Configuration Guide for Google CCAI Call Recording Using Cisco Unified Border Element (Cisco UBE) V17.15.03a

TekVizion

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1 Audience

This document is intended for the SIP Trunk customer's technical staff and Value-Added Reseller (VAR) having installation and operational responsibilities.

1.1 Introduction

This configuration guide describes configuration steps for **Google CCAI Call Recording** using **Cisco Unified Border Element (Cisco UBE) 17.15.03a and Cisco UBE Media Proxy 17.15.03a**.

1.1.1 TekVizion Labs

TekVizion Labs™ is an independent testing and verification facility offered by TekVizion, Inc. TekVizion Labs offers several types of testing services including:

- Remote Testing – provides secure, remote access to certain products in TekVizion Labs for pre-Verification and ad hoc testing.
- Verification Testing – Verification of interoperability performed on-site at TekVizion Labs between two products or in a multi-vendor configuration.
- Product Assessment – independent assessment and verification of product functionality, interface usability, assessment of differentiating features as well as suggestions for added functionality, stress, and performance testing, etc.

TekVizion is a systems integrator specifically dedicated to the telecommunications industry. Our core services include consulting/solution design, interoperability/Verification testing, integration, custom software development and solution support services. Our services help service providers achieve a smooth transition to packet-voice networks, speeding delivery of integrated services. While we have expertise covering a wide range of technologies, we have extensive experience surrounding our practice areas which include SIP Trunking, Packet Voice, Service Delivery, and Integrated Services.

The TekVizion team brings together experience from the leading service providers and vendors in telecom. Our unique expertise includes legacy switching services and platforms, and unparalleled product knowledge, interoperability, and integration experience on a vast array of VoIP and other next-generation products. We rely on this combined experience to do what we do best: help our clients advance the rollout of services that excite customers and result in new revenues for the bottom line. TekVizion leverages this real-world, multi-vendor integration and test experience and proven processes to offer services to vendors, network operators, enhanced service providers, large enterprises and other professional services firms. TekVizion's headquarters, along with a state-of-the-art test lab and Executive Briefing Center, is located in Plano, Texas.

For more information on TekVizion and its practice areas, please visit TekVizion Labs website.

2 SIP Trunking Network Components

The network for the SIP Trunk reference configuration is illustrated below and is representative of Google CCAI Call Recording with Cisco UBE 17.15.03a and Cisco UBE Media Proxy 17.15.03a configuration.

- Google CCAI SIPREC solution supports only TLS/SRTP.
- Hence as per the recommendations from Cisco, Cisco UBE Media Proxy is included in the topology to fork the RTP streams sent from the Cisco UBE to SRTP streams towards Google CCAI.

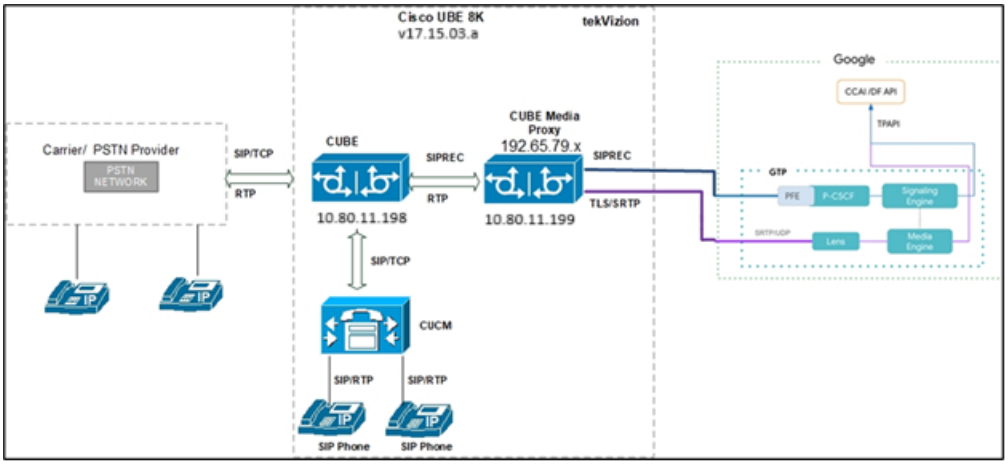

Figure 1: SIP Trunk Lab Reference Network

The lab network consists of the following components.

- Google CCAI Cloud Environment
- Cisco UBE V17.15.03a
- Cisco UBE Media Proxy V17.15.03a
- OnPrem PBX (Cisco Unified Communications Manager V15.0.1.11901-2)

3 Hardware Components

- Cisco UBE C8300
- Cisco UBE Media Proxy C8300

4 Software Requirements

- Cisco UBE C8300 V17.15.03a
- Cisco UBE Media Proxy C8300 V17.15.03a
- Cisco Unified Communications Manager V15.0.1.11901-2 (OnPrem PBX)

5 Features

5.1 Features tested for Google CCAI Call Recording

- Basic Inbound calls
- Call Hold and Resume
- Call Transfer
- Conference

5.2 Features Not tested for Google CCAI Call Recording

- None

5.3 Caveats and Limitations

DTLS	Cisco UBE does not support DTLS
Blind Transfer	CUCM does not support blind transfer. This test case is performed by ringing transfer
Long duration call	Cisco Cube & Google CCAI sends session refresh every 15 minutes using UPDATE
Conversation deactivation using Google CCAI API (Google CCAI sends mid-call SIP INVITE with SDP INACTIVE)	Cisco UBE Media Proxy does not support mid-call renegotiations through Hold/Resume sent from the recording solutions

5.4 Failed Testcase

- None

6 Configuration

6.1 Configuration Checklist

Below are the steps that are required to configure Cisco UBE and Cisco UBE Media Proxy.

Table 1 – Cisco UBE and Cisco UBE Media Proxy Configuration Steps

Step	Description	Reference
Cisco UBE		
Step 1	IP Networking	Section 6.4.1
Step 2	Routing	Section 6.4.2
Step 3	Global Cisco UBE Settings	Section 6.4.3
Step 4	Codecs	Section 6.4.4
Step 5	Dial-peer Groups	Section 6.4.5
Step 6	Tenant	Section 6.4.6
Step 7	Number Translation Rules	Section 6.4.7
Step 8	SIPREC Configuration	Section 6.4.8
Step 9	Dial Peer	Section 6.4.9
Step 10	Running configurations	Section 6.4.10
Cisco UBE Media Proxy		
Step 1	IP Networking	Section 6.5.2
Step 2	Routing	Section 6.5.2
Step 3	DNS Servers	Section 6.5.3
Step 4	Certificates	Section 6.5.4
Step 5	Import Signed Host Certificate	Section 6.5.5
Step 6	Trusted CA Trust point for Google CCAI	Section 6.5.6
Step 7	Default Trust point and TLS Version	Section 6.5.7
Step 8	Global Cisco UBE Media Proxy Settings	Section 6.5.8
Step 9	Message Handling Rules	Section 6.5.9
Step 10	SRTP Crypto	Section 6.5.10
Step 11	Translation Rule	Section 6.5.11
Step 12	SIPREC Configuration	Section 6.5.12
Step 13	Dial Peer	Section 6.5.13

Step 14	Message Handling Rules for Participation Label.	Section 6.5.14
Step 15	Running Configurations	Section 6.5.15

6.2 IP Address Worksheet

The specific values listed in the table below and in subsequent sections are used in the lab configuration described in this document are for **illustrative purposes only**.

Table 2 - IP Address Worksheet

Component	IP Address
Google CCAI	
Signaling	us.telephony.goog
Media	74.125.X.X
OnPrem PBX	
LAN IP Address	10.80.11.247
Cisco UBE Media Proxy	
LAN IP Address	10.80.11.199
WAN IP Address	192.65.X.X
Cisco UBE	
LAN IP Address	10.80.11.198

6.3 Google CCAI API Configuration

Visit this documentation page and search for "audio recordings for playback" to find the appropriate CURL command to enable call recording.

6.4 Cisco UBE Configuration

The following is the example configuration of Cisco UBE for Google CCAI Call Recording

6.4.1 IP Networking

Below is the interface configuration towards PBX and PSTN Gateway

```
interface GigabitEthernet2
 description to PBX and PSTN interface
 ip address 10.80.11.198 255.255.255.0
 negotiation auto
```

6.4.2 Routing

Below is the static route configured towards Cisco UBE Media proxy, PSTN Gateway & Cisco PBX.

```
ip route 0.0.0.0 0.0.0.0 10.80.11.1
ip route 10.80.11.0 255.255.255.0 10.80.11.1
ip route 10.80.13.0 255.255.255.0 10.80.13.1
```

6.4.3 Global Cisco UBE Settings

Below are the Global VoIP and SIP settings configured in the Cisco UBE

```
voice service voip
 ip address trusted list
  ipv4 10.64.1.0 255.255.255.0
  ipv4 10.80.11.0 255.255.255.0
 address-hiding
 mode border-element
 allow-connections sip to sip
 trace
 sip
  session refresh
  error-passthru
  early-offer forced
  sip-profiles inbound
```

Explanation

Command	Description
ip address trusted list	To allow all traffic between PSTN Gateway and CUCM
allow-connections sip to sip	Allows back-to-back user agent connections between two SIP call legs
session refresh	Ensures that a SIP session remains active
sip-profiles inbound	The set of rules or configurations that modify incoming Session Initiation Protocol (SIP) messages

6.4.4 Codecs

The below Voice class codec is used between PSTN gateway and On prem PBX.

6.4.9 - dial peer

```
voice class codec 1
 codec preference 1 g711ulaw
 codec preference 2 g711alaw
```

6.4.5 Dial-peer Groups

Below is the dial-peer group configured to route the call from PSTN Gateway to PBX. This dial peer group is used in *Section 6.4.9 - dial peer 301*

```
voice class dpg 101
 description incoming PSTNGW to PBX
 dial-peer 400 preference 1
!
```

Below is the dial-peer group configured to route the call from PBX to PSTN Gateway. This dial peer group is used in *Section 6.4.9 - dial peer 302*

```
voice class dpg 103
 description incoming PBX to PSTNgw
 dial-peer 1000 preference 1
!
```

6.4.6 Tenant

Below is the tenant configuration towards PSTN Gateway. This is used in *Section 6.4.9 - dial peer 1000*

```
voice class tenant 100
 session transport tcp
 bind control source-interface GigabitEthernet2
 bind media source-interface GigabitEthernet2
```

6.4.7 Number Translation Rules

Below is the Number Translation rule and Translation profile to convert 10 digits DID from PSTN Gateway to 4-digit extension towards PBX. This is used in *Section 6.4.9 – dial peer 301*

```
voice translation-rule 100
 rule 1 /972852XXXX/ /9003/
!

voice translation-profile 100
translate called 100
!
```

6.4.8 SIPREC Configuration

Below is the Media class configured in Cisco UBE to enable SIPREC recording. This is used in *Section 6.4.9 – dial peer 1000 and 400*

```
media class 300
 recorder parameter siprec
  media-recording 900
```

6.4.9 Dial Peer

Below are the outbound dial-peers configured to route the calls towards PSTN Gateway, PBX and Cisco UBE Media Proxy

```
dial-peer voice 1000 voip
 description outbound to pstn
 destination-pattern 214.......
 session protocol sipv2
 session target ipv4:10.64.1.72:5060
 voice-class codec 1 offer-all
 voice-class sip tenant 100
 voice-class sip session refresh
 media-class 300
 dtmf-relay rtp-nte
 no vad
!
dial-peer voice 400 voip
 description outbound to PBX
 destination-pattern 9...
 session protocol sipv2
 session target ipv4:10.80.11.246:5060
  voice-class codec 1 offer-all
 voice-class sip tenant 100
 voice-class sip session refresh
 media-class 300
 dtmf-relay rtp-nte
 no vad
!
```

Below are the inbound dial-peers configured to receive the calls from PBX and PSTN Gateway. Dial peers are matched based on the IP configured in the uri SIP profile

```
voice class uri 501 sip
 host ipv4:10.80.11.246
!
dial-peer voice 302 voip
 description inbound from cucm
 session protocol sipv2
 session transport tcp
 destination dpg 103
 incoming uri via 501
 voice-class sip tenant 100
 voice-class codec 1 offer-all
 voice-class sip session refresh
 dtmf-relay rtp-nte
 no vad
!
voice class uri 401 sip
 host ipv4:10.64.1.72
!
dial-peer voice 301 voip
 description inbound from PSTN
 translation-profile incoming 100
 session protocol sipv2
 destination dpg 101
 incoming uri via 401
 voice-class codec 1 offer-all
 voice-class sip tenant 100
 voice-class sip session refresh
 dtmf-relay rtp-nte
 no vad
!
```

6.4.10 Running Configurations

Building configuration...

```
version 17.15

service tcp-keepalives-in
service tcp-keepalives-out
service timestamps debug datetime msec
service timestamps log datetime msec
service call-home
platform qfp utilization monitor load 80
platform sslvpn use-pd
platform console virtual
```

```
!
hostname Cube_8k1
!
boot-start-marker
boot system bootflash:packages.conf
boot-end-marker
!
logging buffered 512000
no aaa new-model
!
ip domain name tekvizion.com
!
login on-success log
!
subscriber templating
!
!
!
!
voice service voip
 ip address trusted list
  ipv4 10.64.1.0 255.255.255.0
  ipv4 10.80.11.0 255.255.255.0
 address-hiding
 mode border-element
 allow-connections sip to sip
 trace
 sip
  session refresh
  error-passthru
  early-offer forced
  sip-profiles inbound
  no call service stop
!
voice class uri 501 sip
 host ipv4:10.80.11.246
!
voice class uri 401 sip
 host ipv4:10.64.1.72
voice class codec 1
 codec preference 1 g711ulaw
 codec preference 2 g711alaw
!
voice class codec 2
 codec preference 2 g711alaw
!
voice class dpg 101
 description Incoming call from PSTN to PBX
 dial-peer 400 preference 1
!
```

```
voice class dpg 103
 description incoming PBX to PSTNgw
 dial-peer 1000 preference 1
!
voice class tenant 100
 session transport tcp
 bind control source-interface GigabitEthernet2
 bind media source-interface GigabitEthernet2
 no early-offer forced
!
voice translation-rule 100
 rule 2 /9728522668/ /9003/
!
voice translation-profile 100
 translate called 100
!
media class 300
 recorder parameter siprec
  media-recording 900
!
license udi pid C8000V sn 99Y8247FY8W
license boot level network-essentials addon dna-essentials
memory free low-watermark processor 68445
diagnostic bootup level minimal
!
spanning-tree extend system-id
!
!
username admin privilege 15 secret 9
$9$PSFyyqxv3ffDtU$FAK1qjCSYV0JAmqxfxuEci8bll9GMqag5jeN38GyUJI
!
redundancy
!
interface GigabitEthernet1
 description Mangement IP
 ip address 10.80.13.37 255.255.255.0
 negotiation auto
!
interface GigabitEthernet2
 description Interface to PBX,PSTN & Media Proxy
 ip address 10.80.11.198 255.255.255.0
 negotiation auto
!
interface GigabitEthernet3
 no ip address
 negotiation auto
!
ip forward-protocol nd
!
ip http server
```

```
ip http authentication local
ip http secure-server
ip http client source-interface GigabitEthernet1
ip tftp source-interface GigabitEthernet1
ip route profile
ip route 0.0.0.0 0.0.0.0 10.80.11.1
ip route 10.80.11.0 255.255.255.0 10.80.11.1
ip route 10.80.13.0 255.255.255.0 10.80.13.1
ip ssh bulk-mode 131072
!
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
!
dial-peer voice 400 voip
 description outbound to PBX
 destination-pattern 9...
 session protocol sipv2
 session target ipv4:10.80.11.246:5060
 session transport tcp
 voice-class codec 1 offer-all
 voice-class sip tenant 100
 voice-class sip session refresh
 media-class 300
 dtmf-relay rtp-nte
 no vad
!
dial-peer voice 900 voip
 description outbound to ProxyCUBE
 destination-pattern 900
 session protocol sipv2
 session target ipv4:10.80.11.199:5060
 session transport udp
 voice-class sip tenant 100
 voice-class sip options-keepalive
 voice-class sip bind control source-interface GigabitEthernet2
 voice-class sip bind media source-interface GigabitEthernet2
 dtmf-relay rtp-nte
 no vad
!
dial-peer voice 1000 voip
 description outbound to pstn
 destination-pattern 214.......
 session protocol sipv2
 session target ipv4:10.64.1.72:5060
```

```
 voice-class codec 1 offer-all
 voice-class sip tenant 100
 voice-class sip session refresh
 media-class 300
 dtmf-relay rtp-nte
 no vad
!
dial-peer voice 302 voip
 description inbound from cucm
 session protocol sipv2
 session transport tcp
 destination dpg 103
 incoming uri via 501
 voice-class codec 1 offer-all
 voice-class sip tenant 100
 voice-class sip session refresh
 voice-class sip bind control source-interface GigabitEthernet2
 voice-class sip bind media source-interface GigabitEthernet2
 dtmf-relay rtp-nte
 no vad
!
dial-peer voice 301 voip
 description inbound from PSTN
 translation-profile incoming 100
 session protocol sipv2
 session transport tcp
 destination dpg 101
 incoming uri via 401
 voice-class codec 1 offer-all
 voice-class sip tenant 100
 voice-class sip session refresh
 dtmf-relay rtp-nte
 no vad
!
sip-ua
 no remote-party-id
!
line con 0
 exec-timeout 0 0
 stopbits 1
line aux 0
line vty 0
 login local
 transport input ssh
line vty 1 4
 logging synchronous
 login
 transport preferred ssh
 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
```

6.5 Cisco UBE Media Proxy Configuration

6.5.1 IP Networking

Below is the Cisco UBE Media Proxy IP and interface IP towards Google CCAI

```
interface GigabitEthernet1
 description to CUBEProxy
 ip address 10.80.11.199 255.255.255.0
 negotiation auto
!
Interface GigabitEthernet2
 description to Google CCAI
 ip address 192.65.X.X 255.255.255.128
 negotiation auto
```

6.5.2 Routing

Below is the static route configured towards Google CCAI

```
ip route 0.0.0.0 0.0.0.0 192.65.X.X
```

6.5.3 DNS Servers

Below is the DNS server configured in the lab topology to resolve Google FQDN

```
ip name-server 8.8.8.8
```

6.5.4 Certificates

Below are the steps to create and install a certificate in Cisco UBE Media Proxy

Enter config mode and the below command generates **RSA Key Pair.**

```
crypto key generate rsa general-keys label sbc12 exportable redundancy modulus 2048
The name for the keys will be: sbc10

% The key modulus size is 2048 bits
% Generating 2048 bit RSA keys, keys will be exportable with redundancy...
[OK] (elapsed time was 1 seconds)
```

Below command creates **Trust point** for Cisco UBE Media Proxy. This trust point is used in *Section 6.5.7 – Default Trust point and TLS version*

```
crypto pki trustpoint sbc12
 enrollment terminal
 fqdn sbc12.tekvizionlabs.com
 subject-name cn=sbc12.tekvizionlabs.com
 subject-alt-name sbc12.tekvizionlabs.com
 revocation-check none
 rsakeypair sbc12
 hash sha256
```

Generate Certificate Signing Request (CSR)

Below command generates Certificate Signing Request (CSR). This CSR can be used to request a certificate from one of the supported Certificate Authorities

crypto pki enroll sbc10

```
% Start certificate enrollment ..

% The subject name in the certificate will include: cn=sbc12.tekvizionlabs.com
% The subject name in the certificate will include: sbc12.tekvizionlabs.com
% Include the router serial number in the subject name? [yes/no]: no
% Include an IP address in the subject name? [no]: no
Display Certificate Request to terminal? [yes/no]: yes
Certificate Request follows:
```

Authenticate CA Certificate

Enter the following command in config mode, then paste the CA certificate that verifies the host certificate into the Trust point (usually the intermediate certificates). Open the base 64 CER/PEM file with notepad, copy the text, and paste it, having secure CA followed by Root CA into the terminal when prompted.

```
crypto pki authenticate sbc12

Enter the base 64 encoded CA certificate.
End with a blank line or the word "quit" on a line by itself
Note: Refer the running configuration for the trust point of Root CA.
```

6.5.5 Import Signed Host Certificate

Enter the following command then paste the host certificate into the trust point. Open the base 64 CER/PEM file with notepad, copy the text, and paste it into the terminal when prompted.

```
crypto pki import sbc12 certificate

Enter the base 64 encoded CA certificate.
End with a blank line or the word "quit" on a line by itself
```

6.5.6 Trusted CA Trust point for Google CCAI

Below are the configurations to create the CA certificate trust points to validate Google CCAI TLS messages

```
crypto pki trustpoint GoogleCA_1
 enrollment terminal
 revocation-check none
 hash sha256

crypto pki trustpoint GoogleCA_2
 enrollment terminal
 revocation-check none
 hash sha256

crypto pki trustpoint GoogleCA_3
 enrollment terminal
 revocation-check none
 hash sha256
```

Enter the following command then paste the CA certificate into the Trust point. Open the base 64 CER/PEM file with notepad, copy the text, and paste it into the terminal when prompted.

```
crypto pki authenticate GoogleCA_1

Enter the base 64 encoded CA certificate.
End with a blank line or the word "quit" on a line by itself
< GTS Root R1 certificate>

crypto pki authenticate GoogleCA_2

Enter the base 64 encoded CA certificate.
End with a blank line or the word "quit" on a line by itself
< GlobalSign Root CA certificate >

crypto pki authenticate GoogleCA_3
Enter the base 64 encoded CA certificate.
End with a blank line or the word "quit" on a line by itself
< WR2 >
```

6.5.7 Default Trust point and TLS version

Below are the SIP user agent configurations towards Google CCAI

```
sip-ua
 no remote-party-id
 transport tcp tls v1.2
  crypto signaling default trustpoint sbc12
```

6.5.8 Global Cisco UBE Media Proxy Settings

Below are the Global VoIP and SIP settings configured in the Cisco UBE Media Proxy

```
ip address trusted list
  ipv4 10.80.11.198
  ipv4 74.125.X.X
 address-hiding
 mode border-element
 allow-connections sip to sip
 trace
 sip
!
```

Explanation

Command	Description

ip address trusted list	To allow all traffic between Google CCAI and Cisco UBE
allow-connections sip to sip	Allows back-to-back user agent connections between two SIP call legs

6.5.9 Message Handling Rules

Manipulations for Outbound messages to Google CCAI

The following SIP profile is used to send the Call-Info header towards Google CCAI. This rule is applied to outbound SIP messages to Google CCAI. This rule is used in *Section 6.5.13 - dial peer 9000*

The below manipulation,

- The Call-ID header in the INVITE message as input. e.g. Call-ID: (.*)-(.*)-(.*)-(.*)@(.*) and modifies as Call-ID:\1-\2-\3-\4@\5
- Adds the Call-Info header with the static string of <http://dialogflow.googleapis.com/v2beta1/projects/ccai-38XXX/conversations/Cm_\1\2\3\4>;purpose=Goog-ContactCenter-Conversation".
- Has the alpha characters "Cm" which indicates Cisco UBE Media Proxy since the Conversation ID in the Call-Info header must be in the format of **"[a-zA-Z][a-zA-Z0-9_-]***

```
voice class sip-profiles 9000
 rule 5 request ANY sip-header Call-ID modify "Call-ID: (.*)-(.*)-(.*)-(.*)@(.*)" "Call-ID:\1-\2-\3-
\4@\5\x0D\x0ACall-Info:<http://dialogflow.googleapis.com/v2beta1/projects/ccai-
38XXX/conversations/Cm_\1\2\3\4>;purpose=Goog-ContactCenter-Conversation"
!
```

Manipulations for inbound message from Cisco UBE Media Proxy

The following SIP profile is applied towards Cisco UBE. This rule is used in *Section 6.5.13 - dial peer 1000*

- During Session refresh, Google CCAI sends UPDATE message towards Cisco UBE Media Proxy which in turn sends UPDATE message with Require:Siprec header towards Cisco UBE. Cisco UBE responds with 420 Bad Extension with the reason "Unsupported SIPREC".

- The below manipulation removes Require header in the UPDATE message sent from Cisco UBE Media Proxy to Cisco UBE

```
voice class sip-profiles 202
 rule 1 request UPDATE sip-header Require remove
!
```

Options Keepalive

The following profile modifies the SIP Request URI and the TO headers towards Google CCAI with Fully Qualified Domain Name. This profile is applied to SIP Options Keepalive message towards Google CCAI as shown below. This Options Keepalive is used in *Section 6.5.13 – dial peer 9000*

Rule 1: To modify SIP-Req-URI header to us.telephony.goog:5672
Rule 2: To modify “TO” header to us.telephony.goog:5672

```
voice class sip-profiles 201

rule 1 request OPTIONS sip-header SIP-Req-URI modify "sip:74.125.X.X:5672"
"sip:us.telephony.goog:5672"
 rule 2 request OPTIONS sip-header To modify "<sip:74.125.X.X" "sip:us.telephony.goog"
!

voice class sip-options-keepalive 9000
 description towards Google
 up-interval 30
 transport tcp tls
 sip-profiles 201
!
```

6.5.10 SRTP Crypto

Below is the crypto cipher profile used for the Google CCAI. The below rule is applied to *Section 6.5.13 - dial peer 9000*.

```
voice class srtp-crypto 9000
 crypto 1 AES_CM_128_HMAC_SHA1_80
```

6.5.11 Translation Rule

Below is the Translation rule and Translation profile applied towards Google CCAI. This translates the incoming number pattern 900 (*Refer Section 6.4.9 – Dial peer 900*) to Google CCAI DID

The below rule is used in *Section 6.5.13 - dial peer 9000*

```
voice translation-rule 9000
 rule 1 /900/ /+183344XXXXX/
!
!
voice translation-profile 9000
 translate calling 9000
 translate called 9000
!
```

6.5.12 SIPREC Configuration

Below Media profile is configured for secured media forking and it is associated with the Media Class. This profile is used in *Section 6.5.13 - dial peer 1000*

```
media profile recorder 9000
 media-recording proxy secure 9000
 proxy policy mandatory 9000
!
```

```
media class 9000
 recorder profile 9000
```

6.5.13 Dial Peers

Below is the inbound dial peer from Cisco UBE to Cisco UBE Media Proxy via UDP. Dial peer to Cisco UBE Media Proxy are matched based on the Cisco UBE IP configured in the Voice class uri profile 1000.

```
voice class uri 1000 sip
 host ipv4:10.80.11.198

dial-peer voice 1000 voip
 description inbound from cubeSBC
 translation-profile incoming 9000
 session protocol sipv2
 session transport udp
 incoming uri from 1000
 voice-class sip profiles 202
 voice-class sip session refresh
 voice-class sip bind control source-interface GigabitEthernet1
 voice-class sip bind media source-interface GigabitEthernet1
 media-class 9000
 codec g711ulaw
```

Below is the outbound dial peer towards Google CCAI via TLS

```
dial-peer voice 9000 voip
 description GoogleCCAI
 destination-pattern +183344XXXXX
 session protocol sipv2
 session target dns:us.telephony.goog:5672
 session transport tcp tls
 voice-class sip profiles 9000
 voice-class sip srtp-crypto 9000
 voice-class sip options-keepalive profile 9000
 voice-class sip bind control source-interface GigabitEthernet2
 voice-class sip bind media source-interface GigabitEthernet2
 srtp
```

```
codec g711ulaw
```

6.5.14 Message Handling Rules for Participation Label.

- Manipulations for Outbound messages to Google CCAI
- The following SIP profile is used to send the Call-Info header towards Google CCAI. This rule is applied to outbound SIP messages to Google CCAI. This rule is used in *Section 6.5.13 - dial peer 9000*

The below manipulation,

- The Call-ID header in the INVITE message as input. e.g. Call-ID: (.*)@(.*) and modifies as Call-ID:\1@\2
- Adds the Call-Info header with the static string of <http://dialogflow.googleapis.com/v2beta1/projects/ccai-38XXX/conversations/Cm_\1?roles=HUMAN_AGENT,END_USER>; purpose=Goog-ContactCenter-Conversation".
- Has the alpha characters "Cm" which indicates Cisco UBE Media Proxy since the Conversation ID in the Call-Info header must be in the format of **"[a-zA-Z][a-zA-Z0-9_-]***

```
voice class sip-profiles 9000
 rule 5 request ANY sip-header Call-ID modify "Call-ID: (.*)@(.*)" "Call-ID:\1@\2\x0D\x0ACall-Info:<http://dialogflow.googleapis.com/v2beta1/projects/ccai-389XXX/conversations/Cm_\1?roles=HUMAN_AGENT,END_USER>;purpose=Goog-ContactCenter-Conversation"
!
```

Note : Make sure to remove the old rule 5 and replace with this new rule 5 to perform the participation label testing

6.5.15 Running Configurations

```
User Access Verification

version 17.15
service timestamps debug datetime msec
service timestamps log datetime msec
service call-home
platform qfp utilization monitor load 80
platform sslvpn use-pd
platform console virtual
!
hostname Cisco_8k2_MP
!
boot-start-marker
boot system bootflash:packages.conf
```

```
boot-end-marker
!
!
logging buffered 512000
no aaa new-model
!
!
ip name-server 8.8.8.8
ip domain name tekvizion.com
!
login on-success log
!
!
subscriber templating
!
!
crypto pki trustpoint sbc12
 enrollment terminal
 fqdn sbc12.tekvizionlabs.com
 subject-name cn=sbc12.tekvizionlabs.com
 subject-alt-name sbc12.tekvizionlabs.com
 revocation-check none
 rsakeypair sbc12
 hash sha256
!
crypto pki trustpoint GoogleCA_1
 enrollment terminal
 revocation-check none
 hash sha256
!
crypto pki trustpoint GoogleCA_2
 enrollment terminal
 revocation-check none
 hash sha256
!
crypto pki trustpoint GoogleCA_3
 enrollment terminal
 revocation-check none
 hash sha256
!
!
crypto pki certificate chain sbc12
 certificate 00A2C9CCAE1B9ECFC5
  308206AF 30820597 A0030201 02020900 A2C9CCAE 1B9ECFC5 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
```

170D3235 30353237 31303233 35305A17 0D323531 32313730 34323031 355A3022
3120301E 06035504 03131773 62633132 2E74656B 76697A69 6F6E6C61 62732E63
6F6D3082 0122300D 06092A86 4886F70D 01010105 00038201 0F003082 010A0282
010100B2 C46AF934 34A26C95 1804A9A3 2A2ACEEB CBD3464D 29E05E94 45B2DFC7
7306824B 47E462C0 17017D75 A0B9ACF1 30695AED E75796D9 78F19F48 4EC2ED7D
850EC7CD AB279DFB 262C0EB0 8FF599AC 20399245 91019D98 3BD6A19B 78893CAA
34000A5C 9F0478E5 E8B6D8E5 6DEACD53 2C1211C7 4FFB156B 0A57E478 6AD3828E
F8687DCE 48A2F342 C02C9908 280DB58F FBEF70F6 11CF32DB B84D3658 5C6CCD12
F6607654 766BC52D B3AF5BED D6E02317 62063ABD 52F1982D 20DB74B8 5F080740
EB69163B 862F9ACA CAFAF97E F721ECAD E804862D 963A103E F1BD8B2C 10F42E10
3D03D2B7 41D7C789 4C892B8A 55478325 D4AD39BD 69EA1F7B 3C855761 4A7928F3
69610302 03010001 A3820353 3082034F 300C0603 551D1301 01FF0402 3000301D
0603551D 25041630 1406082B 06010505 07030106 082B0601 05050703 02300E06
03551D0F 0101FF04 04030205 A0303906 03551D1F 04323030 302EA02C A02A8628
68747470 3A2F2F63 726C2E67 6F646164 64792E63 6F6D2F67 64696732 73312D34
38333539 2E63726C 305D0603 551D2004 56305430 48060B60 86480186 FD6D0107
17013039 30370608 2B060105 05070201 162B6874 74703A2F 2F636572 74696669
63617465 732E676F 64616464 792E636F 6D2F7265 706F7369 746F7279 2F300806
0667810C 01020130 7606082B 06010505 07010104 6A306830 2406082B 06010505
07300186 18687474 703A2F2F 6F637370 2E676F64 61646479 2E636F6D 2F304006
082B0601 05050730 02863468 7474703A 2F2F6365 72746966 69636174 65732E67
6F646164 64792E63 6F6D2F72 65706F73 69746F72 792F6764 6967322E 63727430
1F060355 1D230418 30168014 40C2BD27 8ECC3483 30A233D7 FB6CB3F0 B42C80CE
303F0603 551D1104 38303682 17736263 31322E74 656B7669 7A696F6E 6C616273
2E636F6D 821B7777 772E7362 6331322E 74656B76 697A696F 6E6C6162 732E636F
6D301D06 03551D0E 04160414 C8DA9BDB 8EA29C53 263294D8 6DF39917 318E8660
3082017B 060A2B06 010401D6 79020402 0482016B 04820167 01650075 0012F14E
34BD5372 4C840619 C38F3F7A 13F8E7B5 6287889C 6D300584 EBE58626 3A000001
9711451B E6000004 03004630 44022026 C1AF7B3C 6DD21A8F 618C1DBB E8D9B8FC
E1DDABE6 D27B48DF 9517EA79 74D8B902 201444AF A62088E1 5FACDE74 8AE04036
4F789FFA 38A095FF C26B12DB 3DF2350A D9007500 7D591E12 E1782A7B 1C61677C
5EFDF8D0 875C14A0 4E959EB9 032FD90E 8C2E79B8 00000197 11451CEC 00000403
00463044 0220628D 89913723 6D7F0FC8 A00BBE6A B12A46EE 589167FA 15E5F9F6
A0E92C15 5F130220 632CEC76 32826345 DB6B76DB 854AC7BE 5DA22954 EFFB51A7
A149902A 17BCF171 007500CC FB0F6A85 710965FE 959B53CE E9B27C22 E9855C0D
978DB6A9 7E54C0FE 4C0DB000 00019711 451D4000 00040300 46304402 200CABBD
6A47FA07 965CEA2A D4E0186B AA3CAD8D 69164772 816522FF 6AC6473F 7F02206F
B3DD5937 13D24F38 568B3C72 183BD80E FA6525D2 F59E38DA BD6777DC 36C28830
0D06092A 864886F7 0D01010B 05000382 01010050 BF42A878 83FC3294 AD2C1EF5
0FB4E78A 7F1915B1 E6BCA614 6E8F2246 62C155D6 ED5C063B BB46AD66 495CCB3B
EB929A02 37C09DA4 91FF5C29 FF2FD44F 1D7D5F05 BB254790 E566BE26 C841BF8D
1A3516B5 C1F03902 BDB0F531 5F4A7405 49A31C75 C944DDD3 F7290DC3 20ECC5B9
0001EC73 87BF681C 84EAEE48 6CBF8ED0 B35B9E09 BCA17E9B FBB688C8 9276B705
BC73CFB5 A39C56D8 5038B927 F56B7F87 1937E7FD FB1D0BA2 892BBD7C E6ED41AF
7D6715A8 4E9CCF22 F7A05146 A7C8E30A 0882EE7A DC87A274 01A5AC78 A38EF571
86B19F39 1A27B710 0B849F8D 95314FDA ACE6412A 5482AE68 75D81891 63F7B20B
5FFA4F57 B8D60388 6E31DCED C04DBE4F 2A1648
quit
crypto pki certificate chain GoogleCA_1
certificate ca 0203E5936F31B01349886BA217

30820557 3082033F A0030201 02020D02 03E5936F 31B01349 886BA217 300D0609
2A864886 F70D0101 0C050030 47310B30 09060355 04061302 55533122 30200603
55040A13 19476F6F 676C6520 54727573 74205365 72766963 6573204C 4C433114
30120603 55040313 0B475453 20526F6F 74205231 301E170D 31363036 32323030
30303030 5A170D33 36303632 32303030 3030305A 3047310B 30090603 55040613
02555331 22302006 0355040A 1319476F 6F676C65 20547275 73742053 65727669
63657320 4C4C4331 14301206 03550403 130B4754 5320526F 6F742052 31308202
22300D06 092A8648 86F70D01 01010500 0382020F 00308202 0A028202 0100B611
028B1EE3 A1779B3B DCBF943E B795A740 3CA1FD82 F97D3206 8271F6F6 8C7FFBE8
DBBC6A2E 9797A38C 4BF92BF6 B1F9CE84 1DB1F9C5 97DEEFB9 F2A3E9BC 12895EA7
AA52ABF8 2327CBA4 B19C63DB D7997EF0 0A5EEB68 A6F4C65A 470D4D10 33E34EB1
13A3C818 6C4BECFC 0990DF9D 64292523 07A1B4D2 3D2E60E0 CFD20987 BBCD48F0
4DC2C27A 888ABBBA CF5919D6 AF8FB007 B09E31F1 82C1C0DF 2EA66D6C 190EB5D8
7E261A45 033DB079 A49428AD 0F7F26E5 A808FE96 E83C6894 53EE833A 882B1596
09B2E07A 8C2E75D6 9CEBA756 648F964F 68AE3D97 C2848FC0 BC40C00B 5CBDF687
B3356CAC 18507F84 E04CCD92 D320E933 BC5299AF 32B529B3 252AB448 F972E1CA
64F7E682 108DE89D C28A88FA 38668AFC 63F901F9 78FD7B5C 77FA7687 FAECDFB1
0E799557 B4BD26EF D601D1EB 160ABB8E 0BB5C5C5 8A55ABD3 ACEA914B 29CC19A4
32254E2A F16544D0 02CEAACE 49B4EA9F 7C83B040 7BE743AB A76CA38F 7D8981FA
4CA5FFD5 8EC3CE4B E0B5D8B3 8E45CF76 C0ED402B FD530FB0 A7D53B0D B18AA203
DE31ADCC 77EA6F7B 3ED6DF91 2212E6BE FAD832FC 10631451 72DE5DD6 1693BD29
6833EF3A 66EC078A 26DF13D7 57657827 DE5E4914 00A2007F 9AA821B6 A9B195B0
A5B90D16 11DAC76C 483C40E0 7E0D5ACD 563CD197 05B9CB4B ED394B9C C43FD255
136E24B0 D671FAF4 C1BACCED 1BF5FE81 41D80098 3D3AC8AE 7A983718 05950203
010001A3 42304030 0E060355 1D0F0101 FF040403 02018630 0F060355 1D130101
FF040530 030101FF 301D0603 551D0E04 160414E4 AF2B2671 1A2B4827 852F5266
2CEFF089 13713E30 0D06092A 864886F7 0D01010C 05000382 0201009F AA4226DB
0B9BBEFF 1E96922E 3EA2654A 6A98BA22 CB7DC13A D8820A06 C6F6A5DE C04E8766
79A1F9A6 589CAAF9 B5E660E7 E0E8B11E 4241330B 373DCE89 7015CAB5 24A8CF6B
B5D24021 98CF2234 CF3BC522 84E0C50E 8A7C5D88 E43524CE 9B3E1A54 1E6EDBB2
87A7FCF3 FA815514 620A59A9 2205313E 82D6EEDB 5734BC33 95D3171B E827A28B
7B4E261A 7A5A64B6 D1AC37F1 FDA0F338 EC72F011 759DCB34 528DE676 6B17C6DF
86AB278E 492B7566 811021A6 EA3EF4AE 25FF7C15 DECE8C25 3FCA6270 0AF72F09
6607C83F 1CFCF0DB 4530DF62 88C1B50F 9DC39F4A DE595947 C5872236 E682A7ED
0AB9E207 A08D7B7A 4A3C71D2 E203A11F 3207DD1B E442CE0C 00456180 B50B2059
2978BDF9 55CB63C5 3C4CF4B6 FFDB6A5F 316B999E 2CC16B50 A4D7E618 14BD853F
67AB469F A0FF42A7 3A7F5CCB 5DB0701D 2B34F5D4 76090CEB 784C5905 F33342C3
6115101B 774DCE22 8CD485F2 457DB753 EAEF405A 940A5C20 5F4E405D 622276DF
FFCE61BD 8C2378D2 3702E08E DED11137 89F6BFED 490762AE 92EC401A AF1409D9
D04EB2A2 F7BEEEEE D8FFDC1A 2DDEB836 71E2FC79 B79425D1 48735BA1 35E7B399
6775C119 3A2B474E D3428EFD 31C81666 DAD20C3C DBB38EC9 A10D800F 7B167714
BFFFDB09 94B293BC 205815E9 DB7143F3 DE10C300 DCA82A95 B6C2D63F 906B76DB
6CFE8CBC F270350C DC991935 DCD7C846 63D53671 AE57FBB7 826DDC
quit
crypto pki certificate chain GoogleCA_2
certificate ca 0203E57EF53F93FDA50921B2A6
308201DC 30820183 A0030201 02020D02 03E57EF5 3F93FDA5 0921B2A6 300A0608
2A8648CE 3D040302 30503124 30220603 55040B13 1B476C6F 62616C53 69676E20
45434320 526F6F74 20434120 2D205234 31133011 06035504 0A130A47 6C6F6261
6C536967 6E311330 11060355 0403130A 476C6F62 616C5369 676E301E 170D3132

```
  31313133 30303030 30305A17 0D333830 31313930 33313430 375A3050 31243022
  06035504 0B131B47 6C6F6261 6C536967 6E204543 4320526F 6F742043 41202D20
  52343113 30110603 55040A13 0A476C6F 62616C53 69676E31 13301106 03550403
  130A476C 6F62616C 5369676E 30593013 06072A86 48CE3D02 0106082A 8648CE3D
  03010703 420004B8 C679D38F 6C250E9F 2E39191C 03A4AE9A E5390709 16CA63B1
  B986F88A 57C157CE 42FA73A1 F76542FF 1EC100B2 6E730EFF C721E518 A4AAD971
  3FA8D4B9 CE8C1DA3 42304030 0E060355 1D0F0101 FF040403 02018630 0F060355
  1D130101 FF040530 030101FF 301D0603 551D0E04 16041454 B07BAD45 B8E2407F
  FB0A6EFB BE33C93C A384D530 0A06082A 8648CE3D 04030203 47003044 0220224F
  7472B960 AFF1E69C A0160550 5FC35E3B 6E6174EF BE01C4BE 18485961 82320220
  269D5463 40DE3760 50CFC8D8 ED9D82AE 3798BCA3 8F4C4CA9 342B6CEF FB959B26
       quit
crypto pki certificate chain GoogleCA_3
 certificate ca 7FF005A07C4CDED100AD9D66A5107B98
  3082050B 308202F3 A0030201 0202107F F005A07C 4CDED100 AD9D66A5 107B9830
  0D06092A 864886F7 0D01010B 05003047 310B3009 06035504 06130255 53312230
  20060355 040A1319 476F6F67 6C652054 72757374 20536572 76696365 73204C4C
  43311430 12060355 0403130B 47545320 526F6F74 20523130 1E170D32 33313231
  33303930 3030305A 170D3239 30323230 31343030 30305A30 3B310B30 09060355
  04061302 5553311E 301C0603 55040A13 15476F6F 676C6520 54727573 74205365
  72766963 6573310C 300A0603 55040313 03575232 30820122 300D0609 2A864886
  F70D0101 01050003 82010F00 3082010A 02820101 00A9FF9C 7F451E70 A8539FCA
  D9E50DDE 4657577D BC8F9A5A AC46F184 9ABB91DB C9FB2F01 FB920900 165EA01C
  F8C1ABF9 782F4ACC D885A2D8 593C0ED3 18FBB1F5 240D26EE B65B6476 7C14C72F
  7ACEA84C B7F4D908 FCDF8723 3520A8E2 69E28C4E 3FB159FA 60A21EB3 C9205319
  82CA3653 6D604DE9 0091FC76 8D5C080F 0AC2DCF1 736BC513 6E0A4F7A C2F2021C
  2EB46383 DA31F62D 7530B2FB ABC26EDB A9C00EB9 F967D4C3 255774EB 05B4E98E
  B5DE28CD CC7A14E4 7103CB4D 612E6157 C519A90B 98841AE8 7929D9B2 8D2FFF57
  6A66E0CE AB95A829 96637012 671E3AE1 DBB02171 D77C9EFD AA176EFE 2BFB3817
  14D166A7 AF9AB570 CCC86381 3A8CC02A A97637CE E3020301 0001A381 FE3081FB
  300E0603 551D0F01 01FF0404 03020186 301D0603 551D2504 16301406 082B0601
  05050703 0106082B 06010505 07030230 12060355 1D130101 FF040830 060101FF
  02010030 1D060355 1D0E0416 0414DE1B 1EED7915 D43E3724 C321BBEC 34396D42
  B230301F 0603551D 23041830 168014E4 AF2B2671 1A2B4827 852F5266 2CEFF089
  13713E30 3406082B 06010505 07010104 28302630 2406082B 06010505 07300286
  18687474 703A2F2F 692E706B 692E676F 6F672F72 312E6372 74302B06 03551D1F
  04243022 3020A01E A01C861A 68747470 3A2F2F63 2E706B69 2E676F6F 672F722F
  72312E63 726C3013 0603551D 20040C30 0A300806 0667810C 01020130 0D06092A
  864886F7 0D01010B 05000382 02010045 758BE51F 3B441396 1AAB58F1 35C96F3D
  D2D0334A 8633BA57 514FEEC4 34DA1612 4CBF139F 0DD454E9 4879C030 3C9425F2
  1AF4BA32 94B63372 0B85EE09 11253494 E16F42DB 829B7B7F 2A9AA9FF 7FA9D2DE
  4A20CBB3 FB0303B8 F80705DA 59922F18 4698CEAF 72BE2426 B11E004D BD08AD93
  41440ABB C7D50185 BF9357E3 DF741253 0E1125D3 9BDCDECB 276EB3C2 B9336239
  C2E035E1 5BA7092E 19CB912A 765CF1DF CA238440 A56FFF9A 41E0B5EF 32D185AE
  AF2509F0 62C56EC2 C86E32FD B8DAE2CE 4A914AF3 85554EB1 75D64833 2F6F84D9
  125C9FD4 71986325 8D695C0A 6B7DF241 BDE8BB8F E422D79D 6545E84C 0A87DAE9
  6066880E 1FC7E14E 56C576FF B47A5769 F2022209 26411DDA 74A2E529 F3C49AE5
  5DD6AA7A FDE1B72B 6638FBE8 2966BAEF A0132FF8 737EF0DA 40111C5D DD8FA6FC
  BEDBBE56 F8329C1F 41416D7E B6C5EBC6 8B36B717 8C9DCF19 7A349F21 93C47E74
  35D2AAFD 4C6D14F5 C9B0795B 493CF3BF 1748E8EF 9A26130C 87F273D6 9CC5526B
```

```
  63F73290 78A96BEB 5ED693A1 BFBC183D 8B59F68A C6055E52 18E266E0 DAC1DCAD
  5A25AAF4 45FCF10B 78A4AFB0 F273A430 A834C153 7F4296E5 4841EB90 460C06DC
  CB92C65E F3444443 462946A0 A6FCB98E 392739B1 5AE2B1AD FC13FF8E FC26E1D4
  FE84F150 5A8E976B 2D2A79FB 4064EAF3 3DBD5BE1 A004B097 481C42F5 EA5A1CCD
  26C851FF 14996789 725F1DEC AD5ADD
       quit
!
!
voice service voip
 ip address trusted list
  ipv4 10.80.11.198
  ipv4 74.125.X.X
 address-hiding
 mode border-element
 allow-connections sip to sip
 trace
 sip
  early-offer forced
!
!
voice class uri 1000 sip
 host ipv4:10.80.11.198
voice class codec 1
 codec preference 1 g711ulaw
!
!
voice class sip-profiles 9000
 rule 5 request ANY sip-header Call-ID modify "Call-ID: (.*)-(.*)-(.*)-(.*)@(.*)" "Call-ID:\1-\2-\3-
\4@\5\x0D\x0ACall-Info:<http://dialogflow.googleapis.com/v2beta1/projects/ccai-
389811/conversations/Cm_\1\2\3\4>;purpose=Goog-ContactCenter-Conversation"
!
voice class sip-profiles 201
 rule 1 request OPTIONS sip-header SIP-Req-URI modify "sip:74.125.X.X:5672"
"sip:us.telephony.goog:5672"
 rule 2 request OPTIONS sip-header To modify "<sip:74.125.X.X" "sip:us.telephony.goog"
!
voice class sip-profiles 202
 rule 1 request UPDATE sip-header Require remove
!
!
voice class dpg 9000
 dial-peer 9000 preference 1
!
!
voice class sip-options-keepalive 9000
 description towards Google
 up-interval 30
 transport tcp tls
 sip-profiles 201
!
```

```
voice class srtp-crypto 9000
 crypto 1 AES_CM_128_HMAC_SHA1_80
!
!
voice translation-rule 9000
 rule 1 /900/ /+183344XXXXX/
!
!
voice translation-profile 9000
 translate calling 9000
 translate called 9000
!
!
!
media profile recorder 9000
 media-recording proxy secure 9000
 proxy policy mandatory 9000
!
media class 9000
 recorder profile 9000
!
license udi pid C8000V sn 9FQTYW5MY8J
license boot level network-essentials addon dna-essentials
memory free low-watermark processor 68445
diagnostic bootup level minimal
!
!
spanning-tree extend system-id
!
!
username admin privilege 15 secret 9
$9$hiqJhQhhJ7mEmE$hW.ZhYTTPD8GPaayCHop/HmmFOUgXvy1GBWn89TjZmw
!
redundancy
!
!
track 1 interface GigabitEthernet1 line-protocol
!
track 2 interface GigabitEthernet2 line-protocol
!
!
!
interface GigabitEthernet1
 description to CUBEProxy
 ip address 10.80.11.199 255.255.255.0
 negotiation auto
!
interface GigabitEthernet2
 description to Google CCAI
 ip address 192.65.X.X 255.255.255.128
```

```
 negotiation auto
!
interface GigabitEthernet3
 description Managemnet IP
 ip address 10.80.13.38 255.255.255.0
 negotiation auto
!
ip forward-protocol nd
!
ip http server
ip http authentication local
ip http secure-server
ip http secure-trustpoint sbc12
ip http client source-interface GigabitEthernet1
ip tftp source-interface GigabitEthernet1
ip route profile
ip route 0.0.0.0 0.0.0.0 192.65.X.X
ip route 0.0.0.0 0.0.0.0 10.80.11.1
ip ssh bulk-mode 131072
!
!
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
!
!
dial-peer voice 1000 voip
 description inbound from cubeSBC
 translation-profile incoming 9000
 session protocol sipv2
 session transport udp
 incoming uri from 1000
 voice-class sip profiles 202
 voice-class sip bind control source-interface GigabitEthernet1
 voice-class sip bind media source-interface GigabitEthernet1
 media-class 9000
 codec g711ulaw
!
dial-peer voice 9000 voip
 description GoogleCCAI
 destination-pattern +183344XXXXX
 session protocol sipv2
 session target dns:us.telephony.goog:5672
 session transport tcp tls
```

```
 voice-class sip profiles 9000
 voice-class sip srtp-crypto 9000
 voice-class sip options-keepalive profile 9000
 voice-class sip bind control source-interface GigabitEthernet2
 voice-class sip bind media source-interface GigabitEthernet2
 srtp
 codec g711ulaw
!
!
sip-ua
 no remote-party-id
 transport tcp tls v1.2
  crypto signaling default trustpoint sbc12
!
!
line con 0
 exec-timeout 0 0
 stopbits 1
line aux 0
line vty 0 4
 exec-timeout 15 0
 password xxx
 login local
 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
```

7 Summary of Tests and Results

ID	Title	Description	Expected Results	Status (Passed or Failed etc)	Observations
SBC Configuration Verification					

ID	Title	Description	Expected Results	Status (Passed or Failed etc)	Observations
1	SBC Configuration Verification	TLS connection setup. SBC initiates TLS connection with CCAI	Successful 4way handshake with Google CCAI. Validate the right certificates are being negotiated. SBC should be loaded with GTSR1 cert for Google. SBC should also send the certificate chain when sending its cert.	PASSED	
2	SBC Configuration Verification	TCP Keep Alive. SBC will perform monitoring checks by attempting TCP Keep Alive to ensure Network Connectivity	Successful 3way handshake and thereafter termination	PASSED	TCP Keep-alive packets are sent to the Google CCAI
3	SBC Configuration Verification	TCP link is persistent. Establish call, send multiple calls that should all use the same TCP transport connection	Persistent TCP connection, we should establish a single connection and multiplex all calls over that connection.	PASSED	
4	SBC Configuration Verification	Session Timer support. SBC should be initiator for the Session Refresh timer using Update or Re-Invite	every 900 secs the SBC should refresh the SIP session.	PASSED	Cisco UBE does not send session refresh RE-INVITE. Google CCAI sends session refresh every 15 minutes using UPDATE message

ID	Title	Description	Expected Results	Status (Passed or Failed etc)	Observations
5	SBC Configuration Verification	SIP Header Manipulation (call-info header)	Validate if the Google requested header manipulation is present in the SIP INVITE. Ensure every SDP media has a label.	PASSED	
6	SBC Configuration Verification	*SBCs may need further Header manipulations based on SIP stack constraints. Verify required manipulation are added in SBC to support Google CCAI Example: FROM, TO header manipulations HOST part change in headers etc..,	All signaling in e.164 format	PASSED	
7	SBC Configuration Verification	SDES for SRTP. Configure the SDES parameters for crypto negotiation for the BYOT trunk	Validate the crypto is successfully negotiated and media is encrypted. All SBCs should support SDES for media encryption.	PASSED	
8	SBC Configuration Verification	DTLS for Media Encryption. Configure the DTLS parameters for crypto negotiation for the BYOT trunk, certificate for DTLS must be self-signed by the SBC.	Validate the crypto is successfully negotiated and media is encrypted.	NOT SUPPORTED	Cisco UBE does not support DTLS
Inbound					

ID	Title	Description	Expected Results	Status (Passed or Failed etc)	Observations
9	SIP OPTIONS	SBC send SIP options every 60 seconds	Verify SBC sends SIP OPTIONS every 60 seconds and responded with 200 OK	PASSED	
10	Inbound	Inbound call: Calling Party disconnects the call. Inbound siprec call, ensure recording are present, disconnect call from calling party and confirm proper disconnect	Verify Call is established with audio and transcripts from both participants Verify call is disconnected properly	PASSED	
11	Inbound	Inbound call: Called Party disconnects the call. Inbound siprec call, ensure recording are present, disconnect call from called party and confirm proper disconnect	Verify Call is established with audio and transcripts from both participants Verify call is disconnected properly	PASSED	
12	Inbound	Long duration call- Outbound Call- 1 hour max. Long duration siprec call	Ensure siprec calls stay up for an hour, confirm transcripts are present for entire duration	PASSED	Cisco UBE does not send session refresh RE-INVITE. Google CCAI sends session refresh every 15 minutes using UPDATE message

ID	Title	Description	Expected Results	Status (Passed or Failed etc)	Observations
13	Inbound	Long duration hold and resume (wait until session audit\session refresh occurs from DUT). Long duration siprec call, have the call placed on hold by agent, have call resume. Have customer place on hold then have call resume.	Call is connected, we have two active streams, confirm once a stream goes on hold, we receive corresponding signaling events, and that we no longer record transcripts for the participant on hold.	PASSED	Cisco UBE does not send session refresh RE-INVITE. Google CCAI sends session refresh every 15 minutes using UPDATE
14	Inbound	Handling Error codes 603 decline. User A Calls PSTN A PSTN A rejects the incoming call	Verify SBC handles Call rejected properly	PASSED	
15	Inbound	Inbound call hold scenarios. Call starts out inactive for both participants, session moves to active	Validate if media is present when expected, confirm signaling events modify sdp properly, once call is move to active validate media and transcripts	NOT SUPPORTED	Cisco UBE does not support mid-call renegotiations via hold/resume
16	Inbound	Inbound call hold scenarios. call starts out as active for both participants, session move to inactive, and transitions back to active	Validate if media is present when expected, confirm signaling events modify sdp properly, once call is moved to active validate media and transcripts	PASSED	

ID	Title	Description	Expected Results	Status (Passed or Failed etc)	Observations
17	Inbound	Update. Validate that update sent prior to call establishment do not contain SDP	Validate that update prior to call establishment do not contain SDP as expected	NOT SUPPORTED	
18	Inbound	Update. Validate that updates post call establishment contain SDP to modify session	If SBC uses update to modify session, ensure SDP is included	NOT SUPPORTED	
19	Inbound	re-invites. Ensure re-invites that modify session include SDP	Ensure re-invites that modify session include SDP	PASSED	
20	Inbound	Codec negotiation. Ensure that g711 u-law is preferred codec	Ensure we can prioritize g711 as preferred codec, note where SBC configures preferred codec	PASSED	
21	Inbound	3 way conference. Determine requirements, record all leg.	Determine requirements, record all legs	PASSED	
22	Inbound	CCAI cloud project setup. Establish CCAI cloud project, provision the project with a GTP phone number for access (Create conversations/participants on the fly through SIP headers)	Verify project is setup, functional test to confirm you can connect to the GTP access phone number	PASSED	

ID	Title	Description	Expected Results	Status (Passed or Failed etc)	Observations
23	Inbound	CCAI cloud project setup. Establish CCAI cloud project, provision the project with a GTP phone number for access (Pre-creation of conversations/participants)	Verify project is setup, functional test to confirm you can connect to the GTP access phone number	NOT APPLICABLE	This test case is not applicable for call recording
24	Inbound	Consultative transfer. Consultative transfer from 1. PSTN > User1 > User2 2. PSTN > User1 > PSTN user2		PASSED	
25	Inbound	Blind transfer. Blind transfer from 1. PSTN > User1 > User2 2. PSTN > User1 > PSTN user2		PASSED	CUCM does not support blind transfer. This test case performed by ringing transfer
26	Use documentation to build trunk using self service model			PASSED	
27	Inbound call hold scenarios using A-law as codec	Call starts out inactive for both participants, session moves to active	Inbound call hold scenarios using A-law as codec	PASSED	
28	Inbound call: Called Party disconnects the call. using a a-law codec	Inbound siprec call, ensure recording are present , disconnect call from called party and confirm proper disconnect	Inbound call: Called Party disconnects the call. using a a-law codec	PASSED	

ID	Title	Description	Expected Results	Status (Passed or Failed etc)	Observations
29	Long duration call-Outbound Call- 1 hour max using a-law codec	Long duration siprec call	Long duration call-Outbound Call- 1 hour max using a-law codec	PASSED	UPDATE message is sent from SBC to Google CCAI every 15min (900 seconds)
30	Inbound call: Configure trunk in non default region,	Confirm call is processed within the region for signaling and media that corresponds to the region trunk was provisioned in	"Verify Call is established with audio and transcripts from both participants	PASSED	Testing conducted on US region
31	Participant Labels test	Configure call info header to specify roles, ensure the media streams align	"Frist media stream HUMAN_AGENT role and	PASSED	"When the roles are set to ""HUMAN AGENT"" and ""END USER,"" (Call-Info:<http://dialogflow.googleapis.com/v2beta1/projects/ccai-389811/conversations/Cm_84E840A0-408411F0-9DCB82A8-A2663C7F?roles=HUMAN_AGENT,END_USER>;purpose=Goog-ContactCenter-Conversation) the transcript shows the first media stream with the participation role as ""HUMAN AGENT,"" followed by ""END USER."" It showed 8/10 attempts. The call-id in the call-info

ID	Title	Description	Expected Results	Status (Passed or Failed etc)	Observations
					header is sent with hyphen sign"
32	DTLS test			Not Supported	
33	Conference TEST	Conference call between PSTN and PBX users	Validate both way-audio	PASSED	Both-way audio for all users were present.
34	Validate Call recording			PASSED	