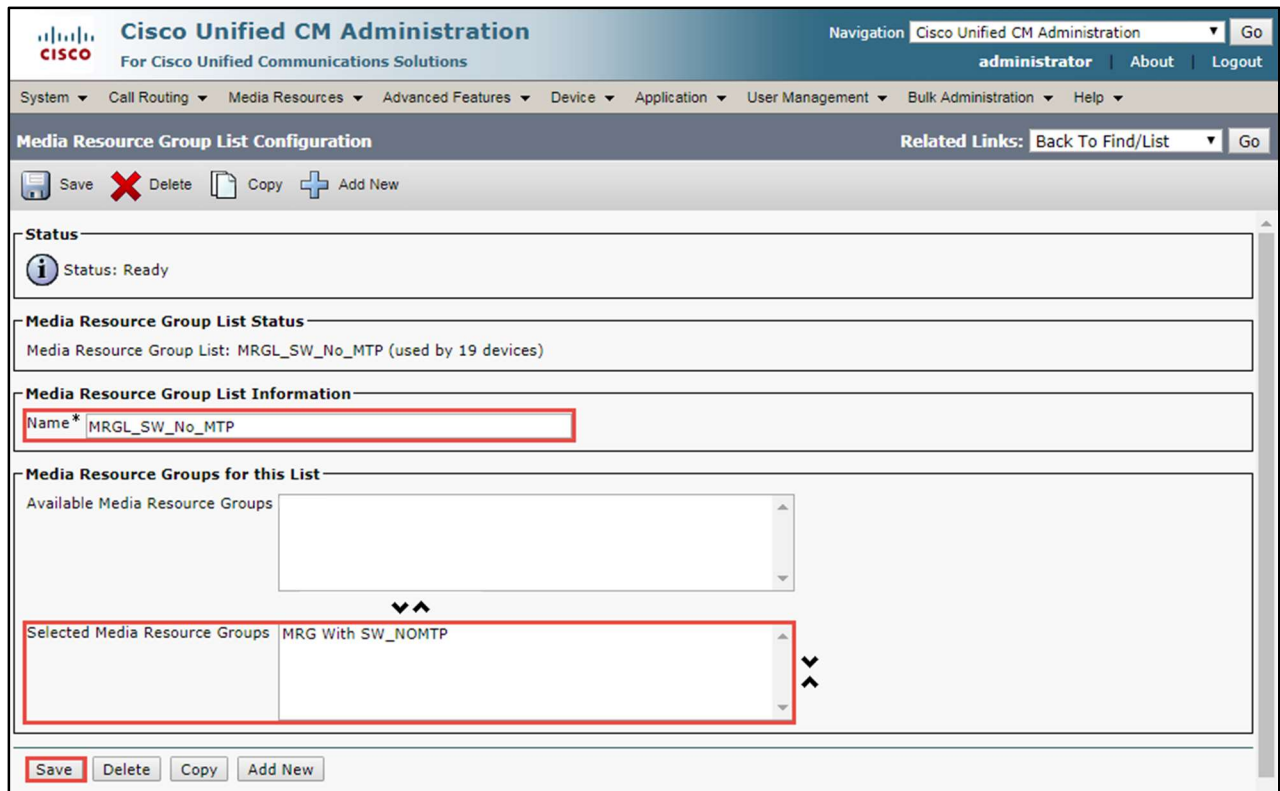


Figure 15 Cisco UCM Media Resources Group List

#### 4.2.5 SIP Trunk Security Profile

1. Navigate to: **System**→**Security**→ **SIP Trunk Security Profile**
2. Provide a Name: **Non Secure SIP Trunk Profile-AWS** was used for this test
3. Select Incoming Transport Type: **TCP+UDP** was used in this test
4. Select Outgoing Transport Type: **UDP** was used in this test
5. Click **Save**

**Cisco Unified CM Administration**  
For Cisco Unified Communications Solutions

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**SIP Trunk Security Profile Configuration** Related Links: Back To Find/List Go

Save Delete Copy Reset Apply Config Add New

**SIP Trunk Security Profile Information**

Name*	Non Secure SIP Trunk Profile-AWS
Description	Non Secure SIP Trunk Profile authenticated by null String
Device Security Mode	Non Secure
Incoming Transport Type*	TCP+UDP
Outgoing Transport Type	UDP

Enable Digest Authentication  
Nonce Validity Time (mins)\* 600  
Secure Certificate Subject or Subject Alternate Name

**Incoming Port\*** 5060

Enable Application level authorization  
 Accept presence subscription  
 Accept out-of-dialog refer\*\*  
 Accept unsolicited notification  
 Accept replaces header

Figure 16 Cisco UCM SIP Trunk Security Profile

<input type="checkbox"/> Accept replaces header
<input type="checkbox"/> Transmit security status
<input type="checkbox"/> Allow charging header
SIP V.150 Outbound SDP Offer Filtering* Use Default Filter

Save Delete Copy Reset Apply Config Add New

Figure 17 Cisco UCM SIP Trunk Security Profile Contd.,

## 4.2.6 SIP Trunk to Cisco UBE

1. Navigate to **Device** → **Trunk**
2. Provide a **Device Name**: AmazonSIPTrunkCUBE
3. Provide a **Description**: AmazonSIPTrunkCUBE
4. Set **Device Pool**: G711\_pool
5. Set **Destination Address**: Set IP address of Cisco UBE
6. Set **SIP Trunk Security Profile**: Non Secure SIP Trunk Profile-AWS
7. Set **SIP Profile**: Standard SIP Profile – AWS
8. Set **DTMF Signaling Method**: RFC2833

**Cisco Unified CM Administration**  
For Cisco Unified Communications Solutions

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**Trunk Configuration** Related Links: Back To Find/List Go

Save ✖ Delete ↺ Reset + Add New

**Device Information**

Product:	SIP Trunk
Device Protocol:	SIP
Trunk Service Type	None(Default)
Device Name*	AmazonSIPTrunkCUBE
Description	AmazonSIPTrunkCUBE
Device Pool*	G711_pool
Common Device Configuration	< None >
Call Classification*	Use System Default
Media Resource Group List	MRGL_SW_No_MTP
Location*	Hub_None
AAR Group	< None >
Tunneled Protocol*	None
QSIG Variant*	No Changes
ASN.1 ROSE OID Encoding*	No Changes
Packet Capture Mode*	None
Packet Capture Duration	0

Media Termination Point Required  
 Retry Video Call as Audio  
 Path Replacement Support  
 Transmit UTF-8 for Calling Party Name  
 Transmit UTF-8 Names in QSIG APDU  
 Unattended Port  
 SRTP Allowed - When this flag is checked, Encrypted TLS needs to be configured in the network to provide end to end security. Failure to do so will

Figure 18 Cisco UCM SIP Trunk Configuration

**Cisco Unified CM Administration**  
For Cisco Unified Communications Solutions

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**Trunk Configuration** Related Links: Back To Find/List Go

Save Delete Reset Add New

SRTP Allowed - When this flag is checked, Encrypted TLS needs to be configured in the network to provide end to end security. Failure to do so will expose keys and other information.

Consider Traffic on This Trunk Secure\* When using both sRTP and TLS

Route Class Signaling Enabled\* Default

Use Trusted Relay Point\* Default

PSTN Access

Run On All Active Unified CM Nodes

**Intercompany Media Engine (IME)**

E.164 Transformation Profile < None >

**MLPP and Confidential Access Level Information**

MLPP Domain < None >

Confidential Access Mode < None >

Confidential Access Level < None >

**Call Routing Information**

Remote-Party-Id

Asserted-Identity

Asserted-Type\* Default

SIP Privacy\* Default

Trust Received Identity\* Trust All (Default)

Figure 19 Cisco UCM SIP Trunk Configuration Contd.,

**Cisco Unified CM Administration**  
For Cisco Unified Communications Solutions

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administrator About Logout

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**Trunk Configuration** Related Links: Back To Find/List Go

Save Delete Reset Add New

**Inbound Calls**

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

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, the value configured is used as the prefix 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	Use Device Pool CSS
Incoming Number	Default	0	< None >	<input checked="" type="checkbox"/>

Figure 20 Cisco UCM SIP Trunk Configuration Contd.,

**Cisco Unified CM Administration**  
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**Trunk Configuration** Related Links: Back To Find/List Go

Save Delete Reset Add New

**Incoming Called 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, the value configured is used as the prefix 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	Use Device Pool CSS
Incoming Number	Default	0	< None >	<input checked="" type="checkbox"/>

**Connected Party Settings**

Connected Party Transformation CSS < None >

Use Device Pool Connected Party Transformation CSS

Figure 21 Cisco UCM SIP Trunk Configuration Contd.,

**Cisco Unified CM Administration**  
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Navigation: Cisco Unified CM Administration Go  
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**Trunk Configuration** Related Links: Back To Find/List Go

Save ✖ Delete ↺ Reset + Add New

**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

Calling and Connected Party Info Format\*: Deliver DN only in connected party

Redirecting Diversion Header Delivery - Outbound

Redirecting Party Transformation CSS: < None >

Use Device Pool Redirecting Party Transformation CSS

**Presentation Information**

Anonymous Presentation

Presentation Number:

Presentation Name:

Send Presentation Name and Number only in the FROM header and not in the other identity headers

Figure 22 Cisco UCM SIP Trunk Configuration Contd.,

**Cisco Unified CM Administration**  
For Cisco Unified Communications Solutions

Navigation: Cisco Unified CM Administration Go  
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**Trunk Configuration** Related Links: Back To Find/List Go

Save ✖ Delete ↺ Reset + Add New

**SIP Information**

Destination Address is an SRV

	Destination Address	Destination Address IPv6	Destination Port
1*	10.64.4.136		5060

MTP Preferred Originating Codec\*: 711ulaw

BLF Presence Group\*: Standard Presence group

SIP Trunk Security Profile\*: Non Secure SIP Trunk Profile-AWS

Rerouting Calling Search Space: < None >

Out-Of-Dialog Refer Calling Search Space: < None >

SUBSCRIBE Calling Search Space: < None >

SIP Profile\*: Standard SIP Profile-AWS [View Details](#)

DTMF Signaling Method\*: RFC 2833

**Normalization Script**

Normalization Script: < None >

Enable Trace

	Parameter Name	Parameter Value
1	<input type="text"/>	<input type="text"/>

Figure 23 Cisco UCM SIP Trunk Configuration Contd.,

**Recording Information**

None  
 This trunk connects to a recording-enabled gateway  
 This trunk connects to other clusters with recording-enabled gateways

---

**Geolocation Configuration**

Geolocation:   
 Geolocation Filter:   
 Send Geolocation Information

Figure 24 Cisco UCM SIP Trunk Configuration Contd.,

## 4.2.7 Route Pattern

1. Navigate to **Call Routing -> Route/Hunt-> Route Pattern**
2. Select **Add New** to create a new Route Pattern
3. The route pattern "9.[0-9]![0-9#]" was configured to enable outbound dialing from CUCM to PSTN using the access code as "9".
4. Set **Gateway/Route List**: AmazonSIPTrunkCUBE
5. Set **Discard Digits**: PreDot was used in this test (configure this option to remove the prefix '9' from called party number while sending the call out to Cisco UBE)
6. Click on **Save**

Cisco Unified CM Administration

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**Route Pattern Configuration**

Related Links:

**Pattern Definition**

Route Pattern*	<input type="text" value="9.[0-9]![0-9#]"/>	
Route Partition	<input type="text" value="&lt; None &gt;"/>	▼
Description	AmazonRP	
Numbering Plan	-- Not Selected --	
Route Filter	<input type="text" value="&lt; None &gt;"/>	
MLPP Precedence*	<input type="text" value="Default"/>	
<input type="checkbox"/> Apply Call Blocking Percentage	<input type="text" value=""/>	
Resource Priority Namespace Network Domain	<input type="text" value="&lt; None &gt;"/>	
Route Class*	<input type="text" value="Default"/>	
Gateway/Route List*	<input type="text" value="AmazonSIPTrunkCUBE"/>	
Route Option	<input checked="" type="radio"/> Route this pattern <input type="radio"/> Block this pattern <input type="text" value="No Error"/>	
Call Classification*	<input type="text" value="OffNet"/>	
External Call Control Profile	<input type="text" value="&lt; None &gt;"/>	
<input type="checkbox"/> Allow Device Override	<input checked="" type="checkbox"/> Provide Outside Dial Tone	
<input type="checkbox"/> Require Forced Authorization Code	<input type="checkbox"/> Allow Overlap Sending	
Authorization Level*	<input type="text" value="0"/>	
<input type="checkbox"/> Require Client Matter Code		

Figure 25 Cisco UCM Route Pattern Configuration

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For Cisco Unified Communications Solutions

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**Route Pattern Configuration** Related Links: Back To Find/List Go

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**Calling Party Transformations**

Use Calling Party's External Phone Number Mask

Calling Party Transform Mask

Prefix Digits (Outgoing Calls)

Calling Line ID Presentation\* Default

Calling Name Presentation\* Default

Calling Party Number Type\* Cisco CallManager

Calling Party Numbering Plan\* Cisco CallManager

**Connected Party Transformations**

Connected Line ID Presentation\* Default

Connected Name Presentation\* Default

**Called Party Transformations**

Discard Digits PreDot

Called Party Transform Mask

Prefix Digits (Outgoing Calls)

Called Party Number Type\* Cisco CallManager

Called Party Numbering Plan\* Cisco CallManager

Figure 26 Cisco UCM Route Pattern Configuration Contd.,

**ISDN Network-Specific Facilities Information Element**

Network Service Protocol -- Not Selected --

Carrier Identification Code

Network Service	Service Parameter Name	Service Parameter Value
-- Not Selected --	< Not Exist >	

Save Delete Copy Add New

Figure 27 Cisco UCM Route Pattern Configuration Contd.,

## 4.3 Cisco UBE Configuration

### 4.3.1 Global Cisco UBE settings

```
voice service voip
  ip address trusted list
    ipv4 10.80.11.141
    ipv4 10.80.11.79
    ipv4 xx.xx.16.0 255.255.254.0
address-hiding
  mode border-element
  allow-connections sip to sip
  no supplementary-service sip moved-temporarily
  no supplementary-service sip handle-replaces
  fax protocol pass-through g711ulaw
  trace
  sip
    session refresh
    asserted-id pai
    midcall-signaling passthru
    pass-thru headers un_supp
```

### 4.3.2 Codecs

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

### 4.3.3 Network Based Recording (NBR)

#### 4.3.3.1 NBR Common configuration for TCP and TLS

##### 4.3.3.1.1 SIP Profile

```
voice class sip-profiles 300
  rule 3 request INVITE sip-header X-Voice-Connector-Record-Only add
  "X-Voice-Connector-Record-Only: true"
```

#### 4.3.3.1.2 Media Profile

```
media profile recorder 2020
  media-type audio
  media-recording 5980090 100 101
```

#### 4.3.3.1.3 Media Class

```
media class 2020
  recorder profile 2020
```

### 4.3.3.2 NBR specific configuration using TCP

#### 4.3.3.2.1 Dial-Peer to Amazon Voice Connector

```
dial-peer voice 5980090 voip
  description DP_AmazonVCRecording
  destination-pattern +1972598XXXX
  session protocol sipv2
  session target dns: dtndXXXX.voiceconnector.chime.aws
  session transport tcp
  voice-class codec 1
  voice-class sip localhost dns: dtndXXXX.voiceconnector.chime.aws
  preferred
  voice-class sip profiles 300
  voice-class sip bind control source-interface GigabitEthernet0/0/1
  voice-class sip bind media source-interface GigabitEthernet0/0/1
  media-class 2020
  no vad
```

### 4.3.3.3 NBR specific configuration using TLS

Amazon Chime Voice Connector Root Certificate can be downloaded from Amazon Chime Voice Connector account

#### 4.3.3.3.1 Trust point for Amazon in CUBE

```
crypto pki trustpoint AMZVCROOT
  enrollment terminal pem
  chain-validation continue AMZVCROOT
  revocation-check none
```

#### 4.3.3.3.2 SIP-UA

```
sip-ua
crypto signaling default trustpoint AMZVCROOT
```

#### 4.3.3.3.3 Dial-Peer to Amazon Voice Connector for Call Recording

```
dial-peer voice 5980090 voip
  description DP_AmazonVCRecording
  destination-pattern +1972598XXXX
  session protocol sipv2
  session target dns:XXXXvrbdy3.voiceconnector.chime.aws:5061
  session transport tcp tls
  voice-class codec 1
  voice-class sip localhost
  dns:XXXXlx1usa3vrbdy3.voiceconnector.chime.aws preferred
  voice-class sip profiles 300
  voice-class sip bind control source-interface GigabitEthernet0/0/0
  voice-class sip bind media source-interface GigabitEthernet0/0/0
  media-class 2020
```

```
no vad
```

#### 4.3.4 Dial Peer

##### **Inbound Dial Peer for Cisco UCM**

```
dial-peer voice 100 voip
description *** Inbound Call from CUCM to CUBE-LAN ***
session protocol sipv2
session transport udp
destination dpg 100
incoming uri via CUCM
voice-class codec 1
voice-class sip bind control source-interface GigabitEthernet0/0/0
voice-class sip bind media source-interface GigabitEthernet0/0/0
media-class 2020
dtmf-relay rtp-nte
no vad
```

##### **Inbound Dial Peer for Gateway**

```
dial-peer voice 201 voip
description *** Inbound Call from GW to CUBE-WAN ***
session protocol sipv2
session transport udp
destination dpg 200
incoming called e164-pattern-map 890
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
```

### **Outbound Dial Peer to Cisco UCM**

```
dial-peer voice 101 voip
description *** Outbound Call from CUBE-LAN to CUCM****
destination-pattern BAD.BAD
session protocol sipv2
session target sip-server
session transport udp
voice-class codec 1
voice-class sip tenant 100
voice-class sip bind control source-interface GigabitEthernet0/0/0
voice-class sip bind media source-interface GigabitEthernet0/0/0
media-class 2020
dtmf-relay rtp-nte
no vad
```

### **Outbound Dial Peer to Gateway**

```
description *** Outbound Call from CUBE-WAN to GW****
destination-pattern BAD.BAD
session protocol sipv2
session target sip-server
session transport udp
voice-class codec 1
voice-class sip asserted-id pai
voice-class sip tenant 200
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
```

### 4.3.5 Cisco UBE Running Configuration-NBR using TCP

```
AmazonNBR# show running-config
```

```
Building configuration...
```

```
Current configuration : 24055 bytes
```

```
!
```

```
! Last configuration change at 06:31:05 UTC Thu Aug 11 2022
```

```
! NVRAM config last updated at 06:30:24 UTC Thu Aug 11 2022
```

```
!
```

```
version 17.6
```

```
service config
```

```
service timestamps debug datetime msec
```

```
service timestamps log datetime msec
```

```
service password-encryption
```

```
service call-home
```

```
platform qfp utilization monitor load 80
```

```
platform punt-keepalive disable-kernel-core
```

```
!
```

```
hostname AmazonNBR
```

```
!
```

```
boot-start-marker
```

```
boot system bootflash:isr4300-universalk9.17.06.02.SPA.bin
```

```
boot-end-marker
```

```
!
```

```
!
```

```
vrf definition Mgmt-intf
```

```
!
```

```
address-family ipv4
```

```
exit-address-family
```

```
!
```

```
address-family ipv6
```

```
exit-address-family
```

```
!  
logging queue-limit 1000000  
logging buffered 1000000  
logging persistent  
logging rate-limit 10000  
!  
no aaa new-model  
!  
!  
!  
!  
!  
!  
!  
ip name-server 8.8.8.8 172.16.31.3 10.87.0.16 10.85.0.232 10.64.1.3  
ip domain name tekvizion.com  
!  
!  
!  
login on-success log  
!  
!  
!  
!  
!  
!  
!  
subscriber templating  
!  
!  
!  
!  
!
```

```
!  
multilink bundle-name authenticated  
!  
!  
!  
!  
!  
!  
!  
!  
!  
crypto pki trustpoint SLA-TrustPoint  
  enrollment pkcs12  
  revocation-check crl  
!  
crypto pki trustpoint tekvisionlabs_withCA.pfx  
  enrollment pkcs12  
  revocation-check crl  
  rsakeypair tekvisionlabs_withCA.pfx  
!  
crypto pki trustpoint NBR  
  enrollment selfsigned  
  serial-number none  
  fqdn none  
  ip-address none  
  subject-name cn= AmazonNBR  
  revocation-check none  
  rsakeypair AmazonNBR  
!  
crypto pki trustpoint cucmpubexpw  
  enrollment terminal  
  revocation-check none  
!
```

```
crypto pki trustpoint AMZVCROOT
  enrollment terminal pem
  chain-validation continue AMZVCROOT
  revocation-check none
!
!
crypto pki certificate chain SLA-TrustPoint
  certificate ca 01
    30820321 30820209 A0030201 02020101 300D0609 2A864886 F70D0101
    0B050030
    32310E30 0C060355 040A1305 43697363 6F312030 1E060355 04031317
    43697363
    6F204C69 63656E73 696E6720 526F6F74 20434130 1E170D31 33303533
    30313934
    3834375A 170D3338 30353330 31393438 34375A30 32310E30 0C060355
    040A1305
    43697363 6F312030 1E060355 04031317 43697363 6F204C69 63656E73
    696E6720
    526F6F74 20434130 82012230 0D06092A 864886F7 0D010101 05000382
    010F0030
    82010A02 82010100 A6BCBD96 131E05F7 145EA72C 2CD686E6 17222EA1
    F1EFF64D
    CBB4C798 212AA147 C655D8D7 9471380D 8711441E 1AAF071A 9CAE6388
    8A38E520
    1C394D78 462EF239 C659F715 B98C0A59 5BBB5CBD 0CFEBEA3 700A8BF7
    D8F256EE
    4AA4E80D DB6FD1C9 60B1FD18 FFC69C96 6FA68957 A2617DE7 104FDC5F
    EA2956AC
    7390A3EB 2B5436AD C847A2C5 DAB553EB 69A9A535 58E9F3E3 C0BD23CF
    58BD7188
    68E69491 20F320E7 948E71D7 AE3BCC84 F10684C7 4BC8E00F 539BA42B
    42C68BB7
    C7479096 B4CB2D62 EA2F505D C7B062A4 6811D95B E8250FC4 5D5D5FB8
    8F27D191
    C55F0D76 61F9A4CD 3D992327 A8BB03BD 4E6D7069 7CBADF8B DF5F4368
    95135E44
    DFC7C6CF 04DD7FD1 02030100 01A34230 40300E06 03551D0F 0101FF04
    04030201
```

06300F06 03551D13 0101FF04 05300301 01FF301D 0603551D 0E041604  
1449DC85

4B3D31E5 1B3E6A17 606AF333 3D3B4C73 E8300D06 092A8648 86F70D01  
010B0500

03820101 00507F24 D3932A66 86025D9F E838AE5C 6D4DF6B0 49631C78  
240DA905

604EDCDE FF4FED2B 77FC460E CD636FDB DD44681E 3A5673AB 9093D3B1  
6C9E3D8B

D98987BF E40CBD9E 1AECA0C2 2189BB5C 8FA85686 CD98B646 5575B146  
8DFC66A8

467A3DF4 4D565700 6ADF0F0D CF835015 3C04FF7C 21E878AC 11BA9CD2  
55A9232C

7CA7B7E6 C1AF74F6 152E99B7 B1FCF9BB E973DE7F 5BDDEB86 C71E3B49  
1765308B

5FB0DA06 B92AFE7F 494E8A9E 07B85737 F3A58BE1 1A48A229 C37C1E69  
39F08678

80DDCD16 D6BACECA EEBC7CF9 8428787B 35202CDC 60E4616A B623CDBD  
230E3AFB

418616A9 4093E049 4D10AB75 27E86F73 932E35B5 8862FDAE 0275156F  
719BB2F0

D697DF7F 28

quit

crypto pki certificate chain tekvizionlabs\_withCA.pfx

certificate 00A9C797A2AFB26D66

3082069F 30820587 A0030201 02020900 A9C797A2 AFB26D66 300D0609  
2A864886

F70D0101 0B050030 81B4310B 30090603 55040613 02555331 10300E06  
03550408

13074172 697A6F6E 61311330 11060355 0407130A 53636F74 74736461  
6C65311A

30180603 55040A13 11476F44 61646479 2E636F6D 2C20496E 632E312D  
302B0603

55040B13 24687474 703A2F2F 63657274 732E676F 64616464 792E636F  
6D2F7265

706F7369 746F7279 2F313330 31060355 0403132A 476F2044 61646479  
20536563

75726520 43657274 69666963 61746520 41757468 6F726974 79202D20  
4732301E

170D3232 30333330 31303538 32335A17 0D323231 32303932 30333033  
335A301E

311C301A 06035504 030C132A 2E74656B 76697A69 6F6E6C61 62732E63  
6F6D3082

0122300D 06092A86 4886F70D 01010105 00038201 0F003082 010A0282  
010100CE

1227594E 2E8B9738 D7977DC0 984E28EC D8039B32 E4555244 9DC5A91A  
30ED8364

727F598E A0DBF9DE 6BCAF44E CEA24619 E1AA648C 2549687B 7FFC4F9D  
4470009D

5685B1E2 FFCD355D 365086D6 A507D1BA F52893F7 75CA800F ECE10310  
A3C3C05B

5C53DF2E E1F9CF8F B4AB2AF4 D1FC1283 2D637DEE 206E6905 73A93332  
EFDC57F3

782C116E B0A8045A 4272F360 85D0F8D8 E66AE610 6A21FCC5 71C4CE98  
7EE273B5

F23812CC 6B8F5F38 34918F5D E1223792 DF55088A B2E7EBA6 489452D4  
A366B9C0

E87328BF B608811C 60E00B7D 5290EDFD F4DE7481 29979364 321433B9  
510E449C

C97D84CE 680AC265 E8D1FEC0 ADD8635C B458CF9C 0FC6A369 7E7AE919  
7AB63302

03010001 A3820347 30820343 300C0603 551D1301 01FF0402 3000301D  
0603551D

25041630 1406082B 06010505 07030106 082B0601 05050703 02300E06  
03551D0F

0101FF04 04030205 A0303806 03551D1F 0431302F 302DA02B A0298627  
68747470

3A2F2F63 726C2E67 6F646164 64792E63 6F6D2F67 64696732 73312D33  
3936372E

63726C30 5D060355 1D200456 30543048 060B6086 480186FD 6D010717  
01303930

3706082B 06010505 07020116 2B687474 703A2F2F 63657274 69666963  
61746573

2E676F64 61646479 2E636F6D 2F726570 6F736974 6F72792F 30080606  
67810C01

02013076 06082B06 01050507 0101046A 30683024 06082B06 01050507  
30018618

68747470 3A2F2F6F 6373702E 676F6461 6464792E 636F6D2F 30400608  
2B060105

05073002 86346874 74703A2F 2F636572 74696669 63617465 732E676F  
64616464

792E636F 6D2F7265 706F7369 746F7279 2F676469 67322E63 7274301F  
0603551D

23041830 16801440 C2BD278E CC348330 A233D7FB 6CB3F0B4 2C80CE30  
31060355

1D11042A 30288213 2A2E7465 6B76697A 696F6E6C 6162732E 636F6D82  
1174656B

76697A69 6F6E6C61 62732E63 6F6D301D 0603551D 0E041604 14EFA5C4  
66C63F08

A2CF5520 2BCF2001 3E36437A 46308201 7E060A2B 06010401 D6790204  
02048201

6E048201 6A016800 77002979 BEF09E39 3921F056 739F63A5 77E5BE57  
7D9C600A

F8F94D5D 265C255D C7840000 017FDA7A 068A0000 04030048 30460221  
00A7CC64

D1702469 DCE4942D 354A6228 998F6FC4 157E721B 57FA90DA 6703D3B9  
B6022100

B3ABC724 24C63B12 0CD99F93 48D4B368 D73DF4C8 DBA05615 00B9CBD2  
2BF7F406

00760041 C8CAB1DF 22464A10 C6A13A09 42875E4E 318B1B03 EBEB4BC7  
68F09062

9606F600 00017FDA 7A076C00 00040300 47304502 2100A7DC E14C2175  
C4FBBFB1

334F64C1 78AE1891 E19190AD B6EAD41C 290C6D57 A3A70220 410AB836  
BF125B78

1B953573 6910DC2D BFA00383 45D61CF5 C276D7CC 16551E87 007500DF  
A55EAB68

824F1F6C ADEEB85F 4E3E5AEA CDA212A4 6A5E8E3B 12C02044 5C2A7300  
00017FDA

7A086B00 00040300 46304402 2012FFB1 6F6AE989 3FBAEF77 A1077E62  
114AE37F

300F9B23 E0EDD260 5A308905 8F02204A C750F0FD 5BC4CE69 FFDB7DD7  
86C2438C

1E490DB0 DBCF27E8 37BC4848 E8AD5E30 0D06092A 864886F7 0D01010B  
05000382

0101002D 5903CC8C 47130F98 92FF188B 59AB1104 8E682B90 7EE5F77F  
0662806F

2B14C012 13075746 B436CAC1 45CDC051 48B358DF 8D79457D 9A6B1AF6  
78A1AADB

BA71BDB8 F5D66974 9D7766E5 2CAA8AA8 9B18CF1B 8F1376F0 945C8AB3  
9A31F5AC

E64E095F B792041D 8FD4D3E3 A1B4B5D9 01B64073 C935A9A7 64BF38C0  
616A3A4F

5517EF01 9E507823 1831EBA9 25B476AB 640AF9CE 3D69BFB9 56883A1B  
0CEFF18E

1FDC5F5E 39FDBABC 3D7409C8 5028337C C007FA13 82653D30 B9455354  
69091B7D

746EC628 8B252899 1486C455 E2FC158F EF432EA8 4EB694DA 5AD6409C  
27171461

278B385A EC400E9E 27F672D0 F78B1E0F 5027BCA1 031EC71C FB825A68  
A7D737BC 5DBC24

quit

certificate ca 07

308204D0 308203B8 A0030201 02020107 300D0609 2A864886 F70D0101  
0B050030

8183310B 30090603 55040613 02555331 10300E06 03550408 13074172  
697A6F6E

61311330 11060355 0407130A 53636F74 74736461 6C65311A 30180603  
55040A13

11476F44 61646479 2E636F6D 2C20496E 632E3131 302F0603 55040313  
28476F20

44616464 7920526F 6F742043 65727469 66696361 74652041 7574686F  
72697479

202D2047 32301E17 0D313130 35303330 37303030 305A170D 33313035  
30333037

30303030 5A3081B4 310B3009 06035504 06130255 53311030 0E060355  
04081307

4172697A 6F6E6131 13301106 03550407 130A5363 6F747473 64616C65  
311A3018

06035504 0A131147 6F446164 64792E63 6F6D2C20 496E632E 312D302B  
06035504

0B132468 7474703A 2F2F6365 7274732E 676F6461 6464792E 636F6D2F  
7265706F

7369746F 72792F31 33303106 03550403 132A476F 20446164 64792053  
65637572

65204365 72746966 69636174 65204175 74686F72 69747920 2D204732  
30820122

300D0609 2A864886 F70D0101 01050003 82010F00 3082010A 02820101  
00B9E0CB

10D4AF76 BDD49362 EB3064B8 81086CC3 04D96217 8E2FFF3E 65CF8FCE  
62E63C52

1CDA1645 4B55AB78 6B638362 90CE0F69 6C99C81A 148B4CCC 4533EA88  
DC9EA3AF

2BFE8061 9D7957C4 CF2EF43F 303C5D47 FC9A16BC C3379641 518E114B  
54F828BE

D08CBEF0 30381EF3 B026F866 47636DDE 7126478F 384753D1 461DB4E3  
DC00EA45

ACBDBC71 D9AA6F00 DBDBC30 3A794F5F 4C47F81D EF5BC2C4 9D603BB1  
B24391D8

A4334EEA B3D6274F AD258AA5 C6F4D5D0 A6AE7405 645788B5 4455D42D  
2A3A3EF8

B8BDE932 0A029464 C4163A50 F14AAEE7 7933AF0C 20077FE8 DF0439C2  
69026C63

52FA77C1 1BC87487 C8B99318 5054354B 694EBC3B D3492E1F DCC1D252  
FB020301

0001A382 011A3082 0116300F 0603551D 130101FF 04053003 0101FF30  
0E060355

1D0F0101 FF040403 02010630 1D060355 1D0E0416 041440C2 BD278ECC  
348330A2

33D7FB6C B3F0B42C 80CE301F 0603551D 23041830 1680143A 9A850710  
6728B6EF

F6BD0541 6E20C194 DA0FDE30 3406082B 06010505 07010104 28302630  
2406082B

06010505 07300186 18687474 703A2F2F 6F637370 2E676F64 61646479  
2E636F6D

2F303506 03551D1F 042E302C 302AA028 A0268624 68747470 3A2F2F63  
726C2E67

6F646164 64792E63 6F6D2F67 64726F6F 742D6732 2E63726C 30460603  
551D2004

3F303D30 3B060455 1D200030 33303106 082B0601 05050702 01162568  
74747073

3A2F2F63 65727473 2E676F64 61646479 2E636F6D 2F726570 6F736974  
6F72792F

300D0609 2A864886 F70D0101 0B050003 82010100 087E6C93 10C838B8  
96A9904B

FFA15F4F 04EF6C3E 9C8806C9 508FA673 F757311B BEBCE42F DBF8BAD3  
5BE0B4E7

E679620E 0CA2D76A 637331B5 F5A848A4 3B082DA2 5D90D7B4 7C254F11  
5630C4B6

449D7B2C 9DE55EE6 EF0C61AA BFE42A1B EE849EB8 837DC143 CE44A713  
700D911F

F4C813AD 8360D9D8 72A87324 1EB5AC22 0ECA1789 6258441B AB892501  
000FCDC4

1B62DB51 B4D30F51 2A9BF4BC 73FC76CE 36A4CDD9 D82CEAAE 9BF52AB2  
90D14D75

188A3F8A 4190237D 5B4BFEA4 03589B46 B2C36060 83F87D50 41CEC2A1  
90C3BBEF

022FD215 54EE4415 D90AAEA7 8A33EDB1 2D763626 DC04EB9F F7611F15  
DC876FEE

469628AD A1267D0A 09A72E04 A38DBC8F BC043001

quit

crypto pki certificate chain NBR

certificate self-signed 03

308202F6 308201DE A0030201 02020103 300D0609 2A864886 F70D0101  
05050030

14311230 10060355 04031309 416D617A 6F6E4E42 52301E17 0D323230  
38303430

37303733 335A170D 33323038 30333037 30373333 5A301431 12301006  
03550403

1309416D 617A6F6E 4E425230 82012230 0D06092A 864886F7 0D010101  
05000382

010F0030 82010A02 82010100 B7E59C78 067C7ED3 70BF070A C8672830  
879CA411

7EBEFED1 03D6C354 582BB001 C5F90F82 E0F4254C 92C0B9BF 3494394E  
371FBE3A

DE7AFF02 00FBE14E 51CB635F 4301AA1D 1BC72822 3F0649E2 7AE90699  
D4701A6B

BA3315FC 59C35815 206CB8CE 037BCBA9 25376EEA 99A9BEE2 F298D570  
1B24B34F

CC167E11 C0A097E4 EDE879FC 18ED7B1B 5FDFFECC D41389E3 B7526C5A  
CE5EDDF6

6229BB24 B9799621 890D11C2 4FA55074 76851757 1F441B5F 1EEA8265  
C11B0953

727E4A9E 17329F97 1F218359 3E798FEA 08675747 685050BB 3704FB24  
73F8BCC6

DBC6BC6D 929FD125 C21D9295 15017D91 E4167097 89115136 28C3AD9B  
627CA70D

297E8C88 47B64C52 08693BFB 02030100 01A35330 51300F06 03551D13  
0101FF04

05300301 01FF301F 0603551D 23041830 168014F1 B66C27CC 355EBB18  
AAB4B3F1

991406C7 4AB0D330 1D060355 1D0E0416 0414F1B6 6C27CC35 5EBB18AA  
B4B3F199

1406C74A B0D3300D 06092A86 4886F70D 01010505 00038201 01000728  
D24D7D03

59E77734 DAA72126 AF703CE2 5B2233B6 6DBBBCC8 8BA9C8E1 DB3F6712  
5DC02782

097F658C EAD6B0B5 8170DC12 7D487334 7AC6FA71 772331DA 42C23868  
EEA57D56

1AA0BE0E 8A8383E4 95433285 E154358C 644E862F 031C822B B08894DC  
1F15EB08

DA7726E2 7D7FA59B D4EAE07B 71DE193F 433A3556 F0F7800B F573F05E  
DD617842

AB46CAF5 B27CFFFA 63A37A74 00F1FC1C 3AB27880 91BC4E9B B93A316D  
F993B1FE

0E7E2486 CCEA1D55 46FF041F ABA87DB6 24C03FA5 3F12B57F 78FDCF72  
E40FBDC4

5549ACA6 D5F06CC3 76F0586B D3826AA8 1302D733 C79F0DE1 B111E706  
F35F7384

80ECB773 B1C12A96 A6F663FD FD3BC833 E1F5AF67 86C304DA 1190

quit

crypto pki certificate chain cucmpubexpw

certificate ca 7340D7452E2E48387C963FBBF840CFDF

308203EF 308202D7 A0030201 02021073 40D7452E 2E48387C 963FBBF8  
40CFDF30

0D06092A 864886F7 0D01010B 05003081 81310B30 09060355 04061302  
55533112

30100603 55040A0C 0974656B 76697A69 6F6E3116 30140603 55040B0C  
0D74656B

76697A69 6F6E6C61 62733126 30240603 5504030C 1D637563 6D707562  
65787077

2E74656B 76697A69 6F6E6C61 62732E63 6F6D310E 300C0603 5504080C  
05546578

6173310E 300C0603 5504070C 05506C61 6E6F301E 170D3232 30343232  
31303339

32325A17 0D323730 34323131 30333932 315A3081 81310B30 09060355  
04061302

55533112 30100603 55040A0C 0974656B 76697A69 6F6E3116 30140603  
55040B0C

0D74656B 76697A69 6F6E6C61 62733126 30240603 5504030C 1D637563  
6D707562

65787077 2E74656B 76697A69 6F6E6C61 62732E63 6F6D310E 300C0603  
5504080C

05546578 6173310E 300C0603 5504070C 05506C61 6E6F3082 0122300D  
06092A86

4886F70D 01010105 00038201 0F003082 010A0282 010100A9 F67A6EBC  
862E54BC

A44A93C8 B859482E 972A1EAC 8556882D 2147FF67 13F3276A 8DF9B2AC  
52A6F5BF

160CF930 EBC977D2 66D7239A 26F91540 1396760D 7AB3F6A5 1E7EA6F7  
30563D61

C47C4D58 F7E963E4 F536B9B7 648741D9 BBF93A38 625BFC4B 70FDE1AC  
4DF3D5FD

E7BCE076 4995A758 0E3EE12F E123A193 687C9B34 3133ED7E 6D3C98AE  
C3620CAF

C588A35B B4E41E61 34B6C2E3 CD4E7BE3 EB557134 8116EEEE 571ADD28  
93A4563B

385F0DA1 7EB26BF5 A80FE015 3AD67E36 9F199818 A185740A 05C00B32  
8F15B895

C5A38BBB 4467E4EC F8C16D3B BD3EBDC0 D860FD4A 638D6A8B 86FC856C  
FAD0E473

B12A4055 327666B1 DA3F1817 D13B6F26 89574122 C3F2FF02 03010001  
A361305F

300B0603 551D0F04 04030202 B4301D06 03551D25 04163014 06082B06  
01050507

03010608 2B060105 05070302 301D0603 551D0E04 160414D1 BF9B20CF  
589FA655

DB7EA0F5 A9F56073 8BC71730 12060355 1D130101 FF040830 060101FF  
02010030

0D06092A 864886F7 0D01010B 05000382 0101002B 2207F553 2ED34CBD  
08962DA9

3200BD15 5DC096B7 F5E57487 D53B67C6 D57F50BB 61ADD349 F2662513  
1D08DA7A

DB5F6702 75B6F5CA 88A306C8 E1E0B61E B3872419 E1930831 E11467FC  
A8855F4E

488BFC00 E61802FC E2E6749C 8902A60E 915BA981 50585F43 7C8D46DD  
84496595

D97CE090 FE0F9F1C 40FA17B4 7B54C8B8 6940971F 2290C45E 26363CC2  
2D5EEB80

2A335728 D956C94E 6F9DE10A A9DD1A2F BF127DDA BB9A7B75 5BEB368F  
6A00739D

003C3049 9246CA53 9E0E6E70 66B0F7CE C1F9D99E ABBBECD6 A870EDC5  
4A309938

90DFDEDB 4012A9FC ECB4B258 B60EBBFE 8ADE8E8E D9AAD87B E0B0ED68  
D8228B2B

787EC6EF 32EE03E3 7062FE89 DA128B35 8FAAEF

quit

crypto pki certificate chain AMZVCROOT

certificate ca 066C9FCF99BF8C0A39E2F0788A43E696365BCA

30820341 30820229 A0030201 02021306 6C9FCF99 BF8C0A39 E2F0788A  
43E69636

5BCA300D 06092A86 4886F70D 01010B05 00303931 0B300906 03550406  
13025553

310F300D 06035504 0A130641 6D617A6F 6E311930 17060355 04031310  
416D617A

6F6E2052 6F6F7420 43412031 301E170D 31353035 32363030 30303030  
5A170D33

38303131 37303030 3030305A 3039310B 30090603 55040613 02555331  
0F300D06

0355040A 1306416D 617A6F6E 31193017 06035504 03131041 6D617A6F  
6E20526F

6F742043 41203130 82012230 0D06092A 864886F7 0D010101 05000382  
010F0030

82010A02 82010100 B2788071 CA78D5E3 71AF4780 50747D6E D8D78876  
F49968F7

582160F9 7484012F AC022D86 D3A0437A 4EB2A4D0 36BA01BE 8DDB48C8  
0717364C

F4EE8823 C73EEB37 F5B519F8 4968B0DE D7B97638 1D619EA4 FE8236A5  
E54A56E4

45E1F9FD B416FA74 DA9C9B35 392FFAB0 2050066C 7AD080B2 A6F9AFEC  
47198F50

3807DCA2 873958F8 BAD5A9F9 48673096 EE94785E 6F89A351 C0308666  
A14566BA

54EBA3C3 91F948DC FFD1E830 2D7D2D74 7035D788 24F79EC4 596EBB73  
8717F232

4628B843 FAB71DAA CAB4F29F 240E2D4B F7715C5E 69FFEA95 02CB388A  
AE50386F

DBFB2D62 1BC5C71E 54E177E0 67C80F9C 8723D63F 40207F20 80C4804C  
3E3B2426

8E04AE6C 9AC8AA0D 02030100 01A34230 40300F06 03551D13 0101FF04  
05300301

01FF300E 0603551D 0F0101FF 04040302 0186301D 0603551D 0E041604  
148418CC

8534ECBC 0C94942E 08599CC7 B2104E0A 08300D06 092A8648 86F70D01  
010B0500

03820101 0098F237 5A4190A1 1AC57651 28203623 0EAEE628 BBAAF894  
AE48A430

7F1BFC24 8D4BB4C8 A197F6B6 F17A70C8 5393CC08 28E39825 CF23A4F9  
DE21D37C

8509AD4E 9A753AC2 0B6A8978 76444718 656C8D41 8E3B7F9A CBF4B5A7  
50D7052C

37E8034B ADE961A0 026EF5F2 F0C5B2ED 5BB7DCFA 945C779E 13A57F52  
AD95F2F8

933BDE8B 5C5BCA5A 525B60AF 14F74BEF A3FB9F40 956D3154 FC42D3C7  
461F23AD

D90F4870 9AD97578 71D17243 34756E57 59C2025C 266029CF 2319168E  
8843A5D4

E4CB08FB 231143E8 43297262 A1A95D5E 08D490AE B8D8CE14 C2D055F2  
86F6C493

43776661 C0B9E841 D7977860 036E4A72 AEA5D17D BA109E86 6C1B8AB9  
5933F8EB

C490BEF1 B9

quit

!

crypto pki certificate pool

cabundle nvram:ios.p7b

!

!

!

!

voice service voip

ip address trusted list

ipv4 10.80.11.141

ipv4 10.80.11.79

ipv4 xx.xx.16.0 255.255.254.0

address-hiding

mode border-element

allow-connections sip to sip

```
no supplementary-service sip moved-temporarily
no supplementary-service sip handle-replaces
fax protocol pass-through g711ulaw
trace
sip
  session refresh
  asserted-id pai
  early-offer forced
  midcall-signaling passthru
  pass-thru headers unapp
!
!
voice class uri CUCM sip
  host 10.80.11.141
voice class codec 1
  codec preference 1 g711ulaw
!
!
voice class sip-profiles 300
  rule 3 request INVITE sip-header X-Voice-Connector-Record-Only add
  "X-Voice-Connector-Record-Only: true"
!
!
!
voice class e164-pattern-map 890
  e164 +1972598XXXX$
  e164 +1972598XXXX$
!
!
voice class dpg 200
  description Incoming PSTNGW(DP201) to CUCM(DP101)
  dial-peer 101 preference 1
!
```

```
voice class dpg 100
  description Incoming CUCM(DP100) to PSTNGW(DP200)
  dial-peer 200 preference 1
!
voice class tenant 200
  sip-server ipv4:10.80.11.79
  connection-reuse
  session transport udp
  session refresh
  error-passthru
  asserted-id pai
  bind control source-interface GigabitEthernet0/0/1
  bind media source-interface GigabitEthernet0/0/1
  no pass-thru content custom-sdp
!
voice class tenant 100
  sip-server ipv4:10.80.11.141
  no connection-reuse
  options-ping 60
  session transport udp
  session refresh
  error-passthru
  asserted-id pai
  bind control source-interface GigabitEthernet0/0/0
  bind media source-interface GigabitEthernet0/0/0
  no pass-thru content custom-sdp
!
voice class srtp-crypto 1
  crypto 1 AES_CM_128_HMAC_SHA1_80
!
!
!
!
```

```
voice translation-rule 770
  rule 1 /\+1\ (972.....\)/ /\1/
!
!
voice translation-profile AWS-CUCM
  translate called 770
!
!
!
media profile recorder 2020
  media-type audio
  media-recording 5980090 100 101
!
media class 2020
  recorder profile 2020
!
!
!
voice-card 0/2
  no watchdog
!
voice-card 0/4
  dsp services dspfarm
  no watchdog
!
no license feature hseck9
license udi pid ISR4321/K9 sn FD021422BVW
license accept end user agreement
license boot level appxk9
license boot level uck9
license boot level securityk9
memory free low-watermark processor 67123
!
```



```
!  
!  
!  
interface GigabitEthernet0/0/0  
  description Interface to CUCM  
  ip dhcp client client-id ascii FLM2201V1AX  
  ip address 10.80.11.32 255.255.255.0  
  negotiation auto  
!  
interface GigabitEthernet0/0/1  
  description Interface facing PSTN  
  ip address 10.71.9.51 255.255.255.0  
  negotiation auto  
!  
interface GigabitEthernet0/1/0  
  description Interface facing PSTN  
  no ip address  
  negotiation auto  
!  
interface Service-Engine0/2/0  
!  
interface Service-Engine0/4/0  
!  
interface GigabitEthernet0  
  vrf forwarding Mgmt-intf  
  ip address 10.1.1.58 255.255.255.0  
  shutdown  
  negotiation auto  
!  
ip http server  
ip http authentication local  
ip http secure-server  
ip http client source-interface GigabitEthernet0/0/1
```

```
ip forward-protocol nd
ip route 0.0.0.0 0.0.0.0 10.71.9.1
ip route 10.64.0.0 255.255.0.0 10.80.11.1
ip route 10.80.0.0 255.255.0.0 10.80.11.1
ip route 172.16.0.0 255.255.0.0 10.80.11.1
ip route 172.16.29.0 255.255.255.0 10.80.11.1
!
!
!
!
!
!
!
!
control-plane
!
!
voice-port 0/2/0
!
voice-port 0/2/1
!
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
!
sccp local GigabitEthernet0/0/0
sccp ccm 10.80.11.18 identifier 1 priority 1 version 7.0
sccp
!
sccp ccm group 333
  bind interface GigabitEthernet0/0/0
```

```
associate ccm 1 priority 1
associate profile 2 register confdsp1
!
!
!
dspfarm profile 1 transcode
  codec g729abr8
  codec g729ar8
  codec g711alaw
  codec g711ulaw
  codec g729r8
  maximum sessions 10
  associate application CUBE
!
dial-peer voice 5980090 voip
  description DP_AmazonVCRecording
  destination-pattern +19725980090
  session protocol sipv2
  session target dns:xxxx1x1usa3vrbdy3.voiceconnector.chime.aws:5060
  session transport tcp
  voice-class codec 1
  voice-class sip localhost dns:
xxxx1x1usa3vrbdy3.voiceconnector.chime.aws preferred
  voice-class sip profiles 300
  voice-class sip bind control source-interface GigabitEthernet0/0/0
  voice-class sip bind media source-interface GigabitEthernet0/0/0
  media-class 2020
  no vad
!
dial-peer voice 100 voip
  description *** Inbound Call from CUCM to CUBE-LAN ***
  session protocol sipv2
  session transport udp
```

```
destination dpg 100
incoming uri via CUCM
voice-class codec 1
voice-class sip bind control source-interface GigabitEthernet0/0/0
voice-class sip bind media source-interface GigabitEthernet0/0/0
media-class 2020
dtmf-relay rtp-nte
no vad
!
dial-peer voice 201 voip
description *** Inbound Call from GW to CUBE-WAN ***
session protocol sipv2
session transport udp
destination dpg 200
incoming called e164-pattern-map 890
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 101 voip
description *** Outbound Call from CUBE-LAN to CUCM****
destination-pattern BAD.BAD
session protocol sipv2
session target sip-server
session transport udp
voice-class codec 1
voice-class sip tenant 100
voice-class sip bind control source-interface GigabitEthernet0/0/0
voice-class sip bind media source-interface GigabitEthernet0/0/0
media-class 2020
dtmf-relay rtp-nte
```

```
no vad
!
dial-peer voice 200 voip
description *** Outbound Call from CUBE-WAN to GW****
destination-pattern BAD.BAD
session protocol sipv2
session target sip-server
session transport udp
voice-class codec 1
voice-class sip asserted-id pai
voice-class sip tenant 200
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
!
!
gateway
timer receive-rtp 1200
!
sip-ua
crypto signaling default trustpoint AMZVCROOT
!
!
line con 0
exec-timeout 0 0
password 7 03105E00305E3B1D1E07
logging synchronous
login
stopbits 1
line aux 0
line vty 0 4
exec-timeout 60 0
```

```
password 7 083549453F481F464205
logging synchronous
login
transport input telnet
line vty 5 14
  login
  transport input ssh
!
call-home
  ! If contact email address in call-home is configured as sch-smart-licensing@cisco.com
  ! the email address configured in Cisco Smart License Portal will be used as contact email address to send SCH notifications.
  contact-email-addr sch-smart-licensing@cisco.com
  profile "CiscoTAC-1"
    active
    destination transport-method http
ntp server 10.10.10.5
!
!
!
!
!
!
end
```

AmazonNBR#

#### 4.3.6 Cisco UBE Running Configuration-NBR using TLS

```
AmazonNBR#show run
Building configuration...
```

```
Current configuration : 33499 bytes
!
! Last configuration change at 13:32:21 UTC Wed Aug 24 2022
! NVRAM config last updated at 12:34:10 UTC Wed Aug 24 2022
!
version 17.6
service config
service timestamps debug datetime msec
service timestamps log datetime msec
service password-encryption
service call-home
platform qfp utilization monitor load 80
platform punt-keepalive disable-kernel-core
!
hostname AmazonNBR
!
boot-start-marker
boot system bootflash:isr4300-universalk9.17.06.02.SPA.bin
boot-end-marker
!
!
vrf definition Mgmt-intf
!
address-family ipv4
exit-address-family
!
address-family ipv6
exit-address-family
!
logging queue-limit 10000000
logging buffered 10000000
logging rate-limit 10000
!
```

```
no aaa new-model
!
!
!
!
!
!
!
ip name-server 8.8.8.8 172.16.31.3 10.87.0.16 10.85.0.232 10.64.1.3
ip domain name tekvision.com
!
!
!
login on-success log
!
!
!
!
!
!
!
subscriber templating
!
!
!
!
!
!
multilink bundle-name authenticated
!
!
!
!
```

```
!  
!  
!  
!  
!  
crypto pki trustpoint SLA-TrustPoint  
  enrollment pkcs12  
  revocation-check crl  
!  
crypto pki trustpoint tekvisionlabs_withCA.pfx  
  enrollment pkcs12  
  revocation-check crl  
  rsakeypair tekvisionlabs_withCA.pfx  
!  
crypto pki trustpoint AMZVCROOT  
  enrollment terminal pem  
  chain-validation continue AMZVCROOT  
  revocation-check none  
!  
crypto pki trustpoint root  
  enrollment terminal  
  revocation-check none  
!  
crypto pki trustpoint AmazonNBR  
  enrollment terminal pem  
  subject-name CN=AmazonNBR  
  revocation-check none  
  rsakeypair CUBE  
!  
crypto pki trustpoint cucmpubexpw  
  enrollment terminal  
  revocation-check none  
!
```

```
crypto pki trustpoint NBR
  enrollment terminal pem
  serial-number none
  fqdn none
  ip-address none
  subject-name cn=AmazonNBR
  revocation-check none
  rsakeypair CUBE
```

```
!
!
```

```
crypto pki certificate chain SLA-TrustPoint
```

```
  certificate ca 01
    30820321 30820209 A0030201 02020101 300D0609 2A864886 F70D0101
    0B050030
    32310E30 0C060355 040A1305 43697363 6F312030 1E060355 04031317
    43697363
    6F204C69 63656E73 696E6720 526F6F74 20434130 1E170D31 33303533
    30313934
    3834375A 170D3338 30353330 31393438 34375A30 32310E30 0C060355
    040A1305
    43697363 6F312030 1E060355 04031317 43697363 6F204C69 63656E73
    696E6720
    526F6F74 20434130 82012230 0D06092A 864886F7 0D010101 05000382
    010F0030
    82010A02 82010100 A6BCBD96 131E05F7 145EA72C 2CD686E6 17222EA1
    F1EFF64D
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44433D74 656B7669 7A696F6E 6C616273 2C44433D 636F6D3F 63657274  
69666963

61746552 65766F63 6174696F 6E4C6973 743F6261 73653F6F 626A6563  
74436C61

73733D63 524C4469 73747269 62757469 6F6E506F 696E7430 81CD0608  
2B060105

05070101 0481C030 81BD3081 BA06082B 06010505 07300286 81AD6C64  
61703A2F

2F2F434E 3D74656B 76697A69 6F6E6C61 62732D44 4330312D 43412C43  
4E3D4149

412C434E 3D507562 6C696325 32304B65 79253230 53657276 69636573  
2C434E3D

53657276 69636573 2C434E3D 436F6E66 69677572 6174696F 6E2C4443  
3D74656B

76697A69 6F6E6C61 62732C44 433D636F 6D3F6341 43657274 69666963  
6174653F

62617365 3F6F626A 65637443 6C617373 3D636572 74696669 63617469  
6F6E4175

74686F72 69747930 2106092B 06010401 82371402 04141E12 00570065  
00620053

00650072 00760065 00723013 0603551D 25040C30 0A06082B 06010505  
07030130

0D06092A 864886F7 0D01010B 05000382 010100B8 A75CCFAC 3526CC25  
12D883F3

FE4F6720 C260D7CF 43C4BC4B 2244DA5B C7D92754 799EC3B7 0BA026B7  
5CF34CF4

662DA20C F1766735 94003D82 EA58A60C DFF967EC 46572EA0 DED0C24F  
387A893B

DFFEDA53 670DBDAC 9A405277 3778CE1A 58DCEA4A CB2E03E8 2A0896B3  
E2062753

56C84277 B27EE2A4 08F6E523 20696480 400B5A47 C4C2FA73 C7457C61  
D008C1D2

241C5DD7 1CE4B110 C22DD1DE 1FFEA9D6 31D29708 3CD8600D 8A961B3A  
76DBD16B

DD0BC36E E344AD88 54CD3E33 0C37C68C 29EECBC3 4F20F6F0 A3B29E6A  
863CF3EB

2ED8886C BDF72B38 5D5B4AC7 9916892C 33AA69F7 BE887210 AB089A76  
32F49F44

E9BF7E24 41A00996 391557AB 7AC5B014 C6554D

quit

certificate ca 638979817A493C9B493902E58ACBFFD1

308203AA 30820292 A0030201 02021063 8979817A 493C9B49 3902E58A  
CBFFD130

0D06092A 864886F7 0D01010B 05003054 31133011 060A0992 268993F2  
2C640119

1603636F 6D311D30 1B060A09 92268993 F22C6401 19160D74 656B7669  
7A696F6E

6C616273 311E301C 06035504 03131574 656B7669 7A696F6E 6C616273  
2D444330

312D4341 301E170D 32303036 33303135 33313238 5A170D32 35303633  
30313534

3132375A 30543113 3011060A 09922689 93F22C64 01191603 636F6D31  
1D301B06

0A099226 8993F22C 64011916 0D74656B 76697A69 6F6E6C61 6273311E  
301C0603

55040313 1574656B 76697A69 6F6E6C61 62732D44 4330312D 43413082  
0122300D

06092A86 4886F70D 01010105 00038201 0F003082 010A0282 010100DE  
DE363E05

A352830D 7E884B00 D8143004 E2035E25 43113EED 9AD3B9D9 EF5429A8  
DD24CB37

593797C1 69B73A66 C0207E25 5F93694A 4D20F7C6 752B0EB0 FA57AD95  
EFB9C7D1

BA737380 9BF8FBD1 EC3205D1 24FD1256 913764CC 785847A6 354CB43E  
7E15B0E2

22A34671 5EFD65AF A402B0DD 9D840FA3 18FDA4F3 1450832C 71F9141E  
F32CBD49

62B25280 4017BD86 6DCADEA8 47DCD301 5BBB9008 1E26D662 61405F01  
A915A755

1A017264 25F7308A 09C65C11 E7DCC13B CCDA9095 169C4D87 0CA50D4A  
26CF974D

E9AFB0BF 0772E71F BC32F88D 59C9B70F 600258D7 116C5136 95DB4436  
8CB4A17C

23BD81F0 E76759EE 8D596197 9587AC98 D5B5E6F5 B83329DB 65643102  
03010001

A3783076 300B0603 551D0F04 04030201 86300F06 03551D13 0101FF04  
05300301

01FF301D 0603551D 0E041604 1472436F F907F69B A861E068 B9963AE7  
7F79E394

8F301206 092B0601 04018237 15010405 02030200 02302306 092B0601  
04018237

15020416 041457ED 303498C1 C522F2CA 009C2928 C1CE24F9 E9C1300D  
06092A86

4886F70D 01010B05 00038201 0100B1E0 6BDA2750 931F2C7D C7001B64  
77121710

81DE50F5 EFD4104D 2AC1C30D 20AA2419 87ADA819 54C2812A 2637CCF0  
BF39BDEC

38327C4E 36F3FCCD DA9C12CB 7F308B0A 8CCE46B1 3533819E 8D656234  
D93CA8F3

F564FAED E9E5C18D 99BAEFAB 15902DC5 1CFA203B A6F9D9D3 0CF0586F  
B36C0CBA

C0D43E35 4E394A51 45BCCFA7 15C6855C 8677A207 A9686FAC 8250639E  
92B8FE52

FBEC5DD5 177642E0 53667395 8F8CD168 076E9889 99FA470A 9AE56523  
F152232F

3ECA77AF A9A47F9B DF2194AC 95BA9B70 6CB657CF E67888B8 683BA1A6  
9AB4E732

D104CF15 853BE6D0 9CBCC46D 31AEE431 E01E0F62 879E503E 7BF4B58F  
055C38CC

DD19869F 7FB54E42 06F1D4F9 4527

quit

crypto pki certificate chain cucmpubexpw

crypto pki certificate chain NBR

certificate 2800000294CCC67B64F365C6DB000200000294

3082052F 30820417 A0030201 02021328 00000294 CCC67B64 F365C6DB  
00020000

0294300D 06092A86 4886F70D 01010B05 00305431 13301106 0A099226  
8993F22C

64011916 03636F6D 311D301B 060A0992 268993F2 2C640119 160D7465  
6B76697A

696F6E6C 61627331 1E301C06 03550403 13157465 6B76697A 696F6E6C  
6162732D

44433031 2D434130 1E170D32 32303831 36313330 3034395A 170D3234  
30383135

31333030 34395A30 14311230 10060355 04031309 416D617A 6F6E4E42  
52308201

22300D06 092A8648 86F70D01 01010500 0382010F 00308201 0A028201  
010093E7

DEBB125F B66C23A2 C2C67278 1F20DD75 43DD3267 E8127291 35245C61  
6FB9B8CF

8422AFF3 5BA0244B 068AB0C3 690DAF9B 844813DE 68826E14 C8F0089C  
F6D3F576

F00C4D55 5809FDFD BEA6C1E1 8C51B4F3 B0EE7676 811D5A76 DE2EFAAF  
8B3353D9

9A7954AB E37645EB D2347490 97B20E9D F6B2546D 88713BB2 FEA7BED3  
215328C2

EEEE7B3A 59E1E359 5E7AF46B 71B532F6 62106656 4F82C5F3 A82E0C46  
D110FF99

C2D3B654 5E90D39F 44E502D8 EBCE81B1 442AC641 09E55F48 E0573C6F  
4584FA1C

99BDAD0F 6E627EC5 1FE4E4F1 42C2FC38 1320BB3F 6707E01F DF3269B4  
0763E2B5

9FB9BF18 4F1BDF84 B87A6B8B B3902FD2 9B6952D1 C37E5A6A C7381493  
EA6D0203

010001A3 82023830 82023430 0E060355 1D0F0101 FF040403 0205A030  
1D060355

1D0E0416 0414063E 95158F62 00DF6E11 436F911D 9671F59C F06E301F  
0603551D

23041830 16801472 436FF907 F69BA861 E068B996 3AE77F79 E3948F30  
81D90603

551D1F04 81D13081 CE3081CB A081C8A0 81C58681 C26C6461 703A2F2F  
2F434E3D  
74656B76 697A696F 6E6C6162 732D4443 30312D43 41283229 2C434E3D  
44433031  
2C434E3D 4344502C 434E3D50 75626C69 63253230 4B657925 32305365  
72766963  
65732C43 4E3D5365 72766963 65732C43 4E3D436F 6E666967 75726174  
696F6E2C  
44433D74 656B7669 7A696F6E 6C616273 2C44433D 636F6D3F 63657274  
69666963  
61746552 65766F63 6174696F 6E4C6973 743F6261 73653F6F 626A6563  
74436C61  
73733D63 524C4469 73747269 62757469 6F6E506F 696E7430 81CD0608  
2B060105  
05070101 0481C030 81BD3081 BA06082B 06010505 07300286 81AD6C64  
61703A2F  
2F2F434E 3D74656B 76697A69 6F6E6C61 62732D44 4330312D 43412C43  
4E3D4149  
412C434E 3D507562 6C696325 32304B65 79253230 53657276 69636573  
2C434E3D  
53657276 69636573 2C434E3D 436F6E66 69677572 6174696F 6E2C4443  
3D74656B  
76697A69 6F6E6C61 62732C44 433D636F 6D3F6341 43657274 69666963  
6174653F  
62617365 3F6F626A 65637443 6C617373 3D636572 74696669 63617469  
6F6E4175  
74686F72 69747930 2106092B 06010401 82371402 04141E12 00570065  
00620053  
00650072 00760065 00723013 0603551D 25040C30 0A06082B 06010505  
07030130  
0D06092A 864886F7 0D01010B 05000382 01010076 2F5CE5BB D36041A3  
BD800570  
7D6D9F72 DC0FDBE4 656BCB10 03657741 F677253B 0F8760F1 37AB0DAE  
6765550A  
E3721DDB 8CC73B7A BBA98101 395DE5A8 64AE5E80 8DF2B241 D8D1D748  
A965BE3F  
B5FAA6CC A212BA48 84341F0E 692A7811 ABE436A1 28EE6D5E 402F3052  
38843AD2  
7E1128E0 010E8342 C56EEA88 E0485545 AA7184A6 17002F99 1F93F981  
1DA3F72D

EEB85AB4 B964C9A6 2F13F393 3FF90E2D 7C9C663B 9F4703F5 18EC1F02  
AA24F6C0

60A10613 381ECD34 08E8D146 911F6040 3274276F 38743B14 139BC8FE  
BEFBD053

E8EA29F2 60ED633E 44397262 EB100E36 1AEE9E79 65ACBFFF 06D72E10  
31729EAE

A18135B3 03DA7443 2040BC15 0C1B1322 0B99B9

quit

certificate ca 638979817A493C9B493902E58ACBFFD1

308203AA 30820292 A0030201 02021063 8979817A 493C9B49 3902E58A  
CBFFD130

0D06092A 864886F7 0D01010B 05003054 31133011 060A0992 268993F2  
2C640119

1603636F 6D311D30 1B060A09 92268993 F22C6401 19160D74 656B7669  
7A696F6E

6C616273 311E301C 06035504 03131574 656B7669 7A696F6E 6C616273  
2D444330

312D4341 301E170D 32303036 33303135 33313238 5A170D32 35303633  
30313534

3132375A 30543113 3011060A 09922689 93F22C64 01191603 636F6D31  
1D301B06

0A099226 8993F22C 64011916 0D74656B 76697A69 6F6E6C61 6273311E  
301C0603

55040313 1574656B 76697A69 6F6E6C61 62732D44 4330312D 43413082  
0122300D

06092A86 4886F70D 01010105 00038201 0F003082 010A0282 010100DE  
DE363E05

A352830D 7E884B00 D8143004 E2035E25 43113EED 9AD3B9D9 EF5429A8  
DD24CB37

593797C1 69B73A66 C0207E25 5F93694A 4D20F7C6 752B0EB0 FA57AD95  
EFB9C7D1

BA737380 9BF8FBD1 EC3205D1 24FD1256 913764CC 785847A6 354CB43E  
7E15B0E2

22A34671 5EFD65AF A402B0DD 9D840FA3 18FDA4F3 1450832C 71F9141E  
F32CBD49

62B25280 4017BD86 6DCADEA8 47DCD301 5BBB9008 1E26D662 61405F01  
A915A755

1A017264 25F7308A 09C65C11 E7DCC13B CCDA9095 169C4D87 0CA50D4A  
26CF974D

E9AFB0BF 0772E71F BC32F88D 59C9B70F 600258D7 116C5136 95DB4436  
8CB4A17C

23BD81F0 E76759EE 8D596197 9587AC98 D5B5E6F5 B83329DB 65643102  
03010001

A3783076 300B0603 551D0F04 04030201 86300F06 03551D13 0101FF04  
05300301

01FF301D 0603551D 0E041604 1472436F F907F69B A861E068 B9963AE7  
7F79E394

8F301206 092B0601 04018237 15010405 02030200 02302306 092B0601  
04018237

15020416 041457ED 303498C1 C522F2CA 009C2928 C1CE24F9 E9C1300D  
06092A86

4886F70D 01010B05 00038201 0100B1E0 6BDA2750 931F2C7D C7001B64  
77121710

81DE50F5 EFD4104D 2AC1C30D 20AA2419 87ADA819 54C2812A 2637CCF0  
BF39BDEC

38327C4E 36F3FCCD DA9C12CB 7F308B0A 8CCE46B1 3533819E 8D656234  
D93CA8F3

F564FAED E9E5C18D 99BAEFAB 15902DC5 1CFA203B A6F9D9D3 0CF0586F  
B36C0CBA

C0D43E35 4E394A51 45BCCFA7 15C6855C 8677A207 A9686FAC 8250639E  
92B8FE52

FBEC5DD5 177642E0 53667395 8F8CD168 076E9889 99FA470A 9AE56523  
F152232F

3ECA7AF A9A47F9B DF2194AC 95BA9B70 6CB657CF E67888B8 683BA1A6  
9AB4E732

D104CF15 853BE6D0 9CBCC46D 31AEE431 E01E0F62 879E503E 7BF4B58F  
055C38CC

DD19869F 7FB54E42 06F1D4F9 4527

quit

!

crypto pki certificate pool

cabundle nvram:ios.p7b

!

!

!

!

voice service voip

```
ip address trusted list
  ipv4 10.80.11.141
  ipv4 10.80.11.79
  ipv4 xx.xx.16.0 255.255.254.0
address-hiding
mode border-element
allow-connections sip to sip
no supplementary-service sip moved-temporarily
no supplementary-service sip handle-replaces
fax protocol pass-through g711ulaw
trace
sip
  session refresh
  asserted-id pai
  midcall-signaling passthru
  pass-thru headers unapp
!
!
voice class uri CUCM sip
  host 10.80.11.141
voice class codec 1
  codec preference 1 g711ulaw
!
!
voice class sip-profiles 300
  rule 3 request INVITE sip-header X-Voice-Connector-Record-Only add
  "X-Voice-Connector-Record-Only: true"
!
!
!
voice class e164-pattern-map 890
  e164 +1972598xxxx$
  e164 +1972598xxxx$
```

```
!  
!  
voice class dpg 200  
  description Incoming PSTNGW(DP201) to CUCM(DP101)  
  dial-peer 101 preference 1  
!  
voice class dpg 100  
  description Incoming CUCM(DP100) to PSTNGW(DP200)  
  dial-peer 200 preference 1  
!  
voice class tenant 200  
  sip-server ipv4:10.80.11.79  
  connection-reuse  
  session transport udp  
  session refresh  
  error-passthru  
  asserted-id pai  
  bind control source-interface GigabitEthernet0/0/1  
  bind media source-interface GigabitEthernet0/0/1  
  no pass-thru content custom-sdp  
!  
voice class tenant 100  
  sip-server ipv4:10.80.11.141  
  no connection-reuse  
  options-ping 60  
  session transport udp  
  session refresh  
  error-passthru  
  asserted-id pai  
  bind control source-interface GigabitEthernet0/0/0  
  bind media source-interface GigabitEthernet0/0/0  
  no pass-thru content custom-sdp  
!
```

```
voice class srtp-crypto 1
  crypto 1 AES_CM_128_HMAC_SHA1_80
!
!
!
!
voice translation-rule 770
  rule 1 /\+1\ (972.....\)/ /\1/
!
!
voice translation-profile AWS-CUCM
  translate called 770
!
!
!
media profile recorder 2020
  media-type audio
  media-recording 5980090 100 101
!
media class 2020
  recorder profile 2020
!
!
!
voice-card 0/2
  no watchdog
!
voice-card 0/4
  dsp services dspfarm
  no watchdog
!
no license feature hseck9
license udi pid ISR4321/K9 sn FDO21422BVW
```

```
license accept end user agreement
license boot level appxk9
license boot level uck9
license boot level securityk9
memory free low-watermark processor 67123
!
diagnostic bootup level minimal
!
spanning-tree extend system-id
!
!
redundancy
mode none
!
!
!
interface GigabitEthernet0/0/0
description Interface to CUCM
ip dhcp client client-id ascii FLM2201V1AX
ip address 10.80.11.32 255.255.255.0
negotiation auto
!
interface GigabitEthernet0/0/1
description Interface facing PSTN
ip address 10.71.9.51 255.255.255.0
negotiation auto
!
interface GigabitEthernet0/1/0
description Interface facing PSTN
no ip address
negotiation auto
!
interface Service-Engine0/2/0
```

```
!  
interface Service-Engine0/4/0  
!  
interface GigabitEthernet0  
  vrf forwarding Mgmt-intf  
  ip address 10.1.1.58 255.255.255.0  
  shutdown  
  negotiation auto  
!  
ip http server  
ip http authentication local  
ip http secure-server  
ip http client source-interface GigabitEthernet0/0/1  
ip forward-protocol nd  
ip route 0.0.0.0 0.0.0.0 10.71.9.1  
ip route 10.64.0.0 255.255.0.0 10.80.11.1  
ip route 10.80.0.0 255.255.0.0 10.80.11.1  
ip route 172.16.0.0 255.255.0.0 10.80.11.1  
ip route 172.16.29.0 255.255.255.0 10.80.11.1  
!  
!  
!  
!  
!  
!  
!  
!  
control-plane  
!  
!  
voice-port 0/2/0  
!  
voice-port 0/2/1  
!
```

```
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 1 transcode
  codec g729abr8
  codec g729ar8
  codec g711alaw
  codec g711ulaw
  codec g729r8
  maximum sessions 10
  associate application CUBE
!
dial-peer voice 100 voip
  description *** Inbound Call from CUCM to CUBE-LAN ***
  session protocol sipv2
  session transport udp
  destination dpg 100
  incoming uri via CUCM
  voice-class codec 1
  voice-class sip bind control source-interface GigabitEthernet0/0/0
  voice-class sip bind media source-interface GigabitEthernet0/0/0
  media-class 2020
  dtmf-relay rtp-nte
  no vad
!
dial-peer voice 201 voip
```

```
description *** Inbound Call from GW to CUBE-WAN ***
session protocol sipv2
session transport udp
destination dpg 200
incoming called e164-pattern-map 890
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 101 voip
description *** Outbound Call from CUBE-LAN to CUCM****
destination-pattern BAD.BAD
session protocol sipv2
session target sip-server
session transport udp
voice-class codec 1
voice-class sip tenant 100
voice-class sip bind control source-interface GigabitEthernet0/0/0
voice-class sip bind media source-interface GigabitEthernet0/0/0
media-class 2020
dtmf-relay rtp-nte
no vad
!
dial-peer voice 200 voip
description *** Outbound Call from CUBE-WAN to GW****
destination-pattern BAD.BAD
session protocol sipv2
session target sip-server
session transport udp
voice-class codec 1
voice-class sip asserted-id pai
```

```
voice-class sip tenant 200
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 5980090 voip
description DP_AmazonVCRecording
destination-pattern +19725980090
session protocol sipv2
session target
dns:dtndxrmj1x1usa3vrbdy3.voiceconnector.chime.aws:5061
session transport tcp tls
voice-class codec 1
voice-class sip localhost
dns:dtndxrmj1x1usa3vrbdy3.voiceconnector.chime.aws preferred
voice-class sip profiles 300
voice-class sip bind control source-interface GigabitEthernet0/0/0
voice-class sip bind media source-interface GigabitEthernet0/0/0
media-class 2020
no vad
!
!
gateway
timer receive-rtp 1200
!
sip-ua
crypto signaling default trustpoint AMZVCROOT
!
!
line con 0
exec-timeout 0 0
password 7 03105E00305E3B1D1E07
```

```
logging synchronous
login
stopbits 1
line aux 0
line vty 0 4
  exec-timeout 60 0
  password 7 083549453F481F464205
  logging synchronous
  login
  transport input telnet
line vty 5 14
  login
  transport input ssh
!
call-home
  ! If contact email address in call-home is configured as sch-smart-licensing@cisco.com
  ! the email address configured in Cisco Smart License Portal will be used as contact email address to send SCH notifications.
  contact-email-addr sch-smart-licensing@cisco.com
  profile "CiscoTAC-1"
  active
  destination transport-method http
ntp server 10.10.10.5
!
!
!
!
!
!
end
```

AmazonNBR#