

Configuration Guide for Google  
CES Agent Handoff Using Oracle  
E-SBC Acme Packet 4600  
SCZ9.3.0 GA (Build 46)



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# 1 Audience

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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 CES Agent Handoff** using **Oracle Enterprise Session Border Controller Acme Packet 4600 SCZ9.3.0 GA (Build 46)**

### 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.

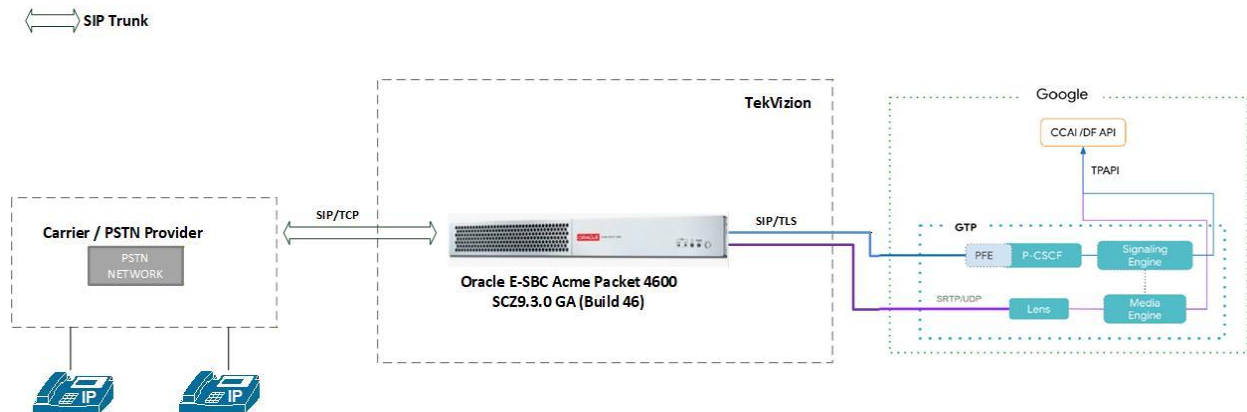
TekVizion is a systems integrator specifically dedicated to the telecommunications industry. Our core services include consulting/solution design, interoperability/Verification testing, integration, custom software development and solution support services. Our services help service providers achieve 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 CES Agent Handoff with Oracle Enterprise Session Border Controller (E-SBC) Acme Packet 4600 SCZ9.3.0 GA (Build 46) configuration.



**Figure 1: SIP Trunk Lab Reference Network**

The lab network consists of the following components.

- Google CES cloud Environment
- Oracle E-SBC Acme Packet 4600
- PSTN Gateway

### 3 Hardware Components

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- Oracle E-SBC Acme Packet 4600

### 4 Software Requirements

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- Oracle E-SBC Acme Packet 4600 SCZ9.3.0 GA (Build46)

### 5 Google CES Certified Oracle E-SBC Versions

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**Table 1 – Google CES Certified Oracle E-SBC Version**

| Google CES Certified Oracle E-SBC Version |                       |
|-------------------------------------------|-----------------------|
| Oracle E-SBC 4600                         | SCZ9.3.0 GA (Build46) |

### 6 Features

---

#### 6.1 Caveats and Limitations

|      |                                       |
|------|---------------------------------------|
| DTLS | DTLS towards Google CES is not tested |
|------|---------------------------------------|

#### 6.2 Failed Testcase

- None

## 7 Configuration

---

### 7.1 Configuration Checklist

Below are the steps that are required to configure Oracle E-SBC.

**Table 1 – Oracle E-SBC Configuration Steps**

| Step    | Description              | Reference                      |
|---------|--------------------------|--------------------------------|
| Step 1  | Media Manager            | <a href="#">Section 7.4.1</a>  |
| Step 2  | Physical Interface       | <a href="#">Section 7.4.2</a>  |
| Step 3  | Network Interface        | <a href="#">Section 7.4.3</a>  |
| Step 4  | SIP Config               | <a href="#">Section 7.4.4</a>  |
| Step 5  | System-Config            | <a href="#">Section 7.4.5</a>  |
| Step 6  | SIP Monitoring           | <a href="#">Section 7.4.6</a>  |
| Step 7  | HTTP Server              | <a href="#">Section 7.4.7</a>  |
| Step 8  | Codec Policy             | <a href="#">Section 7.4.8</a>  |
| Step 9  | Translation Rules        | <a href="#">Section 7.4.9</a>  |
| Step 10 | Session Translation      | <a href="#">Section 7.4.10</a> |
| Step 11 | Realm Config             | <a href="#">Section 7.4.11</a> |
| Step 12 | Steering Pool            | <a href="#">Section 7.4.12</a> |
| Step 13 | SDES Profile             | <a href="#">Section 7.4.13</a> |
| Step 14 | Media Sec Policy         | <a href="#">Section 7.4.14</a> |
| Step 15 | TLS – Certificate Record | <a href="#">Section 7.4.15</a> |
| Step 16 | TLS – TLS Profile        | <a href="#">Section 7.4.16</a> |
| Step 17 | Session Timer            | <a href="#">Section 7.4.17</a> |
| Step 18 | SIP Interface            | <a href="#">Section 7.4.18</a> |
| Step 19 | Session Agent            | <a href="#">Section 7.4.19</a> |
| Step 20 | Local Policy             | <a href="#">Section 7.4.20</a> |
| Step 21 | SIP Manipulation         | <a href="#">Section 7.4.21</a> |

## 7.2 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 3 - IP Address Worksheet**

| Component           | IP Address             |
|---------------------|------------------------|
| <b>Google CES</b>   |                        |
| Signaling           | us.telephony.goog:5672 |
| Media               | 74.125.X.X             |
| <b>PSTN Gateway</b> |                        |
| LAN IP Address      | 172.16.X.X             |
| <b>Oracle E-SBC</b> |                        |
| LAN IP Address      | 10.80.X.X              |
| WAN IP Address      | 192.65.X.X             |

### 7.3 Google CES API Configuration

Below link can be referred for troubleshooting Google CES API configuration for Agent Handoff.

<https://docs.cloud.google.com/contact-center/insights/docs/troubleshooting>

## 7.4 Oracle E-SBC Configuration

The following is the example configuration of Oracle E-SBC for Google CES Agent Handoff.

### 7.4.1 Media Manager

- Media-Manager handles the media stack required for SIP sessions on the E-SBC. Media Manager is configured as shown below
- Navigate to **Configuration** ☐ **media-manager** ☐ **media-manager**

The screenshot displays the 'Modify Media Manager' configuration page. The left sidebar shows a tree view with 'media-manager' selected. The main area contains the following configuration details:

| Parameter               | Value                                      | Range                   |
|-------------------------|--------------------------------------------|-------------------------|
| State                   | <input checked="" type="checkbox"/> enable |                         |
| Flow Time Limit         | 86400                                      | ( Range: 0.999999999 )  |
| Initial Guard Timer     | 300                                        | ( Range: 0.999999999 )  |
| Subsq Guard Timer       | 300                                        | ( Range: 0.999999999 )  |
| TCP Flow Time Limit     | 86400                                      | ( Range: 0.999999999 )  |
| TCP Initial Guard Timer | 300                                        | ( Range: 0.999999999 )  |
| TCP Subsq Guard Timer   | 300                                        | ( Range: 0.999999999 )  |
| Hint Rtcp               | <input type="checkbox"/> enable            |                         |
| Algd Log Level          | NOTICE                                     |                         |
| Mbcd Log Level          | NOTICE                                     |                         |
| Options                 |                                            |                         |
| Red Max Trans           | 10000                                      | ( Range: 0.50000 )      |
| Red Sync Start Time     | 5000                                       | ( Range: 0.4294967295 ) |
| Red Sync Comp Time      | 1000                                       | ( Range: 0.4294967295 ) |

**Figure 2: Media Manager Configuration**

**Configuration** View Configuration  

media-manager 

codecs-policy

**media-manager**

media-policy

realm-config

steering-pool

security >

session-router >

system >

### Modify Media Manager

|                              |                                            |                           |
|------------------------------|--------------------------------------------|---------------------------|
| Red Max Trans                | <input type="text" value="10000"/>         | ( Range: 0.50000 )        |
| Red Sync Start Time          | <input type="text" value="5000"/>          | ( Range: 0.4294967295 )   |
| Red Sync Comp Time           | <input type="text" value="1000"/>          | ( Range: 0.4294967295 )   |
| Media Policing               | <input checked="" type="checkbox"/> enable |                           |
| Max Signalling Bandwidth     | <input type="text" value="10000000"/>      | ( Range: 71000.10000000 ) |
| Max Untrusted Signalling     | <input type="text" value="100"/>           | ( Range: 0.300 )          |
| Min Untrusted Signalling     | <input type="text" value="30"/>            | ( Range: 0.300 )          |
| Dos Guard Window             | <input type="text" value="5"/>             | ( Range: 1.30 )           |
| Untrusted Minor Threshold    | <input type="text" value="0"/>             | ( Range: 0.300 )          |
| Untrusted Major Threshold    | <input type="text" value="0"/>             | ( Range: 0.300 )          |
| Untrusted Critical Threshold | <input type="text" value="0"/>             | ( Range: 0.300 )          |
| Trusted Minor Threshold      | <input type="text" value="0"/>             | ( Range: 0.300 )          |
| Trusted Major Threshold      | <input type="text" value="0"/>             | ( Range: 0.300 )          |
| Trusted Critical Threshold   | <input type="text" value="0"/>             | ( Range: 0.300 )          |

**Figure 3: Media Manager Configuration (Cont.)**

## 7.4.2 Physical Interface

- Navigate to **Configuration** > **system** > **phy-interface**.
- Configure Physical interface towards Google CES and PSTN Gateway as shown below.

**ORACLE** Enterprise Session Border Controller

4600\_sbc1 10:35:32:46 SCZ9.3.0 GA (Build 46) Dashboard **Configuration** Monitor and Trace Widgets System

**Configuration** View Configuration  

media-manager >

security >

session-router >

**system** >

fraud-protection

host-route

http-client

http-server

network-interface

ntp-config

**phy-interface**

### Phy Interface

Discard  Verify  Save

Show Configuration

   Delete all Phy Interface items

| Select                   | Action                                                                              | Name             | Operation Type | Port | Slot | Virtual Mac | Admin State | Auto Neg |
|--------------------------|-------------------------------------------------------------------------------------|------------------|----------------|------|------|-------------|-------------|----------|
| <input type="checkbox"/> |  | Google-Interface | Media          | 0    | 0    |             | enabled     | enabled  |
| <input type="checkbox"/> |  | PSTN-Interface   | Media          | 2    | 0    |             | enabled     | enabled  |

**Figure 4: Physical Interfaces**

- The interface designated towards Google CES is named as Google-Interface (Slot 0, Port 0).

The screenshot shows the 'Modify Phy Interface' configuration page. The left sidebar has 'Configuration' highlighted, and 'system' is selected under the 'phy-interface' category. The main form is titled 'Modify Phy Interface' and contains the following fields:

- Name:** Google-Interface
- Operation Type:** Media
- Port:** 0 (Range: 0-5)
- Slot:** 0 (Range: 0)
- Virtual Mac:** (empty)
- Admin State:** ☒ enable
- Auto Negotiation:** ☒ enable
- Duplex Mode:** FULL
- Speed:** 100
- Wancom Health Score:** 50 (Range: 0-100)
- Network Alarm Threshold:** No network alarm threshold to display. Please add or upload network alarm threshold. (Buttons: Add, Upload)

**Figure 5: Physical Interface towards Google CES**

- The interface designated towards PSTN Gateway are named as PSTN-Interface (Slot 0, Port 2).

The screenshot shows the 'Modify Phy Interface' configuration page. The left sidebar has 'Configuration' highlighted, and 'system' is selected under the 'phy-interface' category. The main form is titled 'Modify Phy Interface' and contains the following fields:

- Name:** PSTN-Interface
- Operation Type:** Media
- Port:** 2 (Range: 0-5)
- Slot:** 0 (Range: 0)
- Virtual Mac:** (empty)
- Admin State:** ☒ enable
- Auto Negotiation:** ☐ enable
- Duplex Mode:** FULL
- Speed:** 100
- Wancom Health Score:** 50 (Range: 0-100)
- Network Alarm Threshold:** (empty)

**Figure 6: Physical Interface towards PSTN Gateway**

### 7.4.3 Network Interface

- Navigate to **Configuration** ▢ **system** ▢ **network-interface**.
- Configure network interface towards Google CES, and PSTN Gateway as shown below.

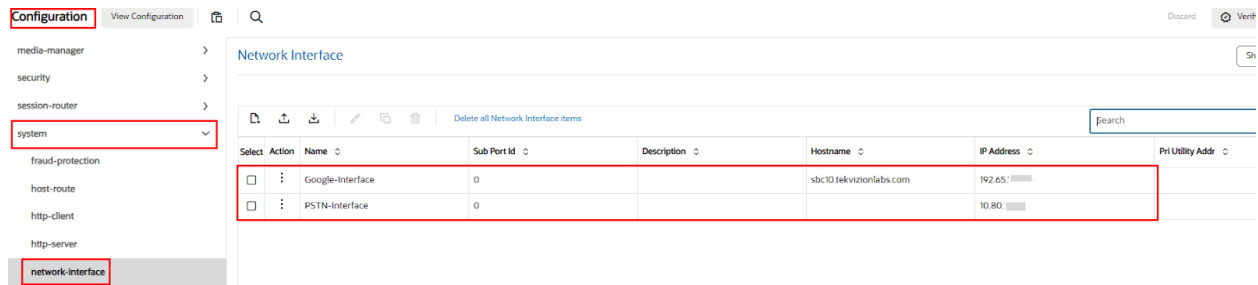


Figure 7: Network Interfaces

- Configure Network interface towards Google CES as shown below.

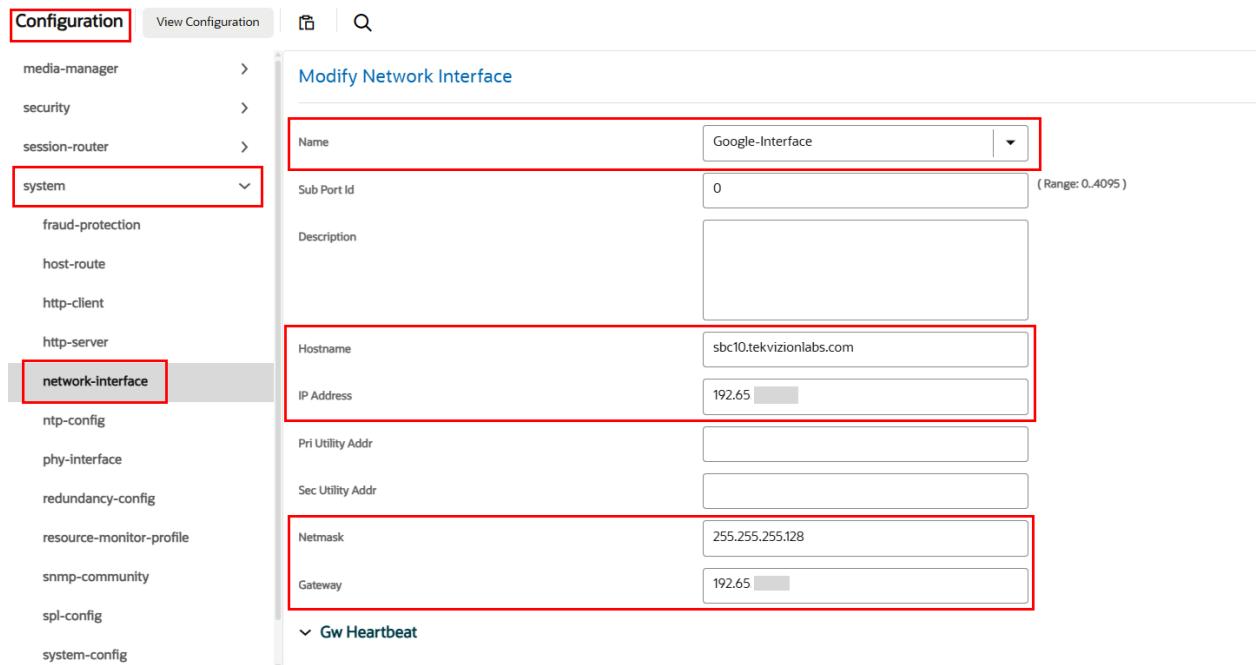


Figure 8: Network Interface towards Google CES

**Configuration** View Configuration

media-manager >  
security >  
session-router >  
system >  
fraud-protection  
host-route  
http-client  
http-server  
**network-interface**  
ntp-config  
phy-interface  
redundancy-config  
resource-monitor-profile  
snmp-community

### Modify Network Interface

▼ Gw Heartbeat

State ☒ enable

Heartbeat  ( Range: 0..65535 )

Retry Count  ( Range: 0..65535 )

Retry Timeout  ( Range: 1..65535 )

Health Score  ( Range: 0..100 )

▼ Bfd Config

State ☐ enable

Health Score  ( Range: 0..100 )

Options

Bfd Session

**Figure 9: Network Interface towards Google CES (Cont.)**

**Configuration** View Configuration

security >  
session-router >  
system >  
fraud-protection  
host-route  
http-client  
http-server  
**network-interface**  
ntp-config  
phy-interface  
redundancy-config  
resource-monitor-profile  
snmp-community  
spl-config  
system-config

### Modify Network Interface

DNS IP Primary

DNS IP Backup1

DNS IP Backup2

DNS Domain

DNS Timeout  ( Range: 1..999999999 )

DNS Max Ttl  ( Range: 30..2073600 )

Signaling Mtu  ( Range: 0..576..4096 )

HIP IP List

ICMP Address

SSH Address

Tunnel Config

**Figure 10: Network Interface towards Google CES (Cont.)**

- Configure the Network interface towards PSTN Gateway as shown below.

**Configuration** View Configuration

media-manager >  
security >  
session-router >  
**system** >  
fraud-protection  
host-route  
http-client  
http-server  
**network-interface**  
ntp-config  
phy-interface  
redundancy-config  
resource-monitor-profile  
snmp-community  
spl-config  
system-config  
trap-receiver

### Modify Network Interface

Name: PSTN-Interface

Sub Port Id: 0 (Range: 0..4095)

Description:

Hostname:

IP Address: 10.80.13.50

Pri Utility Addr:

Sec Utility Addr:

Netmask: 255.255.255.0

Gateway: 10.80.13.1

**Gw Heartbeat**

State: ☒ enable

Heartbeat: 10 (Range: 0..65535)

Retry Count: 3 (Range: 0..65535)

Retry Timeout: 3 (Range: 1..65535)

**Figure 11: Network Interface towards PSTN Gateway**

**Configuration** View Configuration

media-manager >  
security >  
session-router >  
**system** >  
fraud-protection  
host-route  
http-client  
http-server  
**network-interface**  
ntp-config  
phy-interface  
redundancy-config  
resource-monitor-profile  
snmp-community  
spl-config  
system-config  
trap-receiver

### Modify Network Interface

**bfd session**

No bfd session to display. Please add.

Add

DNS IP Primary:

DNS IP Backup1:

DNS IP Backup2:

DNS Domain:

DNS Timeout: 11 (Range: 1..999999999)

DNS Max Ttl: 86400 (Range: 30..2073600)

Signalling Mtu: 0 (Range: 0..4096)

HIP IP List: 10.80.13.50

ICMP Address: 10.80.13.50

SSH Address:

**Figure 12: Network Interface towards PSTN Gateway (Cont.)**

- **Note:** ICMP IP and HIP IP addresses needs to be disabled in production environment.

## 7.4.4 SIP Config

- Navigate to **Configuration** ☐ **session-router** ☐ **sip-config** for SIP configuration as shown below.

The screenshot shows the 'Configuration' menu on the left, with 'session-router' selected. The 'sip-config' option is also highlighted. The main area displays the 'Modify SIP Config' form. The form includes the following fields:

| Field                    | Value                                      | Range                    |
|--------------------------|--------------------------------------------|--------------------------|
| State                    | <input checked="" type="checkbox"/> enable |                          |
| Dialog Transparency      | <input checked="" type="checkbox"/> enable |                          |
| Home Realm ID            | Google                                     |                          |
| Egress Realm ID          |                                            |                          |
| Nat Mode                 | None                                       |                          |
| Registrar Domain         | *                                          |                          |
| Registrar Host           | *                                          |                          |
| Registrar Port           | 5060                                       | ( Range: 0,1025..65535 ) |
| Init Timer               | 500                                        | ( Range: 0.999999999 )   |
| Max Timer                | 4000                                       | ( Range: 0.999999999 )   |
| Trans Expire             | 32                                         | ( Range: 0.2147473 )     |
| Initial Inv Trans Expire | 0                                          | ( Range: 0.2147473 )     |
| Invite Expire            | 180                                        | ( Range: 0.999999999 )   |
| Session Max Life Limit   | 0                                          |                          |

Figure 13: SIP-Config

The screenshot shows the 'Configuration' menu on the left, with 'session-router' selected. The 'sip-config' option is also highlighted. The main area displays the 'Modify SIP Config' form. The form includes the following fields:

| Field                    | Value                                      | Range                  |
|--------------------------|--------------------------------------------|------------------------|
| Enforcement Profile      |                                            |                        |
| Emergency Dscp Profile   |                                            |                        |
| Red Max Trans            | 10000                                      | ( Range: 0.50000 )     |
| Options                  | max-udp-length=0 x                         |                        |
| SPL Options              |                                            |                        |
| SIP Message Len          | 65535                                      | ( Range: 0.65535 )     |
| Enum Sag Match           | <input type="checkbox"/> enable            |                        |
| Extra Method Stats       | <input checked="" type="checkbox"/> enable |                        |
| Extra Enum Stats         | <input type="checkbox"/> enable            |                        |
| Registration Cache Limit | 0                                          | ( Range: 0.999999999 ) |
| Register Use To For Lp   | <input type="checkbox"/> enable            |                        |
| Refer Src Routing        | <input type="checkbox"/> enable            |                        |
| Atcf Stn Sr              |                                            |                        |
| Atcf Psi Dn              |                                            |                        |

Figure 14: SIP-Config (Cont.)

Configuration

View Configuration

Q

media-manager >

security >

session-router ▾

access-control

account-config

filter-config

ldap-config

local-policy

local-routing-config

media-profile

session-agent

session-group

session-recording-group

session-recording-server

session-translation

sip-config

sip-feature

sip-interface

Modify SIP Config

Atcf Route To Scas

☐ enable

Eatf Stn Sr

Sag Lookup On Redirect

☐ enable

Set Disconnect Time On Bye

☐ enable

Refer Reinvite No Sdp

☐ enable

Msrp Delayed Bye Timer

( Range: 0..60 )

Transcoding Realm

▾

Transcoding Agents

Create Dynamic Sa

☐ enable

Node Functionality

▾

Match SIP Instance

☐ enable

Sa Routes Stats

☐ enable

Sa Routes Traps

☐ enable

Rx SIP Reason Mapping

☐ enable

Figure 15: SIP-Config (Cont.)

Configuration

View Configuration

Q

media-manager >

security >

session-router ▾

access-control

account-config

filter-config

ldap-config

local-policy

local-routing-config

media-profile

session-agent

session-group

session-recording-group

session-recording-server

session-translation

sip-config

sip-feature

sip-interface

Modify SIP Config

Add Ue Location In Panel

▾

Hold Emergency Calls For Loc Info

( Range: 0..4294967295 )

Retry After Upon Offline

( Range: 0..999999999 )

Reg Reject Response Upon Offline

Hold Invite Calls For Loc Info

( Range: 0..4294967295 )

Cache Loc Info Expire

( Range: 0..4294967295 )

Msg Hold For Loc Info

( Range: 0..30 )

NpIi Upon Register

▾

Start Hold Timer Event

▾

Hist To Div For Cause 380

▾

Anonymize History For Untrusted

☐ enable

Asymm Preconditions Evs Swb Support

☐ enable

Sms Report Timeout

( Range: 1..100000 )

User Agent

Figure 16: SIP-Config (Cont.)

Configuration

View Configuration

media-manager

>

security

>

session-router

▼

access-control

account-config

filter-config

ldap-config

local-policy

local-routing-config

media-profile

session-agent

session-group

session-recording-group

session-recording-server

session-translation

sip-config

sip-feature

sip-interface

sip-manipulation

sip-monitoring

Modify SIP Config

Reg Reject Response Upon Offline

503

Hold Invite Calls For Loc Info

0

( Range: 0.4294967295 )

Cache Loc Info Expire

32

( Range: 0.4294967295 )

Msg Hold For Loc Info

0

( Range: 0.30 )

NpI Upon Register

inherit

▼

Start Hold Timer Event

AAR

▼

Hist To Div For Cause 380

inherit

▼

Anonymize History For Untrusted

☐ enable

Asymm Preconditions Evs Swb Support

☐ enable

Sms Report Timeout

32

( Range: 1.100000 )

User Agent

Precondition Enhancement

☐ enable

Precondition Med Enhancement

☐ enable

Internal 503 Threshold

0

( Range: 0.300 )

Internal 503 Lower Threshold

40

( Range: 1.95 )

503 Alarm Monitoring Time

15

( Range: 5.600 )

Figure 17: SIP-Config (Cont.)

## 7.4.5 System-Config

- Navigate to **Configuration** > **system** > **system-config** for system configuration as shown below.

**Configuration** View Configuration

media-manager >  
security >  
session-router >  
**system** >  
fraud-protection  
**host-route**  
http-client  
http-server  
network-interface  
ntp-config  
phy-interface  
redundancy-config  
resource-monitor-profile  
snmp-community  
spl-config  
**system-config**

### Modify System Config

Hostname: Oracle

Description: SBC Connecting PSTN SIP Trunk to Google

Location: Plano TX

Mib System Contact:

Mib System Name:

Mib System Location:

Acp TLS Profile:

Disable Garp Out Of Subnet: ☐ enable

SNMP Enabled: ☒ enable

Enable SNMP Auth Traps: ☐ enable

Figure 18: System-Config

**Configuration** View Configuration

media-manager >  
security >  
session-router >  
**system** >  
fraud-protection  
host-route  
http-client  
http-server  
network-interface  
ntp-config  
phy-interface  
redundancy-config  
resource-monitor-profile  
snmp-community  
spl-config  
**system-config**  
trap-receiver

### Modify System Config

Call Trace: ☐ enable

Default Gateway: 10.35.32.1

Restart: ☒ enable

Telnet Timeout: 0 (Range: 0..65535)

Console Timeout: 0 (Range: 0..65535)

HTTP Timeout: 5 (Range: 0..20)

Reserved Nsep Session Capacity: 0 (Range: 0..100)

Alarm Threshold  
No alarm threshold to display. Please add.  
[Add](#)

Source Routing: ☐ enable

Debug Timeout: 0 (Range: 0..65535)

Ecc Chk Pkt: ☐ enable

Log TLS Key: ☐ enable

Pko Rake Pkt: 0 (Range: 0..32768)

Pko Rake Burst: 0 (Range: 0..1024)

Figure 19: System-Config (Cont.)

Configuration

View Configuration

media-manager

security

session-router

system

fraud-protection

host-route

http-client

http-server

network-interface

ntp-config

phy-interface

redundancy-config

resource-monitor-profile

snmp-community

spl-config

system-config

trap-receiver

Modify System Config

Ecc Chk Pkt

☐ enable

Log TLS Key

☐ enable

Pko Rake Pkt

( Range: 0..32768 )

Pko Rake Burst

( Range: 0..3024 )

Default V6 Gateway

Ipv6 Signaling Mtu

( Range: 1280..4096 )

Ipv4 Signaling Mtu

( Range: 576..4096 )

Directory Cleanup

No directory cleanup to display. Please add or upload directory cleanup.

Add

Upload

SNMP Rate Limit

( Range: 0..9999 )

Httpclient Max Total Conn

( Range: 0..2147483647 )

Httpclient Max Cpu Load

( Range: 30..90 )

Httpclient Cache Size Multiplier

( Range: 4..50 )

HTTP ClearDead Conn Timer

( Range: 0..300..86400 )

Resource Monitoring

☐ enable

Figure 20: System-Config (Cont.)

### 7.4.6 SIP Monitoring

- Navigate to **Configuration** ☐ **session-router** ☐ **sip-monitoring** and configure SIP monitoring for capturing trace as shown below.

The screenshot shows the Oracle E-SBC configuration interface. On the left, a navigation tree is visible with 'Configuration' at the top, followed by 'session-router' and 'sip-monitoring', both of which are highlighted with red boxes. The main panel on the right is titled 'Modify SIP Monitoring'. It contains several configuration fields: 'Match Any Filter' with a checked 'enable' checkbox, 'State' with a checked 'enable' checkbox, 'Short Session Duration' with a text input field containing '0' and a range indicator '(Range: 0.999999999)', 'Monitoring Filters' with a text input field containing '\*' and a range indicator '(Range: 0.999999999)', 'Interesting Events' with a message 'No interesting event to display. Please add.' and an 'Add' button, and 'Trigger Window' with a text input field containing '30' and a range indicator '(Range: 0.999999999)'.

Figure 21: SIP Monitoring

### 7.4.7 HTTP Server

- Navigate to **Configuration** ☐ **system** ☐ **http-server** and configure HTTP Server for GUI access to Oracle E-SBC as shown below.

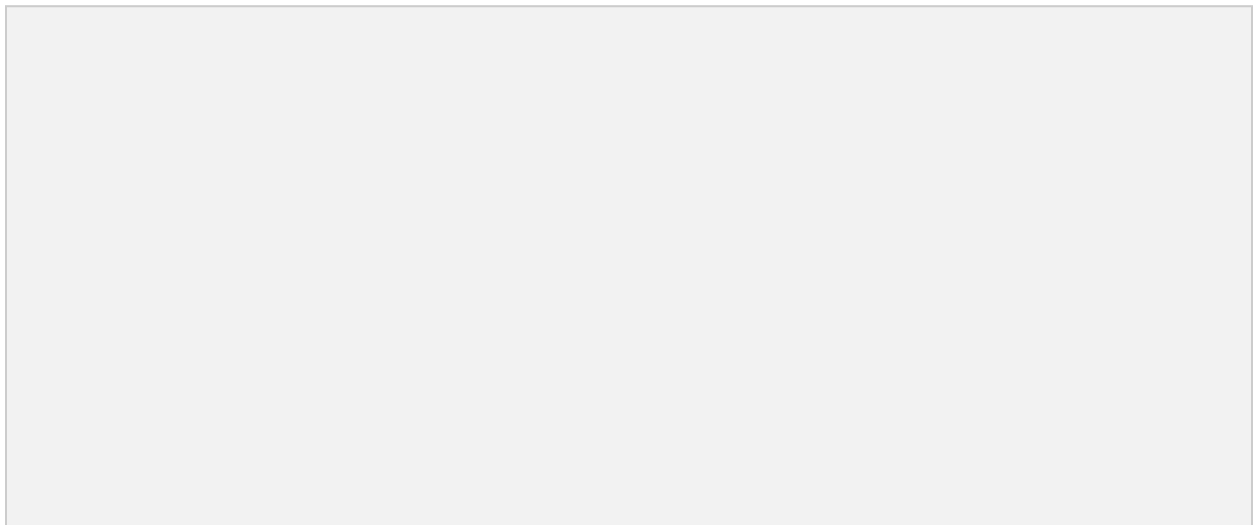
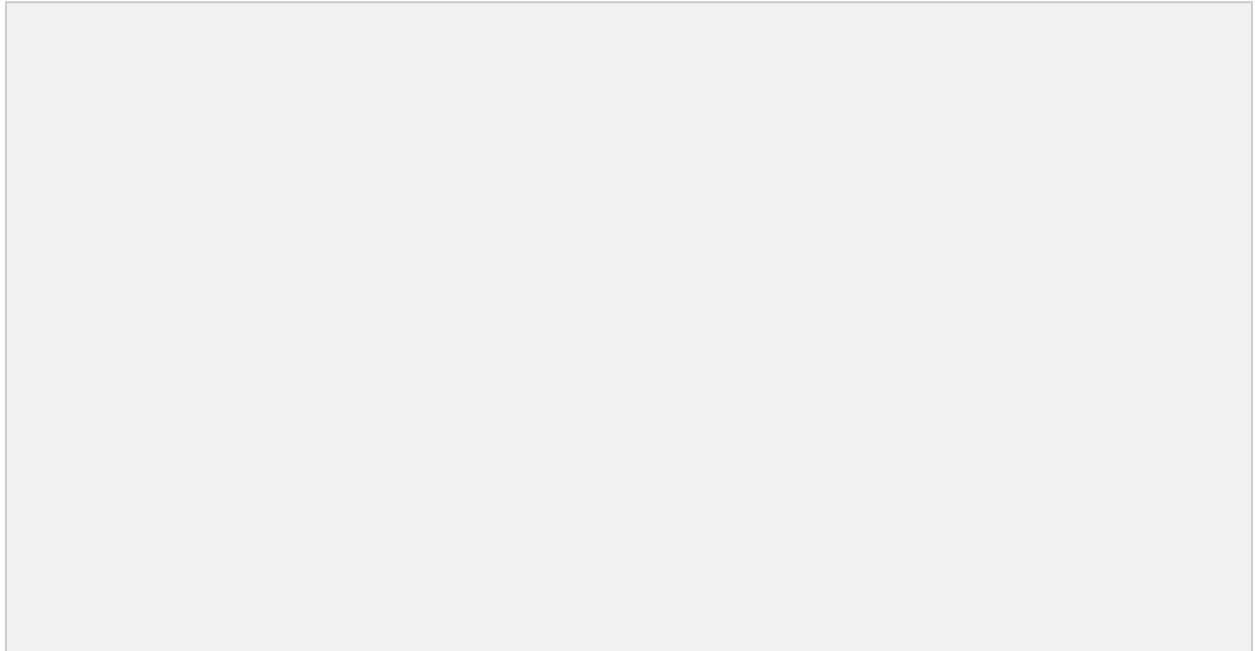


Figure 22: HTTP Server

#### 7.4.8 Codec Policy

- Navigate to **Configuration** ☐ **media-manager** ☐ **codec-policy** and configure codec policy for Google CES as shown below.



**Figure 23: Codec Policy for Google CES**

## 7.4.9 Translation Rules

- Navigate to **Configuration** ☐ **session-router** ☐ **translation-rules** and configure translation rules for Google CES as shown below.
- Translation rule is created to send E.164 number format towards Google CES.
- These translation rules (adding or removing plus) are further mapped in Session Translation Section 7.4.10

The screenshot shows the 'Translation Rules' configuration page. The left sidebar lists various configuration categories, with 'translation-rules' highlighted. The main area displays a table of rules. A red box highlights the table content.

| Select                   | Action | Id                               | Description | Input Header Type    | Input Header Value | Output Header Type   | Output Header Value |
|--------------------------|--------|----------------------------------|-------------|----------------------|--------------------|----------------------|---------------------|
| <input type="checkbox"/> | add    | addplus1_called-header           | add         | called-header        | ^(.{0})X.*\$       | called-header        | \$01+\$02           |
| <input type="checkbox"/> | add    | addplus1_calling-header          | add         | calling-header       | ^(.{0})X.*\$       | calling-header       | \$01+\$02           |
| <input type="checkbox"/> | add    | addplus1_p-asserted-id-header    | add         | p-asserted-id-header | ^(.{0})X.*\$       | p-asserted-id-header | \$01+\$02           |
| <input type="checkbox"/> | add    | addplus1_request-uri             | add         | request-uri          | ^(.{0})X.*\$       | request-uri          | \$01+\$02           |
| <input type="checkbox"/> | delete | removeplus1_called-header        | delete      | called-header        | ^(.*)+ (.*)\$      | called-header        | \$1\$2              |
| <input type="checkbox"/> | delete | removeplus1_calling-header       | delete      | calling-header       | ^(.*)+ (.*)\$      | calling-header       | \$1\$2              |
| <input type="checkbox"/> | delete | removeplus1_p-asserted-id-header | delete      | p-asserted-id-header | ^(.*)+ (.*)\$      | p-asserted-id-header | \$1\$2              |
| <input type="checkbox"/> | delete | removeplus1_request-uri          | delete      | request-uri          | ^(.*)+ (.*)\$      | request-uri          | \$1\$2              |

Figure 24: Translation Rule to add or remove E.164 format Google CES

7.4.10 Session Translation

- Navigate to **Configuration** > **session-router** > **session-translation**. The translation rules configured in [Section 7.4.9](#) is mapped to Google CES is shown below.

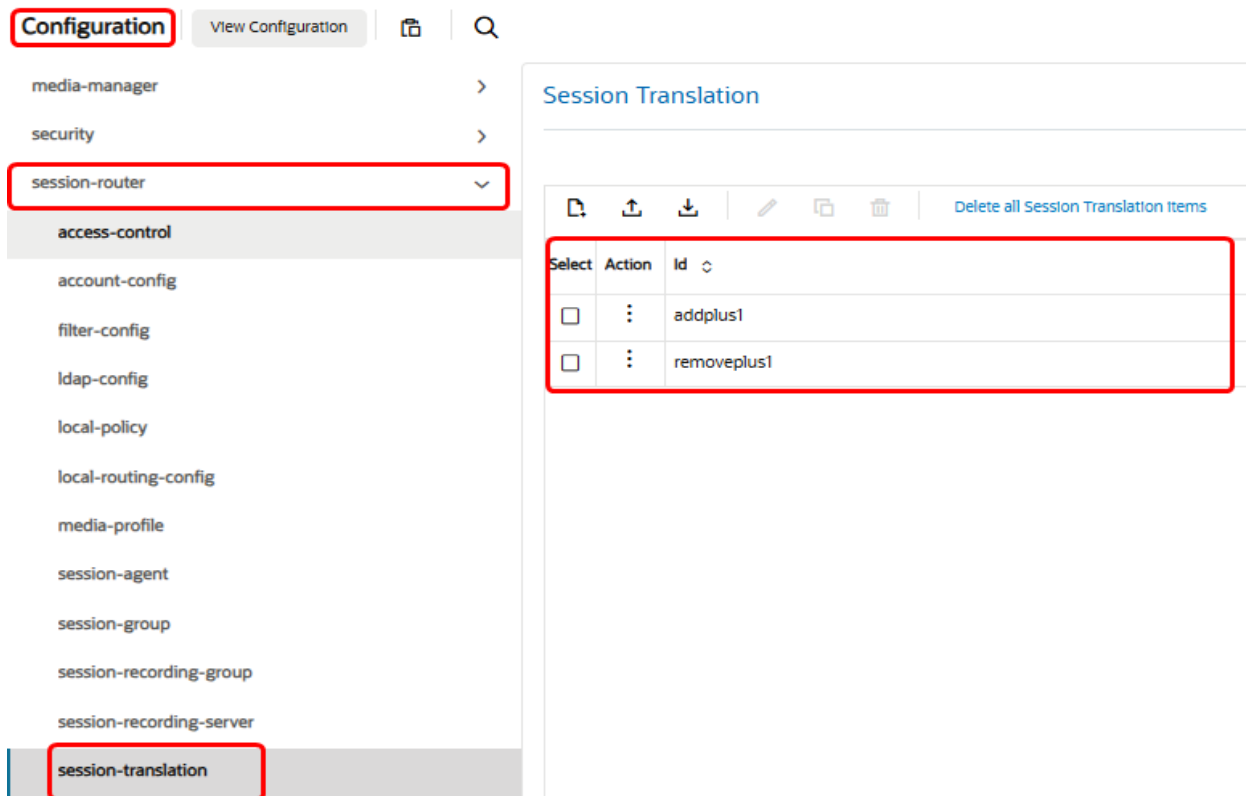


Figure 25: Session Translation towards Google CES

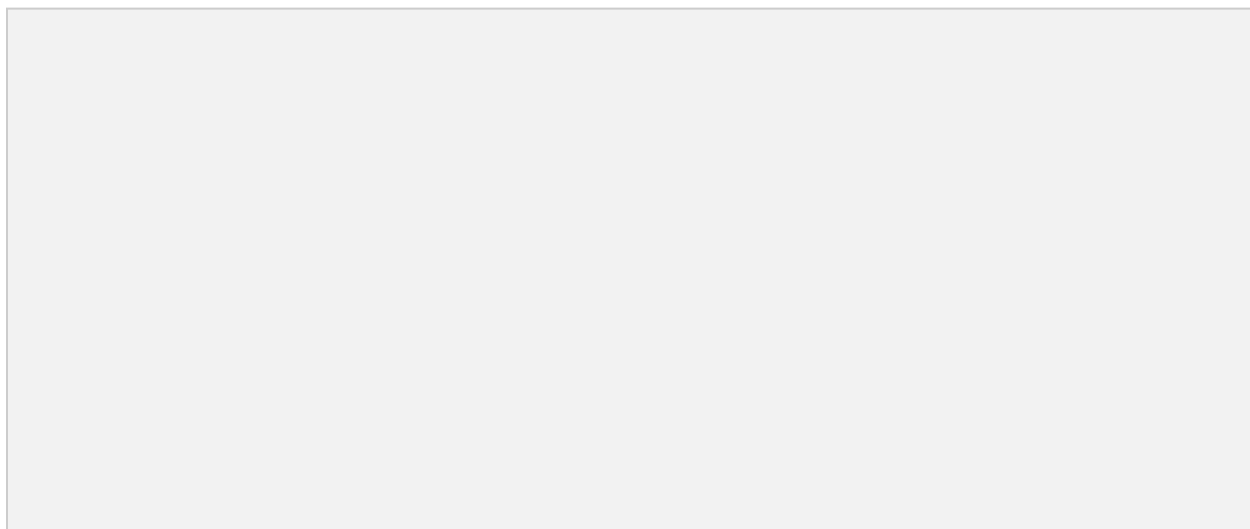
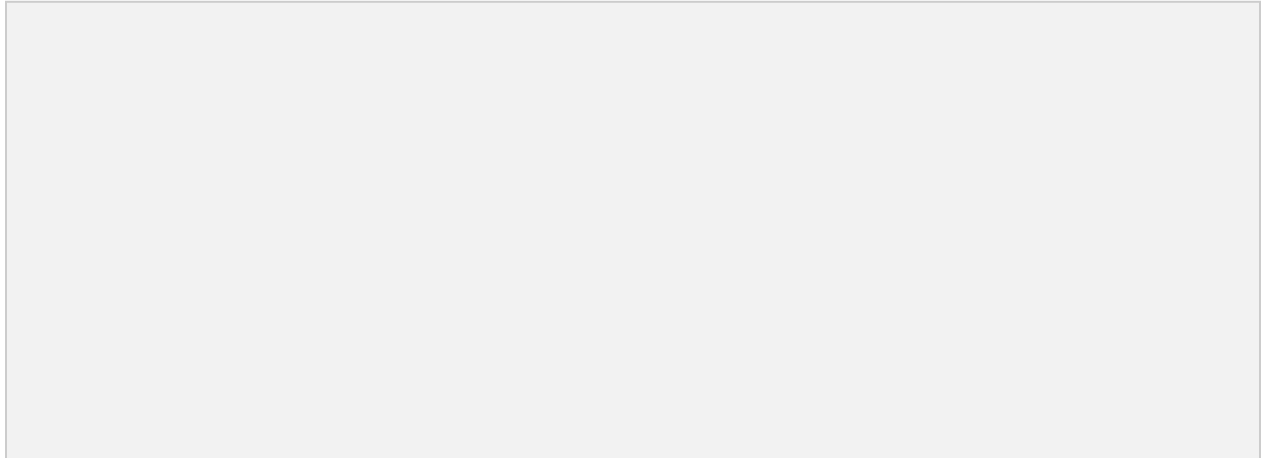


Figure 26: Session Translation for addplus1 towards Google CES (Cont.)

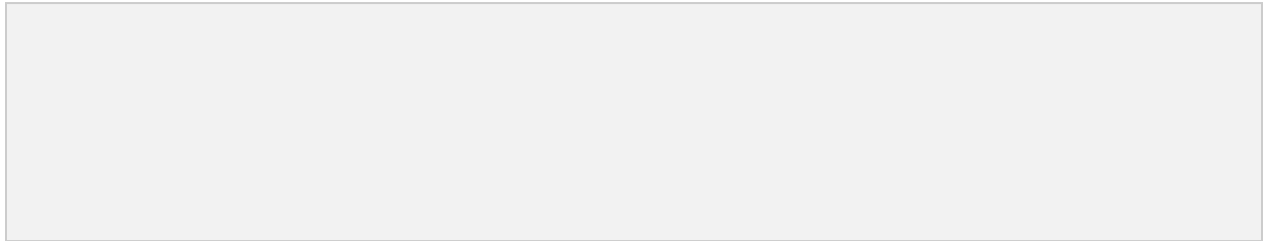
- Under removeplus1, we are removing the translation rules for created on [Section 7.4.9](#)



**Figure 27: Session Translation for removeplus1 towards Google CES (Cont.)**

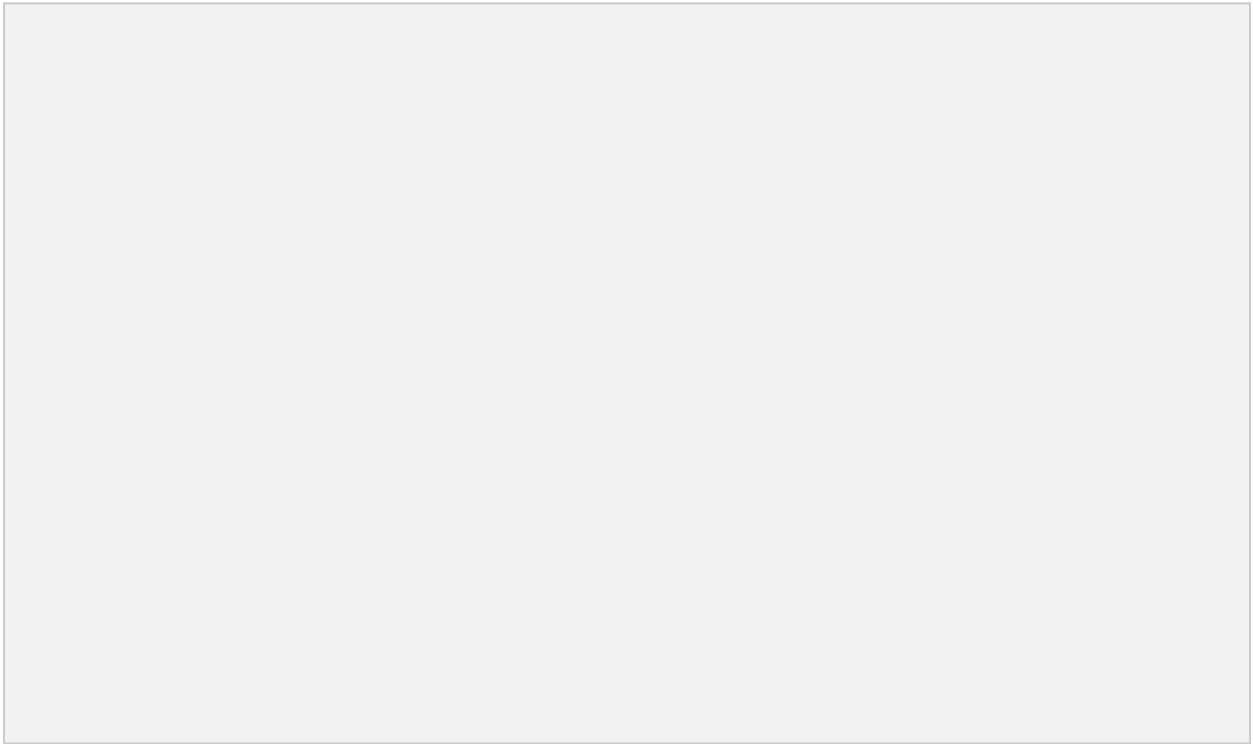
#### 7.4.11 Realm Config

- Navigate to **Configuration** ☐ **media-manager** ☐ **realm-config**.

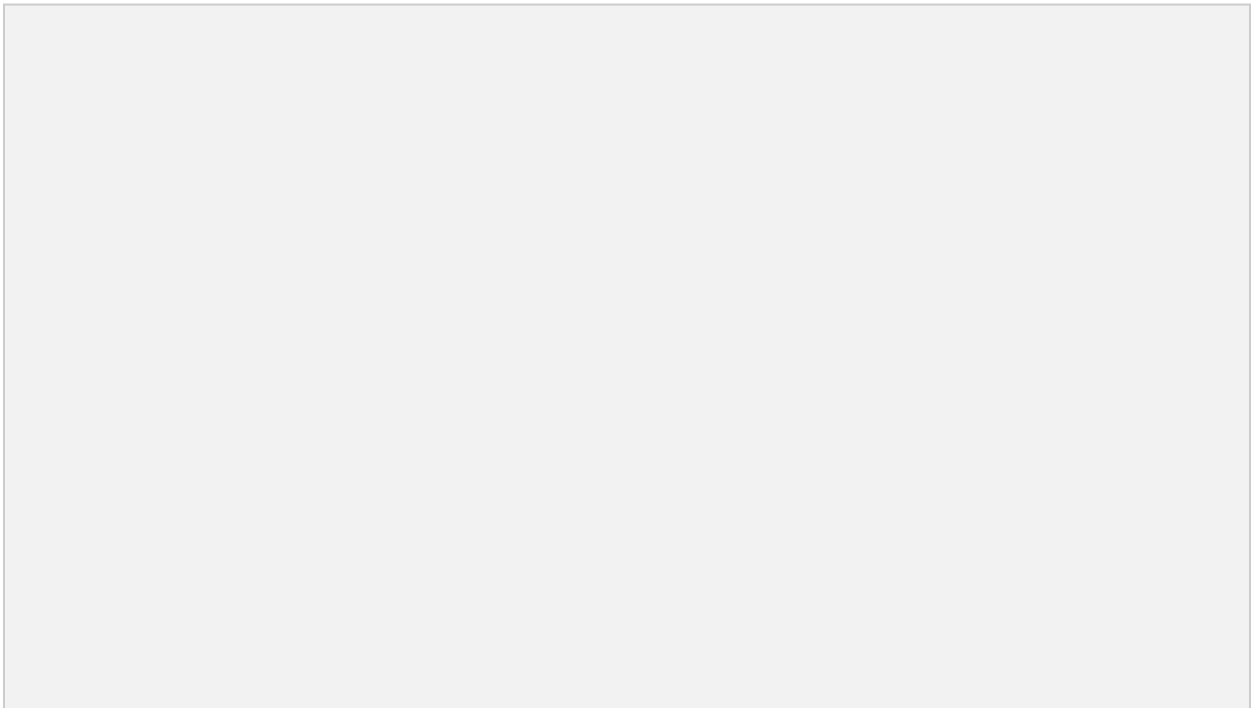


**Figure 28: Realm Configuration**

- Realm Config towards Google CES is shown below.



**Figure 29: Realm Config**



**Figure 30: Realm Config towards Google CES (Cont.)**

Configuration

View Configuration

media-manager

codecs-policy

media-manager

media-policy

realm-config

steering-pool

security

session-router

system

Modify Realm Config

In Session Translations

No in session translation list to display. Please add.

Add

Out Session Translations

| Select                   | Action | Out Session Translation Id | State   |
|--------------------------|--------|----------------------------|---------|
| <input type="checkbox"/> | :      | addplus1                   | enabled |

Figure 31: Realm Config towards Google CES (Cont.)

Configuration

View Configuration

media-manager

codecs-policy

media-manager

media-policy

realm-config

steering-pool

security

session-router

system

Modify Realm Config

In ManipulationId

Out ManipulationId

GoogleManipulation

Average Rate Limit

0

( Range: 0.4294967295 )

Access Control Trust Level

high

Max Inbound Per Session Burst Rate

30

( Range: 1.999999999 )

Burst Rate Window Per Session

1

( Range: 1.999999999 )

Dos Action At Session

none

Invalid Signal Threshold

0

( Range: 0.4294967295 )

Maximum Signal Threshold

0

( Range: 0.4294967295 )

Untrusted Signal Threshold

0

( Range: 0.4294967295 )

Nat Trust Threshold

0

( Range: 0.65535 )

Max Endpoints Per Nat

0

( Range: 0.65535 )

Nat Invalid Message Threshold

0

( Range: 0.65535 )

Wait Time For Invalid Register

0

( Range: 0.4..300 )

Figure 32: Realm Config towards Google CES (Cont.)

Configuration

View Configuration

Q

media-manager

codecs-policy

media-manager

media-policy

realm-config

steering-pool

security

session-router

system

Modify Realm Config

Deny Period

30

( Range: 0..4294967295 )

Session Max Life Limit

0

Untrust Cac Failure Threshold

0

( Range: 0..4294967295 )

Subscription Id Type

END\_USER\_NONE

Trunk Context

Early Media Allow

Enforcement Profile

Additional Prefixes

Restricted Latching

none

Options

SPL Options

Delay Media Update

☐ enable

Refer Call Transfer

disabled

Hold Refer Reinvite

☐ enable

Figure 33: Realm Config towards Google CES (Cont.)

Configuration

View Configuration

Q

media-manager

codecs-policy

media-manager

media-policy

realm-config

steering-pool

security

session-router

system

Modify Realm Config

Refer Notify Provisional

none

Dyn Refer Term

☐ enable

Codec Policy

Google

Codec ManIP In Realm

☐ enable

Codec ManIP In Network

☒ enable

RTCP Policy

Constraint Name

Session Recording Server

Session Recording Required

☐ enable

SIP Profile

Flow Time Limit

-1

( Range: -1..2147483647 )

Initial Guard Timer

-1

( Range: -1..2147483647 )

Subsq Guard Timer

-1

( Range: -1..2147483647 )

TCP Flow Time Limit

-1

( Range: -1..2147483647 )

Figure 34: Realm Config towards Google CES (Cont.)

Configuration

View Configuration

media-manager

codecs-policy

media-manager

media-policy

realm-config

steering-pool

security

session-router

system

Modify Realm Config

TCP Initial Guard Timer

-1

( Range: -1.2147483647 )

TCP Subsq Guard Timer

-1

( Range: -1.2147483647 )

SIP Isup Profile

QoS Constraint

Hide Egress Media Update

☐ enable

TCP Media Profile

Monitoring Filters

Node Functionality

Default Location String

Alt Family Realm

Pref Addr Type

none

Sm Icsi Match For Invite

Sm Icsi Match For Message

Figure 35: Realm Config towards Google CES (Cont.)

Configuration

View Configuration

media-manager

codecs-policy

media-manager

media-policy

realm-config

steering-pool

security

session-router

system

Modify Realm Config

Ringback Trigger

none

Ringback File

Merge Early Dialogs

☐ enable

User Site

Srvcc Trfo

Feature Trfo

Auth Attribute

No auth attributes to display. Please add.

Add

Fqdn Hostname

Fqdn Hostname In Header

P Asserted Identity

P Asserted Identity For

Steering Pool Threshold

0

( Range: 0.100 )

Figure 36: Realm Config towards Google CES (Cont.)

Configuration

View Configuration

media-manager

codecs-policy

media-manager

media-policy

realm-config

steering-pool

security

session-router

system

Modify Realm Config

Srvcc Trfo

Feature Trfo

Auth Attribute

No auth attributes to display. Please add.

Add

Fqdn Hostname

Fqdn Hostname In Header

P Asserted Identity

P Asserted Identity For

Steering Pool Threshold

0

( Range: 0..100 )

Steering Pool Lower Threshold

70

( Range: 1..95 )

Steering Pool Alarm Monitoring Time

15

( Range: 5..600 )

Suppress Hold Resume Reinvite

☐

enable

SNMP Sipmethod Stats

☐

enable

Figure 37: Realm Config towards Google CES (Cont.)

- Realm Config towards PSTN Gateway is shown below.

Configuration

View Configuration

media-manager

codecs-policy

media-manager

media-policy

realm-config

steering-pool

security

session-router

system

Modify Realm Config

DNS Realm

Media Policy

Nsep Media Policy

Media Sec Policy

RTP

RTCP Mux

☐

enable

Ice Profile

Teams Fqdn

Teams Fqdn In Uri

☐

enable

SDP Inactive Only

☐

enable

DTLS Srtcp Profile

Srtcp Msm Passthrough

☐

enable

Class Profile

Figure 38: Realm Config towards PSTN Gateway

Configuration

View Configuration

media-manager

codecs-policy

media-manager

media-policy

realm-config

steering-pool

security

session-router

system

Modify Realm Config

displaying 1 - 1 of 1

|                                    |      |                         |
|------------------------------------|------|-------------------------|
| In ManipulationId                  |      |                         |
| Out ManipulationId                 |      |                         |
| Average Rate Limit                 | 0    | ( Range: 0.4294967295 ) |
| Access Control Trust Level         | none |                         |
| Max Inbound Per Session Burst Rate | 30   | ( Range: 1.999999999 )  |
| Burst Rate Window Per Session      | 1    | ( Range: 1.999999999 )  |
| Dos Action At Session              | none |                         |
| Invalid Signal Threshold           | 0    | ( Range: 0.4294967295 ) |
| Maximum Signal Threshold           | 0    | ( Range: 0.4294967295 ) |
| Untrusted Signal Threshold         | 0    | ( Range: 0.4294967295 ) |
| Nat Trust Threshold                | 0    | ( Range: 0.65535 )      |
| Max Endpoints Per Nat              | 0    | ( Range: 0.65535 )      |
| Nat Invalid Message Threshold      | 0    | ( Range: 0.65535 )      |
| Wait Time For Invalid Register     | 0    | ( Range: 0.4..300 )     |

Figure 39: Realm Config towards PSTN Gateway (Cont.)

Configuration

View Configuration

media-manager

codecs-policy

media-manager

media-policy

realm-config

steering-pool

security

session-router

system

Modify Realm Config

displaying 1 - 1 of 1

|                                    |      |                         |
|------------------------------------|------|-------------------------|
| In ManipulationId                  |      |                         |
| Out ManipulationId                 |      |                         |
| Average Rate Limit                 | 0    | ( Range: 0.4294967295 ) |
| Access Control Trust Level         | none |                         |
| Max Inbound Per Session Burst Rate | 30   | ( Range: 1.999999999 )  |
| Burst Rate Window Per Session      | 1    | ( Range: 1.999999999 )  |
| Dos Action At Session              | none |                         |
| Invalid Signal Threshold           | 0    | ( Range: 0.4294967295 ) |
| Maximum Signal Threshold           | 0    | ( Range: 0.4294967295 ) |
| Untrusted Signal Threshold         | 0    | ( Range: 0.4294967295 ) |
| Nat Trust Threshold                | 0    | ( Range: 0.65535 )      |
| Max Endpoints Per Nat              | 0    | ( Range: 0.65535 )      |
| Nat Invalid Message Threshold      | 0    | ( Range: 0.65535 )      |
| Wait Time For Invalid Register     | 0    | ( Range: 0.4..300 )     |

Figure 40: Realm Config towards PSTN Gateway (Cont.)

Configuration

View Configuration

Q

media-manager

codec-policy

media-manager

media-policy

realm-config

steering-pool

security

session-router

system

Modify Realm Config

Refer Notify Provisional

none

Dyn Refer Term

☐ enable

Codec Policy

Google

Codec ManIP In Realm

☐ enable

Codec ManIP In Network

☒ enable

RTCP Policy

Constraint Name

Session Recording Server

Session Recording Required

☐ enable

SIP Profile

Flow Time Limit

-1

( Range: -1..2147483647 )

Initial Guard Timer

-1

( Range: -1..2147483647 )

Subsq Guard Timer

-1

( Range: -1..2147483647 )

TCP Flow Time Limit

-1

( Range: -1..2147483647 )

Figure 41: Realm Config towards PSTN Gateway (Cont.)

Configuration

View Configuration

Q

media-manager

codec-policy

media-manager

media-policy

realm-config

steering-pool

security

session-router

system

Modify Realm Config

TCP Initial Guard Timer

-1

( Range: -1..2147483647 )

TCP Subsq Guard Timer

-1

( Range: -1..2147483647 )

SIP Isup Profile

QoS Constraint

Hide Egress Media Update

☐ enable

TCP Media Profile

Monitoring Filters

Node Functionality

Default Location String

Alt Family Realm

Pref Addr Type

none

Sm Icsi Match For Invite

Sm Icsi Match For Message

Figure 42: Realm Config towards PSTN Gateway (Cont.)

Configuration

View Configuration

media-manager

codecs-policy

media-manager

media-policy

realm-config

steering-pool

security

session-router

system

Modify Realm Config

Ringback Trigger

none

Ringback File

Merge Early Dialogs

☐ enable

User Site

Srvcc Trfo

Feature Trfo

Auth Attribute

No auth attributes to display. Please add.

Add

Fqdn Hostname

Fqdn Hostname In Header

P Asserted Identity

P Asserted Identity For

Steering Pool Threshold

0

( Range: 0..100 )

**Figure 43: Realm Config towards PSTN Gateway (Cont.)**

Configuration

View Configuration

media-manager

codecs-policy

media-manager

media-policy

realm-config

steering-pool

security

session-router

system

Modify Realm Config

Srvcc Trfo

Feature Trfo

Auth Attribute

No auth attributes to display. Please add.

Add

Fqdn Hostname

Fqdn Hostname In Header

P Asserted Identity

P Asserted Identity For

Steering Pool Threshold

0

( Range: 0..100 )

Steering Pool Lower Threshold

70

( Range: 1..95 )

Steering Pool Alarm Monitoring Time

15

( Range: 5..600 )

Suppress Hold Resume Reinvite

☐ enable

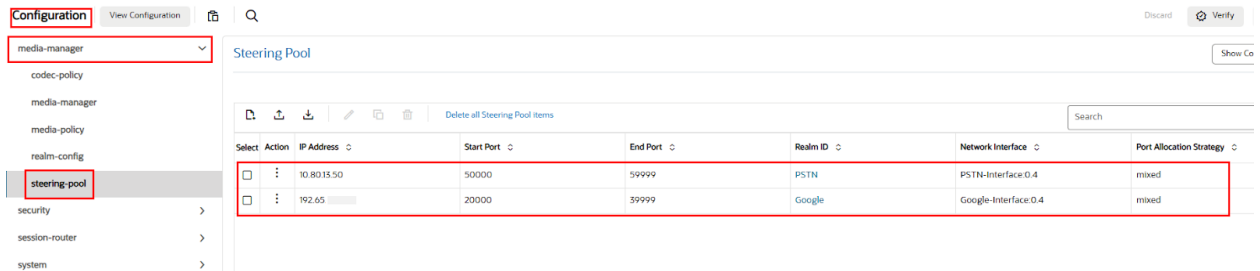
SNMP Sipmethod Stats

☐ enable

**Figure 44: Realm Config towards PSTN Gateway (Cont.)**

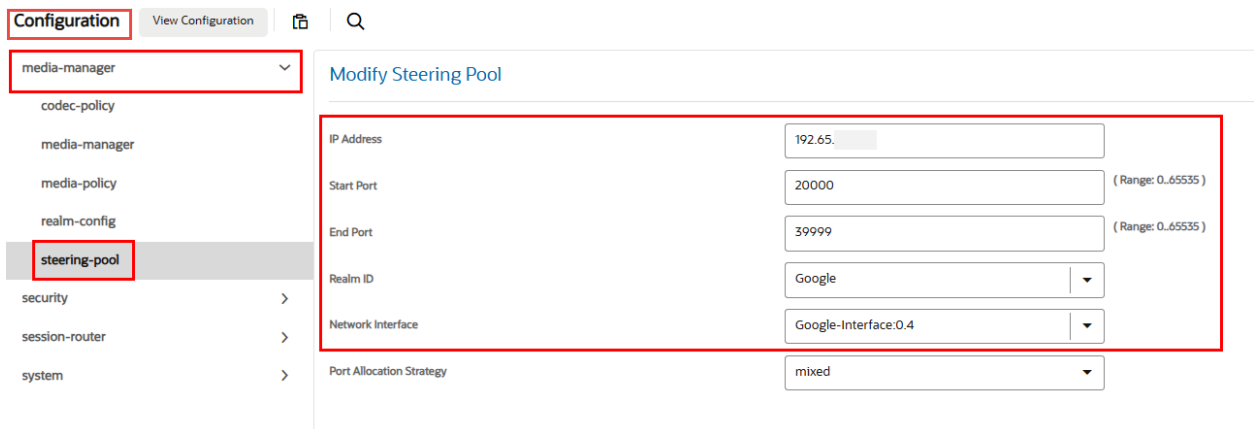
## 7.4.12 Steering Pool

- Navigate to **Configuration** ▢ **media-manager** ▢ **steering-pool**.
- Steering pool allows configuration to assign IP address, ports, and a realm.
- Steering Pool Configuration towards PSTN Gateway are shown below.



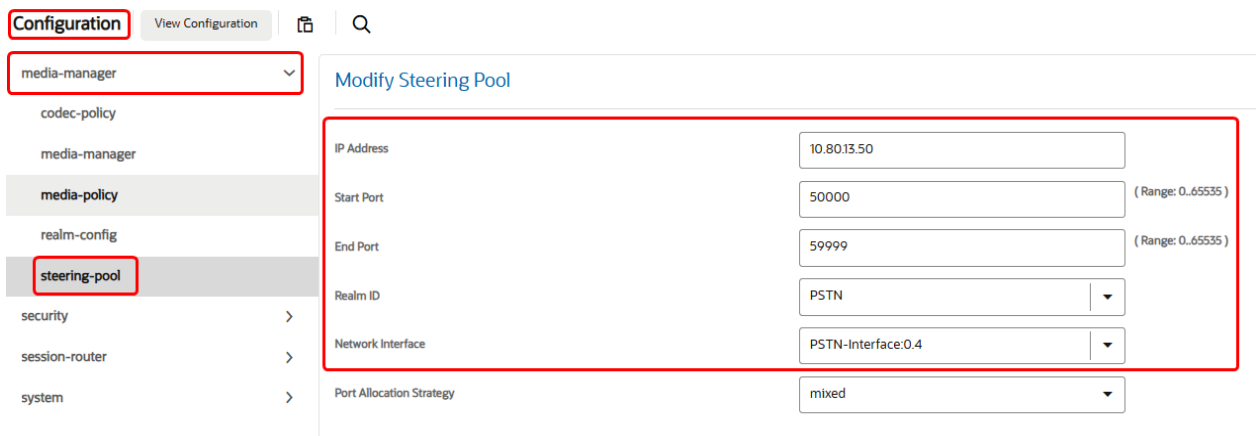
**Figure 45: Steering Pool**

- Steering Pool Configuration towards Google CES is shown below.



**Figure 46: Steering Pool towards Google CES**

- Steering Pool Configuration towards PSTN Gateway is shown below.



**Figure 47: Steering Pool towards PSTN**

### 7.4.13 SDES Profile

- Navigate to **Configuration** ▢ **Security** ▢ **media-security** ▢ **sdes-profile** and con SDES profile as shown below.

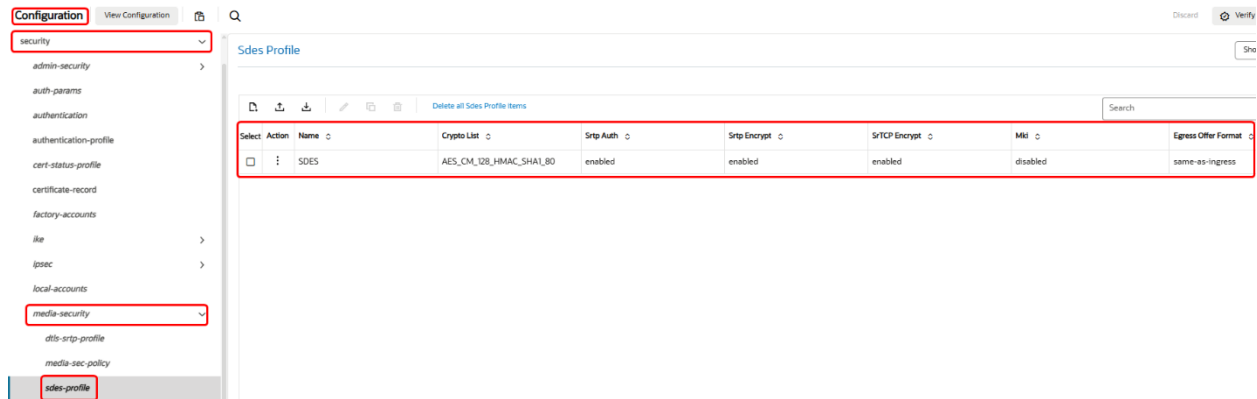


Figure 48: SDES Profile for TLS

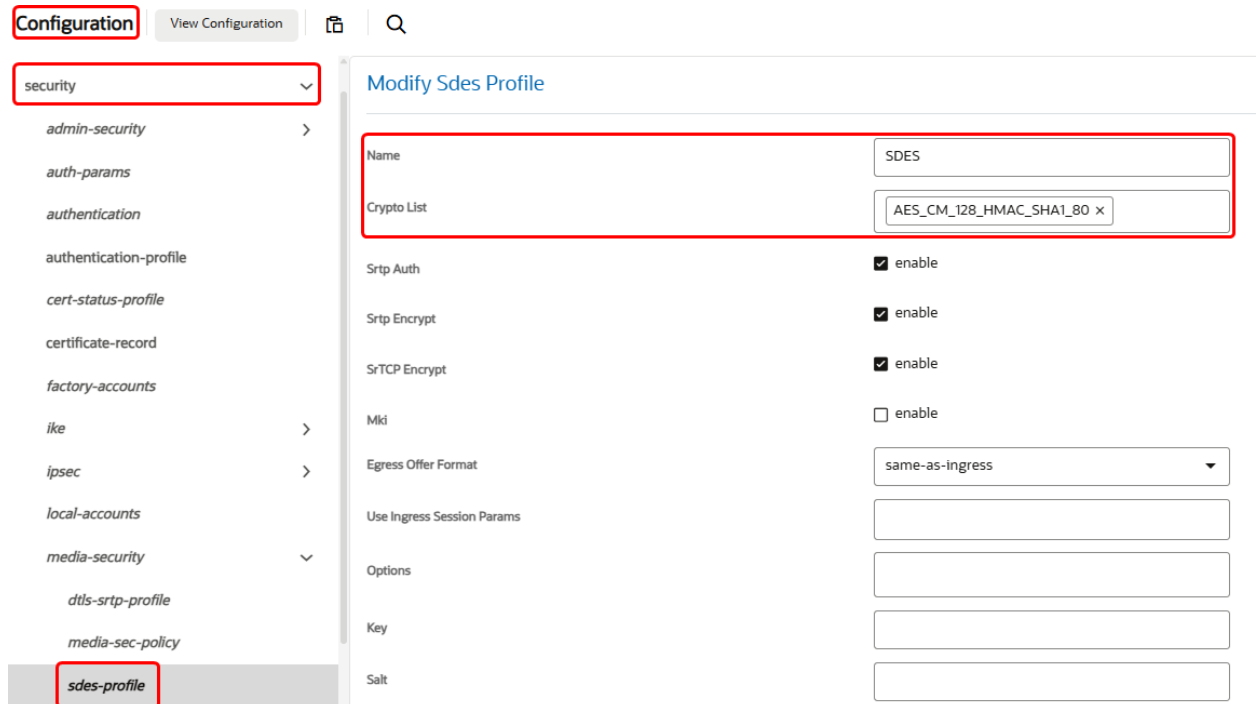


Figure 49: SDES Profile for TLS (Cont.)

## 7.4.14 Media Sec Policy

- Navigate to **Configuration** > **security** > **media-security** > **media-sec-policy** and configure media security policy as shown below.

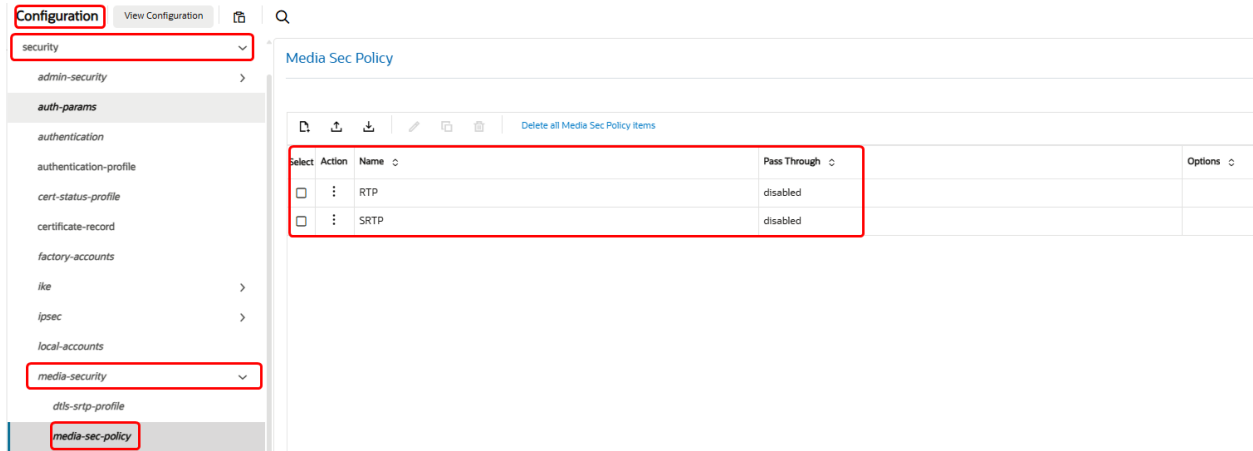


Figure 50: Media Security Policy

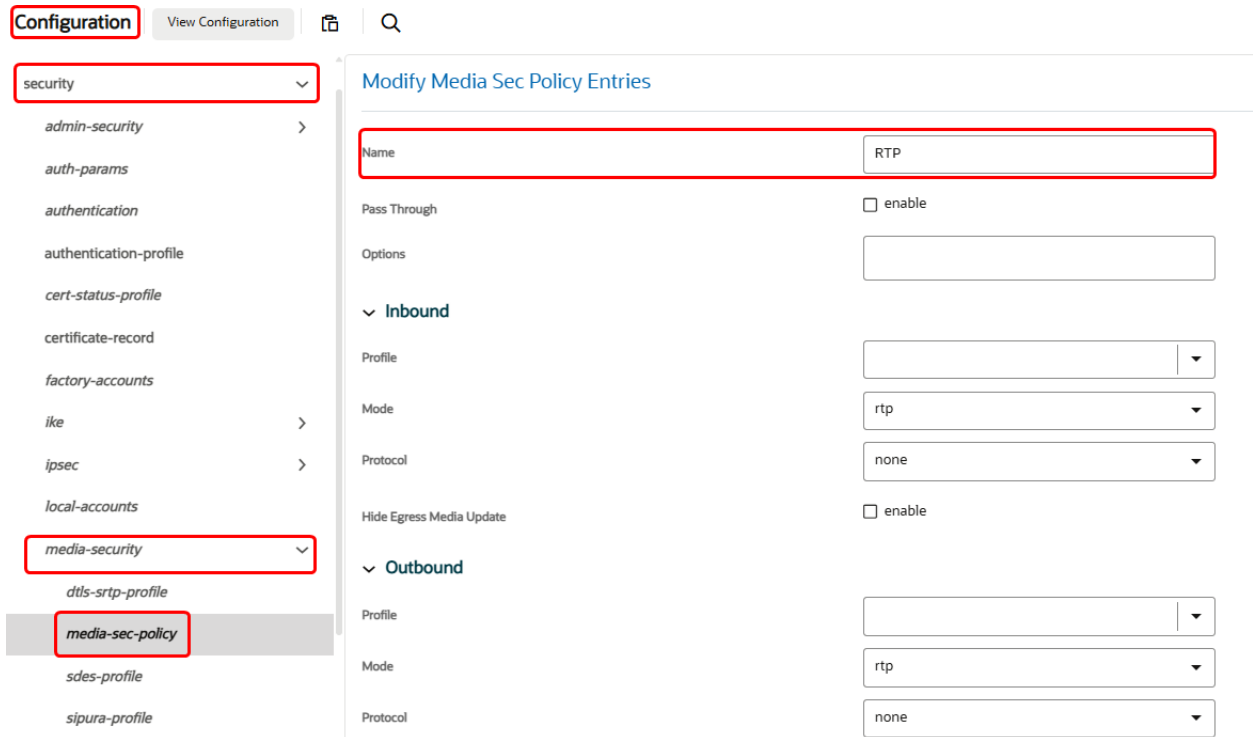


Figure 51: Media Security Policy for RTP

- SDES profile created in [Section 7.4.14](#) is associated with Media Security Policy for SRTP below.

**Configuration** View Configuration

media-manager >  
security >  
admin-security >  
auth-params  
authentication  
authentication-profile  
cert-status-profile  
certificate-record  
factory-accounts  
ike >  
ipsec >  
local-accounts  
media-security >  
dtls-srtp-profile  
media-sec-policy  
sdes-profile  
sipura-profile

### Modify Media Sec Policy Entries

Name: SRTP

Pass Through: ☐ enable

Options:

**Inbound**

Profile: SDES  
Mode: srtp  
Protocol: sdes

Hide Egress Media Update: ☐ enable

**Outbound**

Profile: SDES  
Mode: srtp  
Protocol: sdes

**Figure 52: Media Security Policy for SRTP**

## 7.4.15 TLS – Certificate Record

- Certificate Record are configuration elements on Oracle E-SBC which captures information for a TLS certificate such as common-name, key-size etc.
- Navigate to **Configuration** > **security** > **certificate-record**.

### Certificate record for Oracle E-SBC:

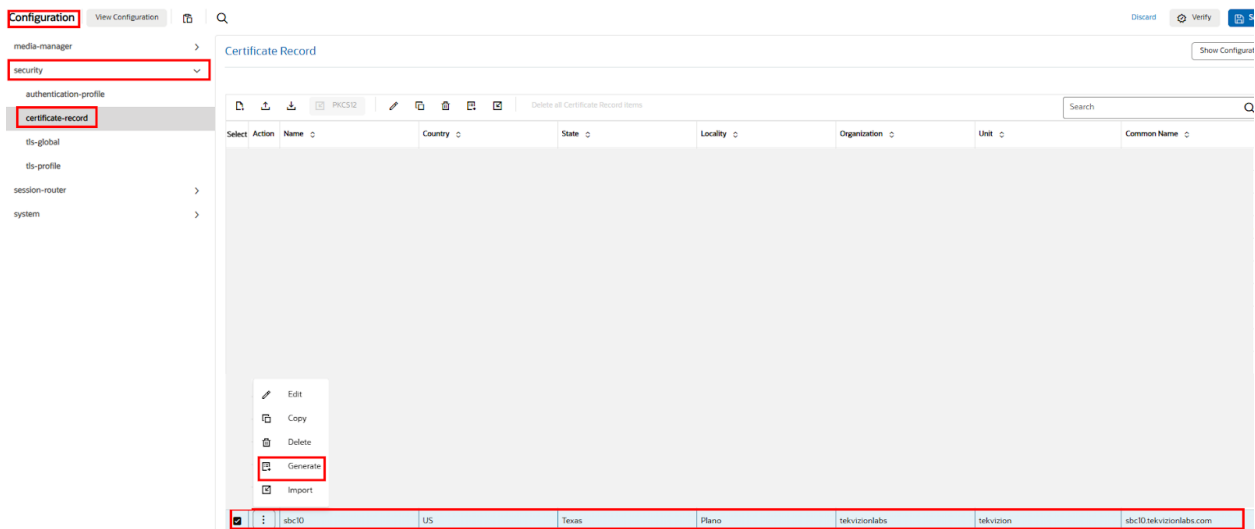
- Create a certificate record for Oracle E-SBC as shown below.

The screenshot displays the Oracle E-SBC Configuration interface. On the left, a navigation tree shows the hierarchy: Configuration > security > certificate-record. The main area is titled 'Modify Certificate Record' and contains the following fields:

|                         |                                            |
|-------------------------|--------------------------------------------|
| Name                    | sbci0                                      |
| Country                 | US                                         |
| State                   | Texas                                      |
| Locality                | Plano                                      |
| Organization            | tekvisionlabs                              |
| Unit                    | tekvision                                  |
| Common Name             | sbci0.tekvisionlabs.com                    |
| Key Size                | 2048                                       |
| Alternate Name          |                                            |
| Trusted                 | <input checked="" type="checkbox"/> enable |
| Key Usage List          | digitalSignature x keyEncipherment x       |
| Extended Key Usage List | serverAuth x clientAuth x                  |
| Key Algor               | rsa                                        |

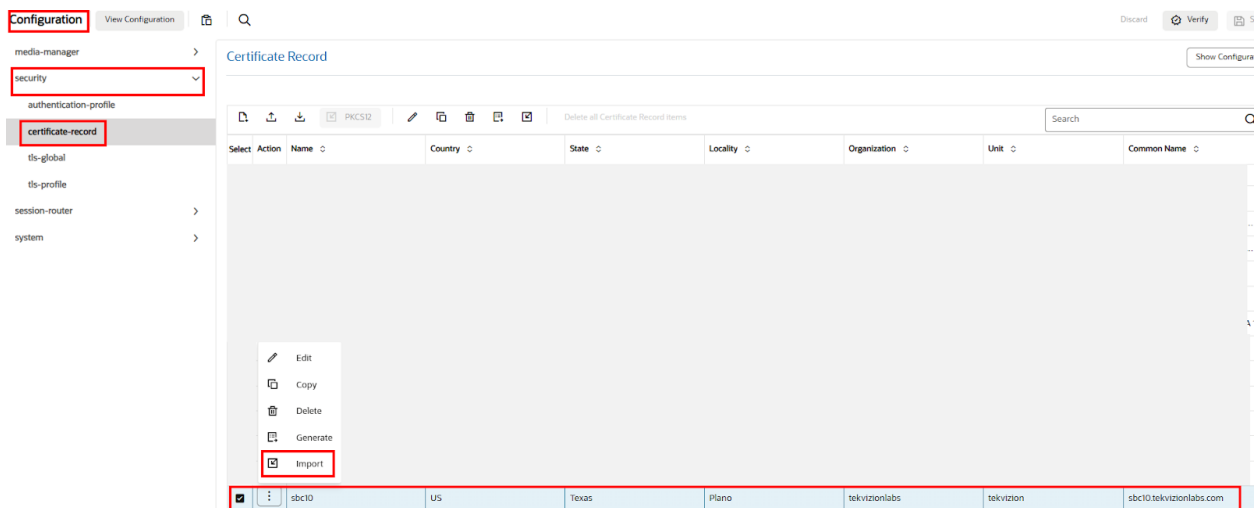
**Figure 53: Create Certificate Record for Oracle E-SBC**

- Select the Certificate record and Click Generate icon to generate CSR.



**Figure 54: Generate Certificate Record for Oracle E-SBC**

- Get the CSR signed by respective approved CAs and further uploaded by clicking Import to import the signed certificate.



**Figure 55: Import Certificate Record for Oracle E-SBC**

- Import the root certificate stored in the local machine and click Import as shown below.

**Import Certificate**

Format: try-all

Import Method: ☒ File ☐ Paste

Certificate File: Upload 9c... 7.pem

Import Cancel

**Figure 56: Import Certificate Record for Oracle E-SBC**

## Certificate record for Google Root CA:

- Visit Google certificate link via <https://pki.goog/roots.pem> and download the roots PEM file.
- Open the PEM file using notepad and copy the certificate under label "GTS Root R1"
- Create a certificate record GTS Root R1 for Google CES.

**Configuration** View Configuration

media-manager >  
security >  
authentication-profile  
**certificate-record**  
tls-global  
tls-profile  
session-router >  
system >

### Modify Certificate Record

Name: GTS\_Root\_R1

Country: US

State: MA

Locality: Burlington

Organization: Engineering

Unit:

Common Name:

Key Size: 2048

Alternate Name:

Trusted: ☒ enable

Key Usage List: digitalSignature x keyEncipherment x

Extended Key Usage List: serverAuth x

Key Algor: rsa

Digest Algor: sha256

Figure 57: Create Certificate Record for Google GTS Root R1 certificate

- Right click on the Certificate Record and Click Import.

**Configuration** View Configuration

media-manager >  
security >  
authentication-profile  
**certificate-record**  
tls-global  
tls-profile  
session-router >  
system >

### Certificate Record

Discard Verify Show Configuration

Select Action Name Country State Locality Organization Unit Common Name

|                                     |          |             |    |       |            |               |           |                                     |
|-------------------------------------|----------|-------------|----|-------|------------|---------------|-----------|-------------------------------------|
| <input checked="" type="checkbox"/> | ...      | GTS_Root_R1 | US | MA    | Burlington | Engineering   |           |                                     |
| <input type="checkbox"/>            | Edit     | potCAGOOGL  | us | Texas | Plano      | tekvisionlabs | Tekvision |                                     |
| <input type="checkbox"/>            | Copy     | ot_CA_G2    | US | TX    | Plano      | Tekvisionlabs |           | Go Daddy Root Certificate Auth...   |
| <input type="checkbox"/>            | Delete   | cure_CA_G2  | US | TX    | Plano      | Tekvisionlabs |           | Go Daddy Secure Certificate Auth... |
| <input type="checkbox"/>            | Generate | ICA         | US | Texas | Plano      | tekvisionlabs | tekvision |                                     |
| <input type="checkbox"/>            | Import   |             | US | MA    | Burlington | Engineering   |           |                                     |
| <input type="checkbox"/>            |          |             | US | TX    | Plano      | Tekvisionlabs |           | IdenTrust Commercial Root CA 1      |

Figure 58: Import Google GTS Root R1 certificate

- Import the root certificate stored in the local machine and click Import as shown below.

**Import Certificate**

Format: try-all

Import Method: ☒ File ☐ Paste

Certificate File:  GTS\_Root\_R1.pem

**Figure 59: Import Google GTS Root R1 certificate (Cont.)**

- Similarly create other certificate records for the Oracle E-SBC leaf certificate and the Certificate Authority Root certificate, ensuring the entire certificate chain from leaf to root is present as shown below. The following certificate-records are required on the Oracle E-SBC to connect with Google CES.

| Select                   | Action | Name                 | Country | State | Locality   | Organization  | Unit | Common Name                      |
|--------------------------|--------|----------------------|---------|-------|------------|---------------|------|----------------------------------|
| <input type="checkbox"/> | :      | GTS_Root_R1          | US      | MA    | Burlington | Engineering   |      |                                  |
| <input type="checkbox"/> | :      | GoDaddy_Root_CA_G2   | US      | TX    | Plano      | Tekvizionlabs |      | Go Daddy Root Certificate Aut... |
| <input type="checkbox"/> | :      | GoDaddy_Secure_CA_G2 | US      | TX    | Plano      | Tekvizionlabs |      | Go Daddy Secure Certificate A... |

**Figure 60: Certificate Records**

### 7.4.16 TLS – TLS Profile

- A TLS profile configuration on the Orace E-SBC allows for specific certificates to be assigned.
- Navigate to **Configuration** > **security** > **tls-profile**
- Create a TLS profile for Google CES as shown below.

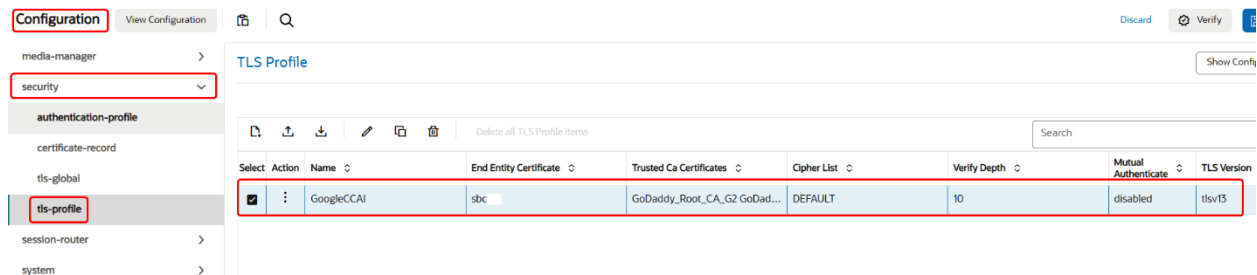


Figure 61: TLS Profile for Google CES

- Intermediate Certificates and Google GTS Root R1 certificate is added for TLS exchange.

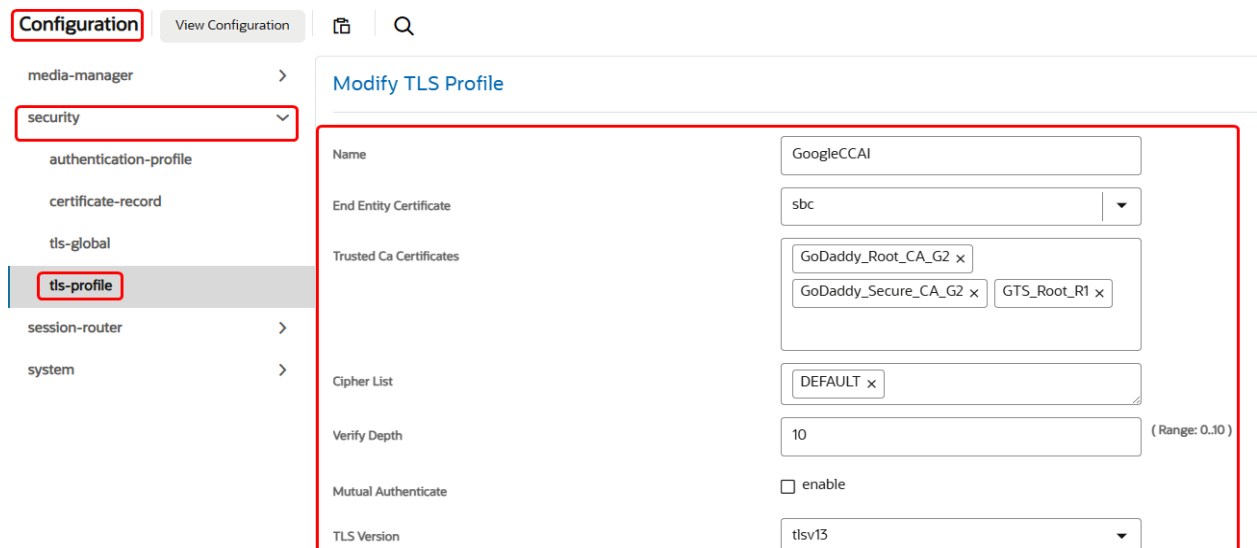
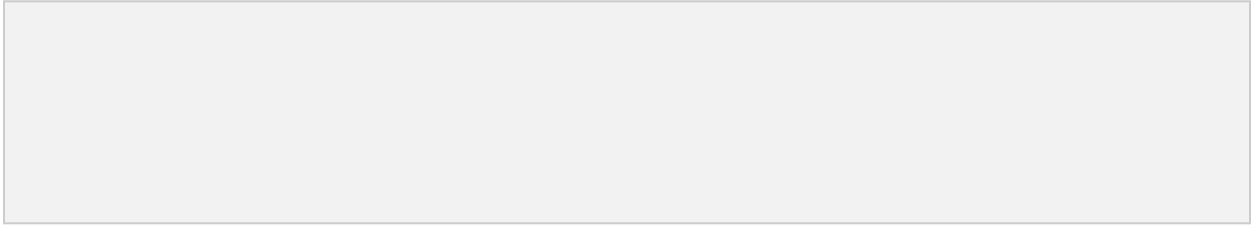


Figure 62: TLS Profile for Google CES (Cont.)

### 7.4.17 Session Timer

- Navigate to **Configuration** > **session-router** > **session-timer-profile**.
- Configure session timer for Google CES as shown below.



**Figure 63: Session Timer**

## 7.4.18 SIP Interface

- Navigate to **Configuration** ▢ **session-router** ▢ **sip-interface**.

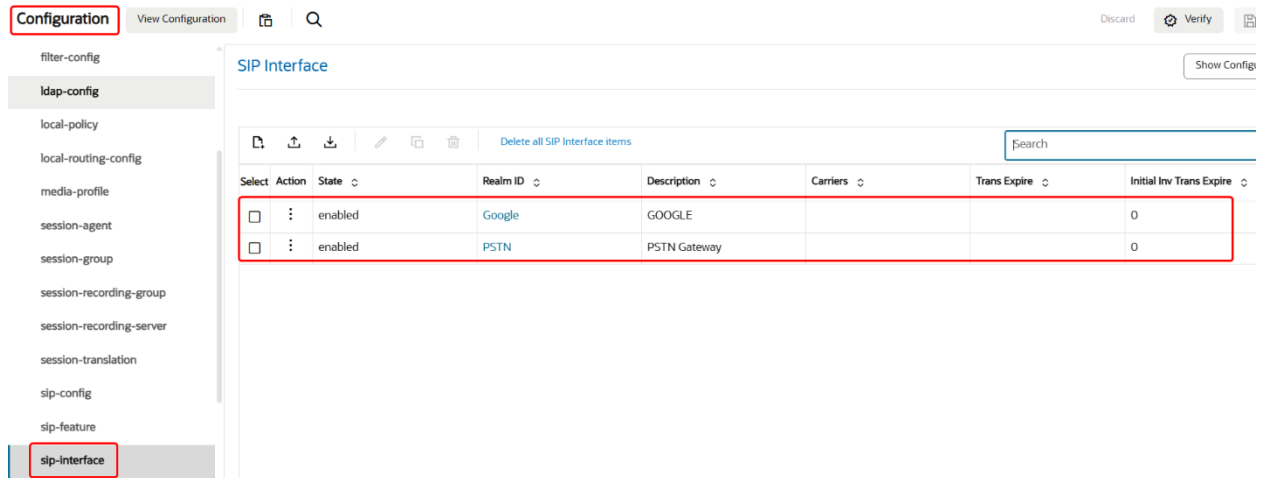


Figure 64: SIP Interface

- Create SIP interface towards PSTN Gateway by adding SIP Ports as shown below.

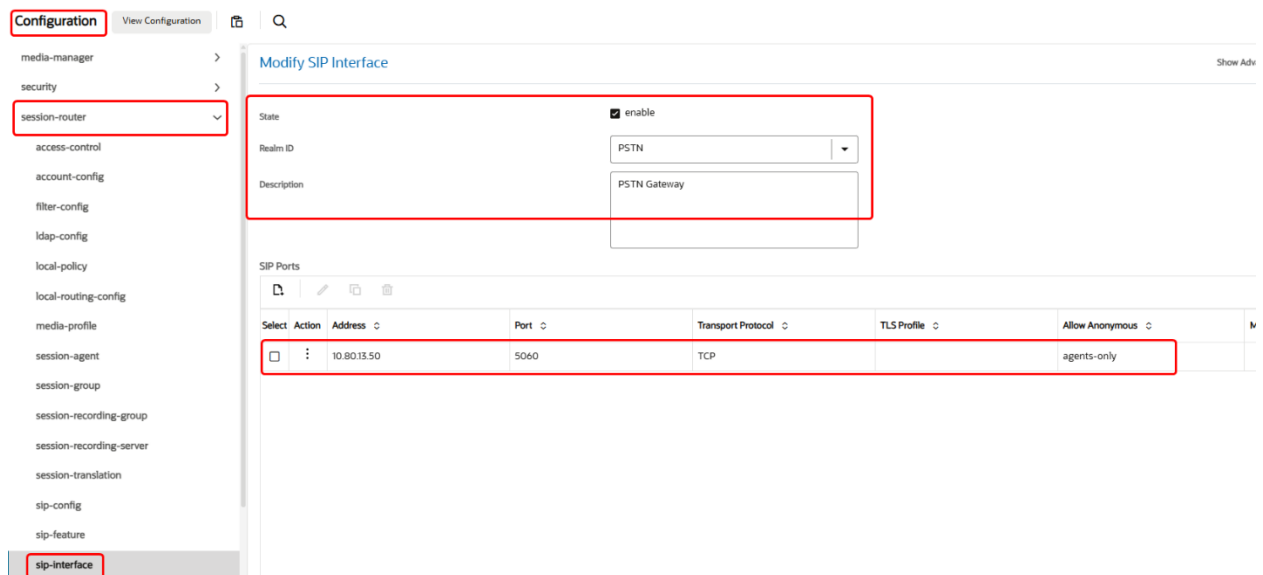


Figure 65: SIP Interface for PSTN Gateway

Configuration

View Configuration

Q

media-manager >

security >

session-router ▾

access-control

account-config

filter-config

ldap-config

local-policy

local-routing-config

media-profile

session-agent

session-group

session-recording-group

session-recording-server

session-translation

sip-config

sip-feature

sip-interface

Modify SIP Interface

Initial Inv Trans Expire

0

( Range: 0..2147473 )

Session Max Life Limit

0

Proxy Mode

Redirect Action

Nat Traversal

none

Nat Interval

30

( Range: 1..999999999 )

TCP Nat Interval

90

( Range: 0..999999999 )

Registration Caching

☒ enable

Min Reg Expire

300

( Range: 0..999999999 )

Registration Interval

3600

( Range: 1..999999999 )

Route To Registrar

☒ enable

Secured Network

☐ enable

Uri Fqdn Domain

Options

Figure 66: SIP Interface for PSTN Gateway (Cont.)

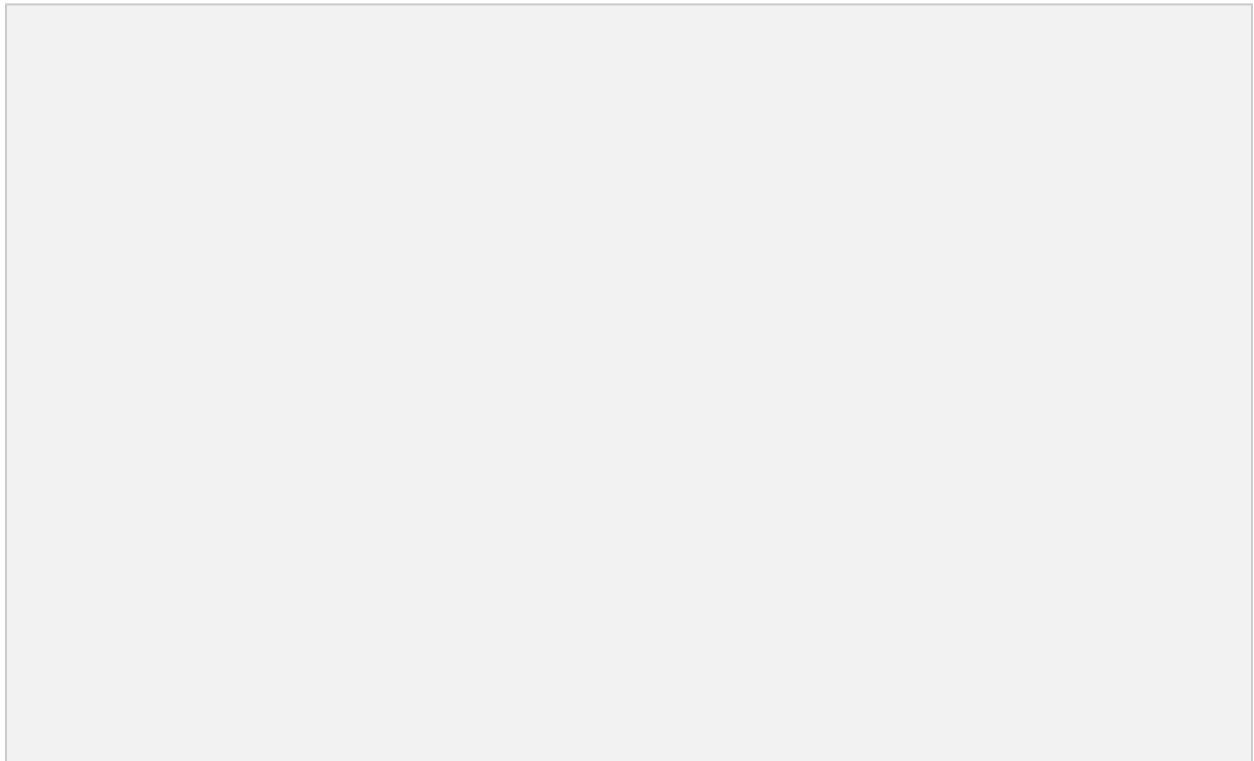
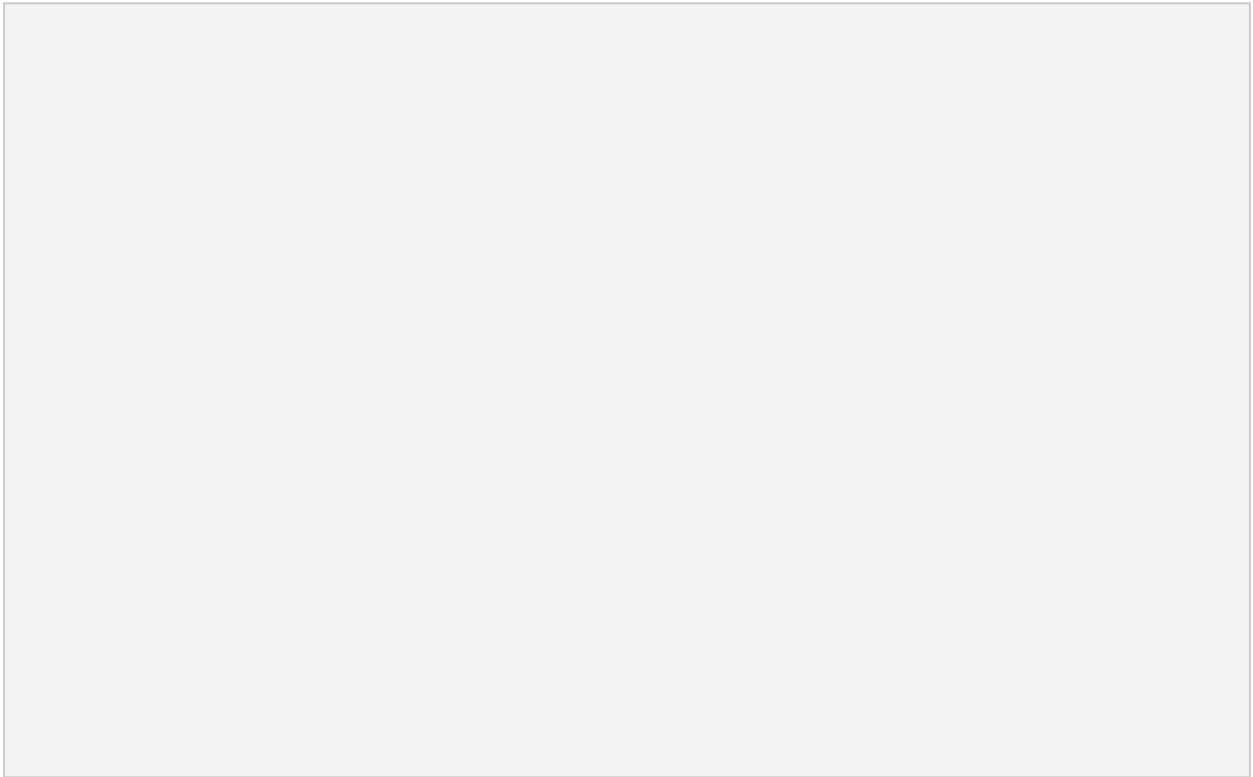
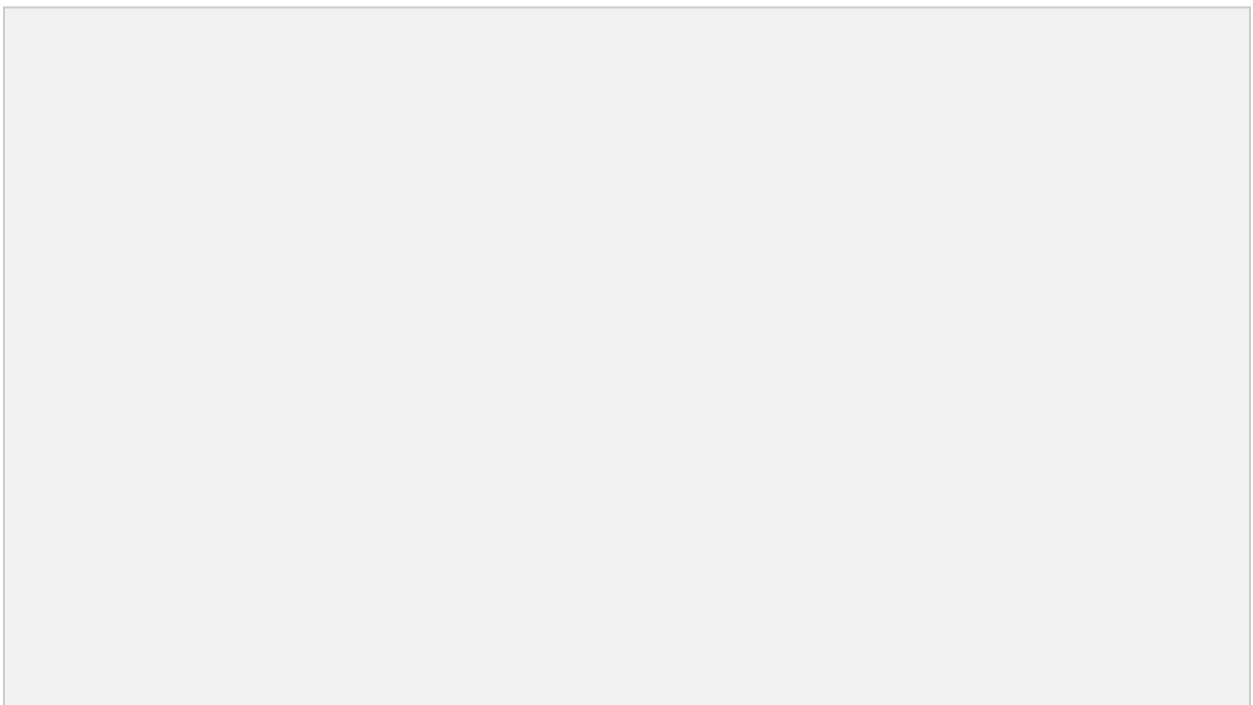


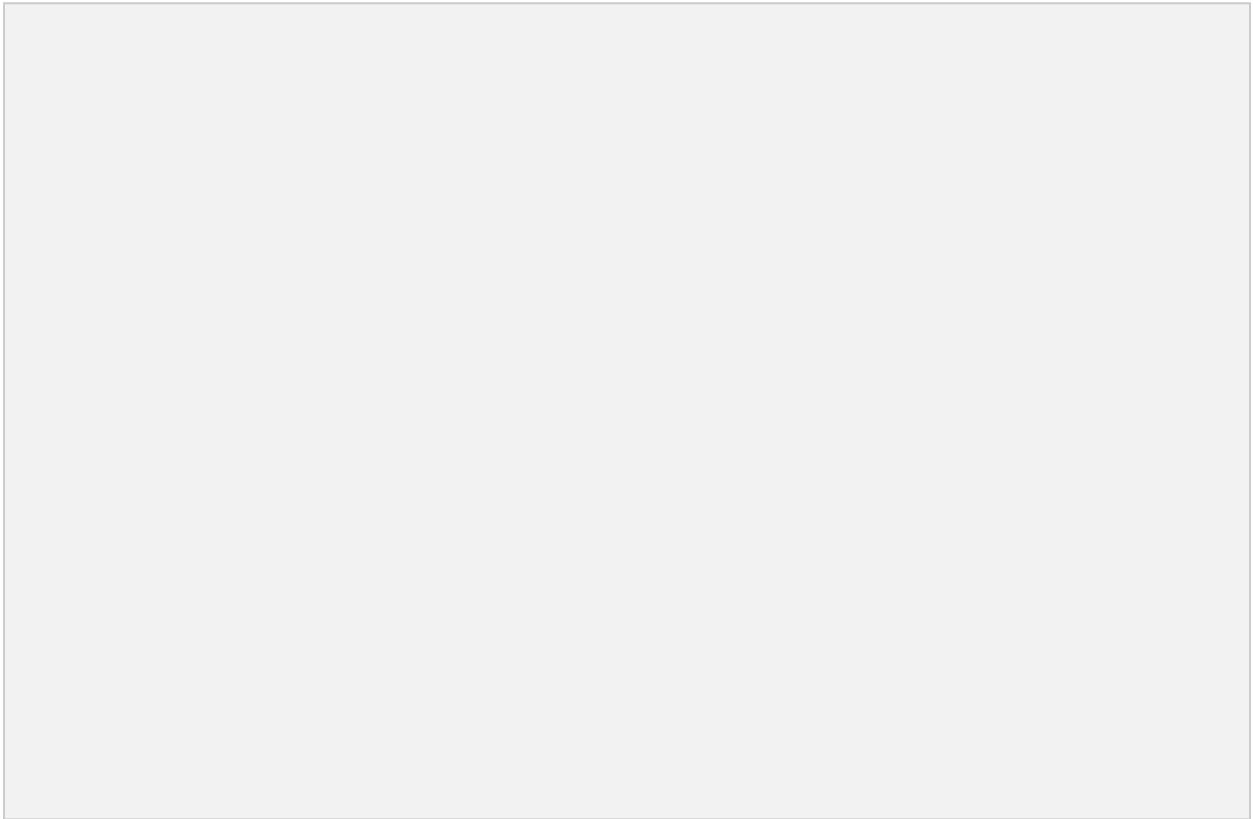
Figure 67: SIP Interface for PSTN Gateway (Cont.)



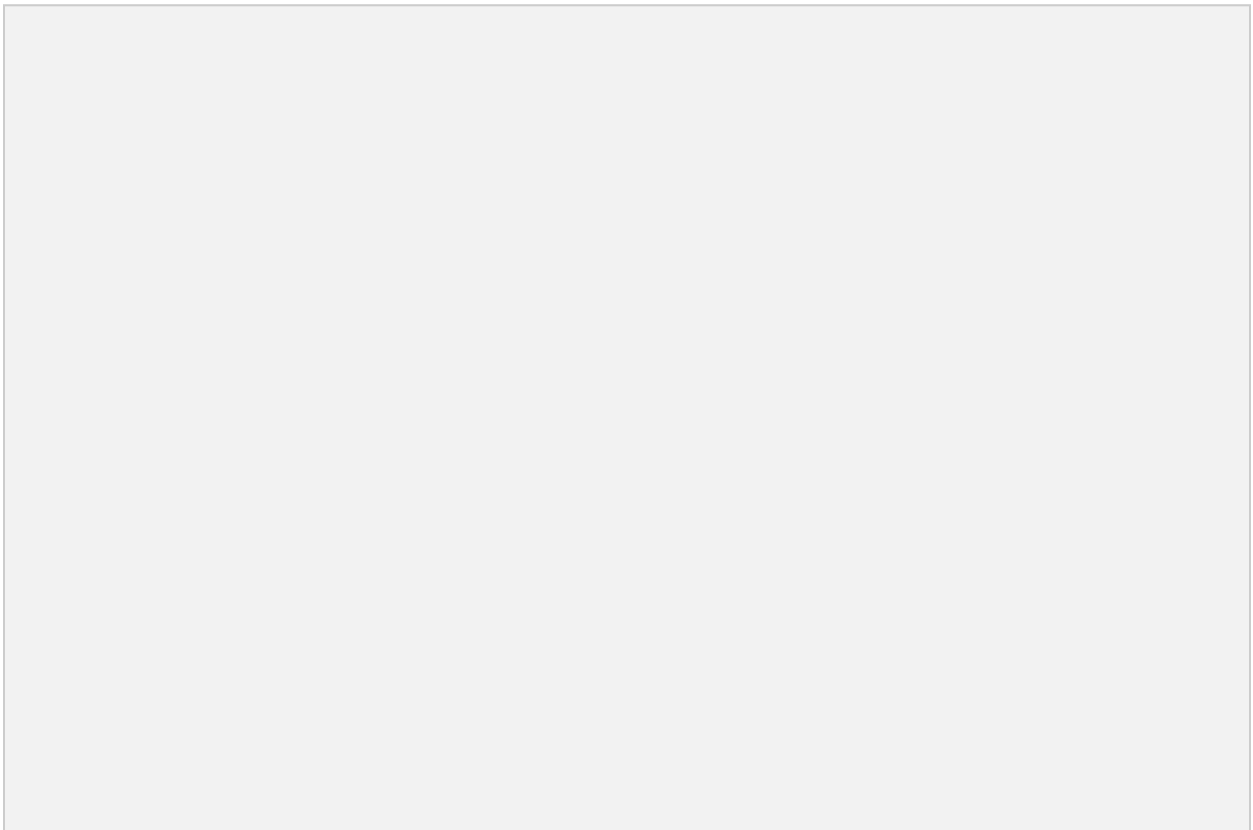
**Figure 68: SIP Interface for PSTN Gateway (Cont.)**



**Figure 69: SIP Interface for PSTN Gateway (Cont.)**

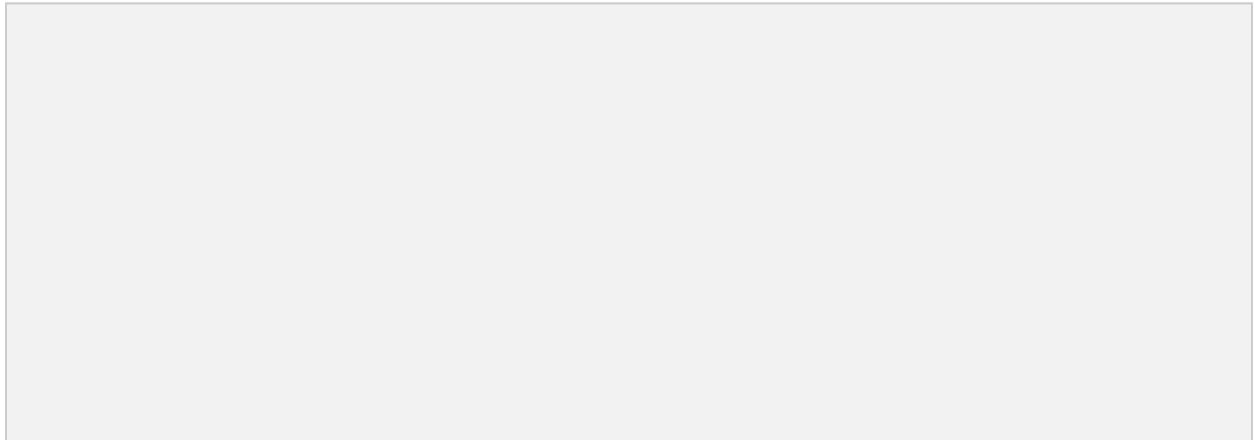


**Figure 70: SIP Interface for PSTN Gateway (Cont.)**

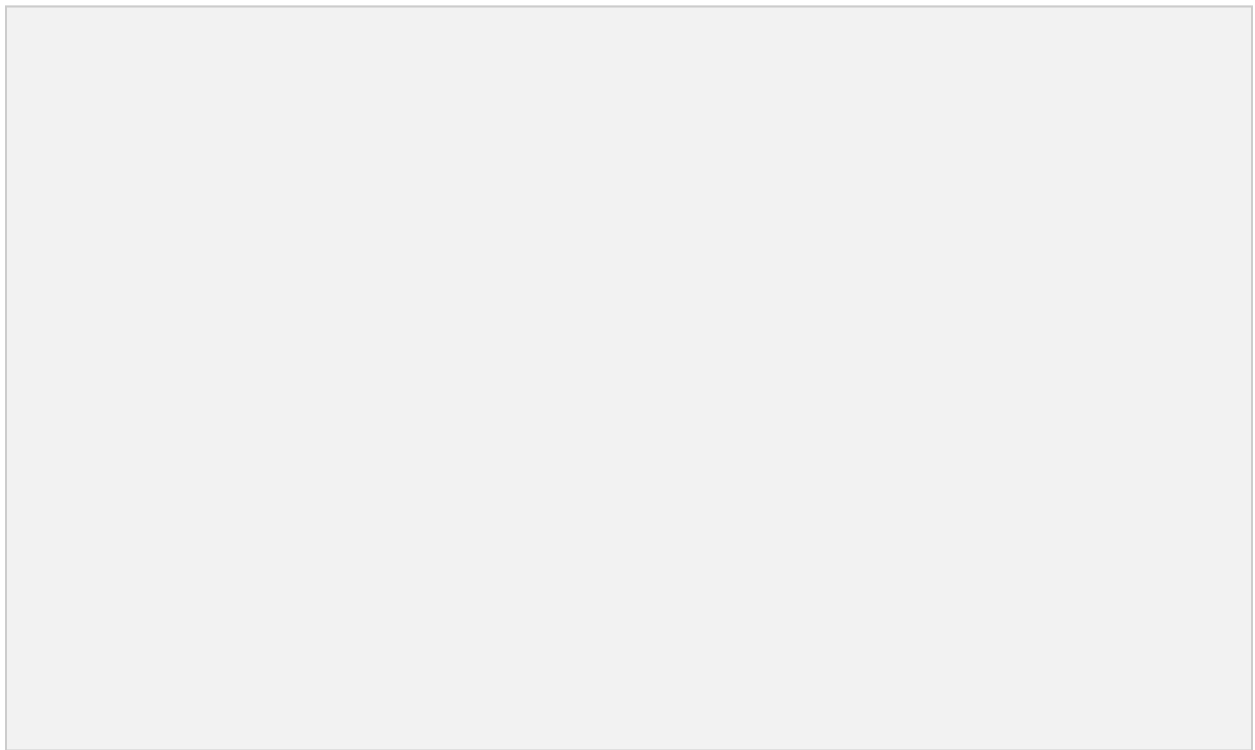


**Figure 71: SIP Interface for PSTN Gateway (Cont.)**

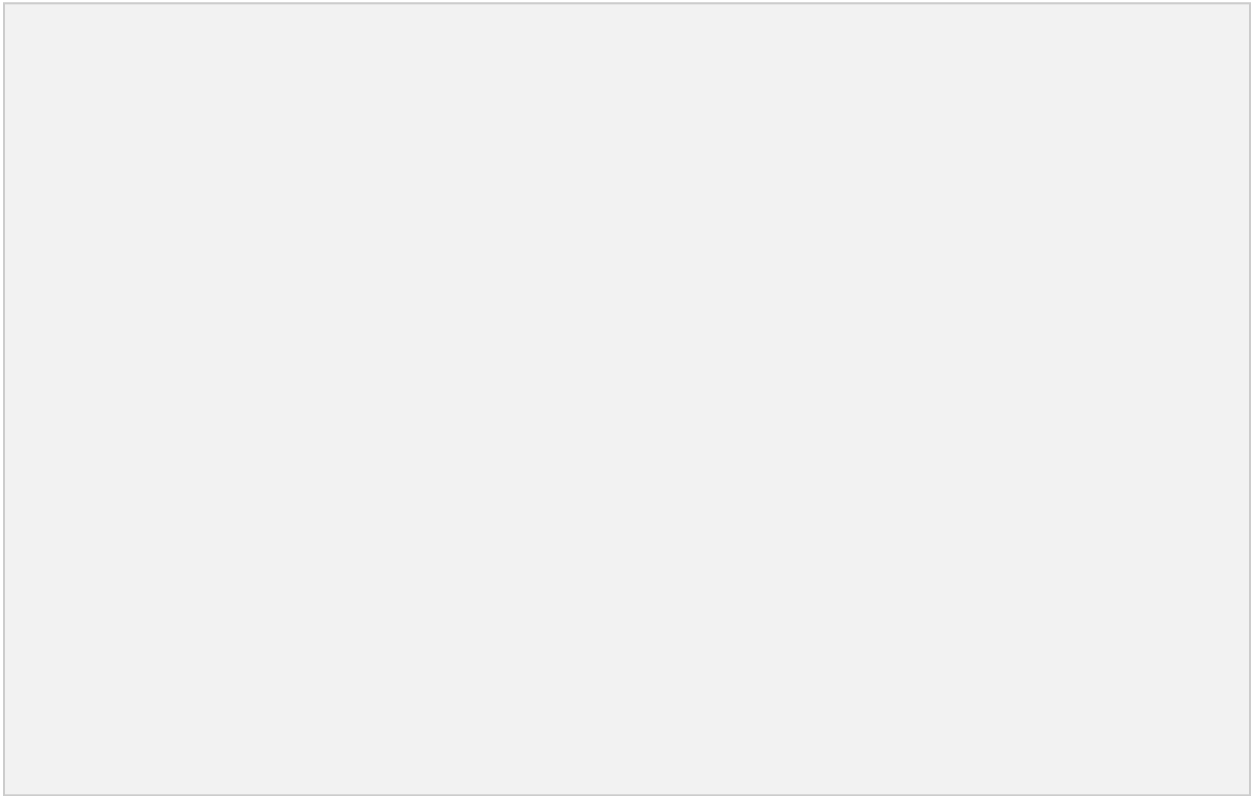
- Create SIP interface towards Google CES by adding SIP Ports as shown below.



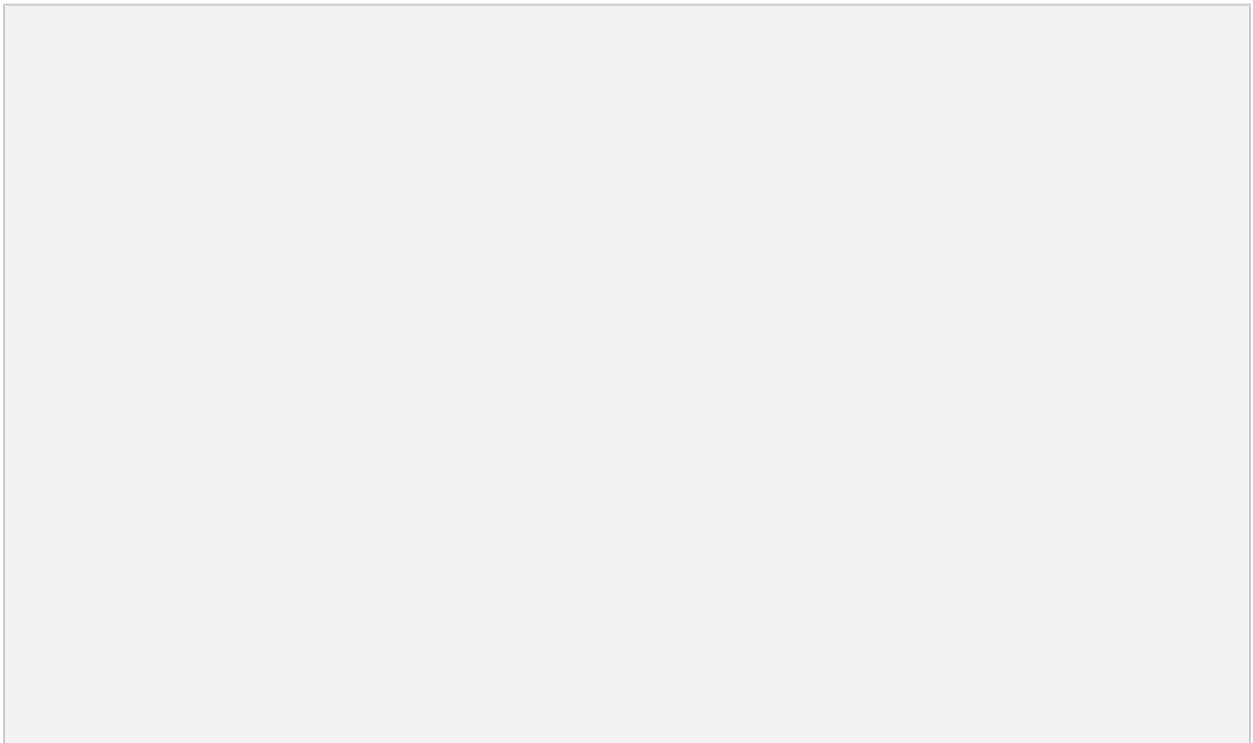
**Figure 72: SIP Interface for Google CES**



**Figure 73: SIP Interface for Google CES (Cont.)**



**Figure 74: SIP Interface for Google CES (Cont.)**



**Figure 75: SIP Interface for Google CES (Cont.)**

Configuration

View Configuration

media-manager

>

security

>

session-router

▼

access-control

account-config

filter-config

ldap-config

local-policy

local-routing-config

media-profile

session-agent

session-group

session-recording-group

session-recording-server

session-translation

sip-config

sip-feature

sip-interface

sip-manipulation

sip-monitoring

translation-rules

Modify SIP Interface

TCP Conn Dereg

0

(Range: 0.999999999)

Kpml Interworking

☐ enable

Kpml2833 lwf On Hairpin

☐ enable

Msrp Delay Egress Bye

☐ enable

Send 380 Response

Pcscf Restoration

Session Timer Profile

SessionTimer

▼

Session Recording Server

Session Recording Required

☐ enable

Service Tag

Reg Cache Route

☐ enable

Diversion Info Mapping Mode

none

▼

Atcf Icsi Match

SIP Recursion Policy

▼

Asymmetric Preconditions

☐ enable

Asymmetric Preconditions Mode

send-with-nodelay

▼

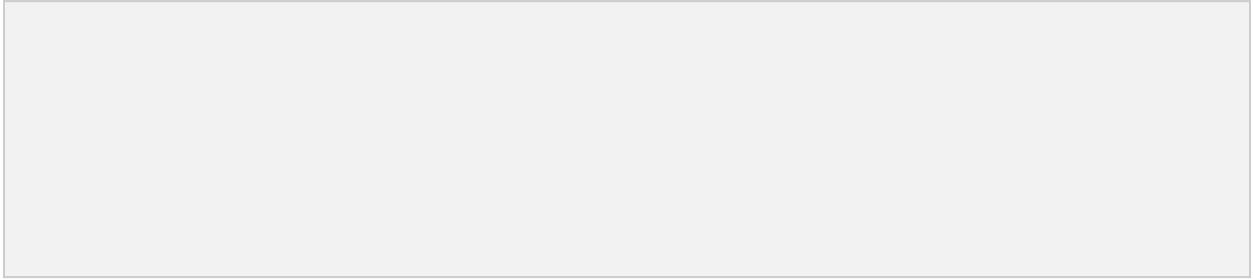
Figure 76: SIP Interface for Google CES (Cont.)

Figure 77: SIP Interface for Google CES (Cont.)

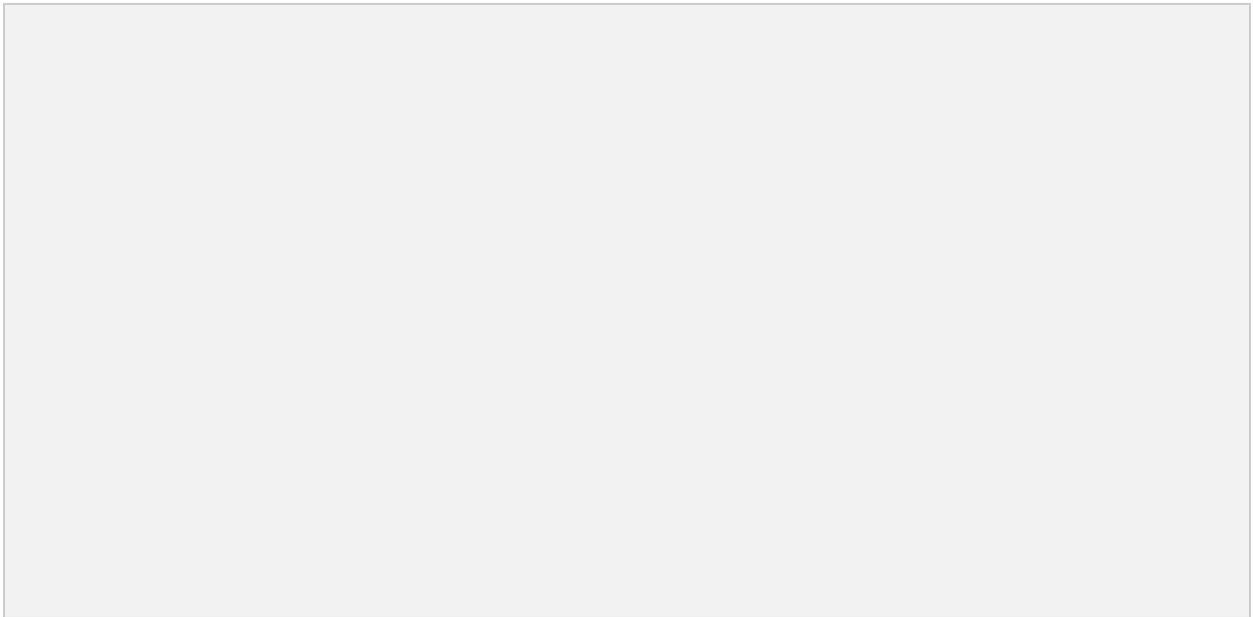
#### 7.4.19 Session Agent

- Session-agents are config elements which are trusted agents which can send/receive traffic from the Oracle E-SBC with direct access to trusted data path.
- Navigate to **Configuration** ▢ **session-router** ▢ **session-agent**.
- Configure Session Agent for PSTN Gateway Google CES.

**Configure the Session Agent for Google CES as shown below.**



**Figure 78: Session Agent**



**Figure 79: Session Agent for Google CES**

Configuration

View Configuration

Q

security

session-router

access-control

account-config

filter-config

ldap-config

local-policy

local-routing-config

media-profile

session-agent

session-group

session-recording-group

session-recording-server

session-translation

sip-config

sip-feature

sip-interface

sip-manipulation

sip-monitoring

translation-rules

Modify Session Agent

Associated Agents

Constraints

☐ enable

Max Sessions

0

( Range: 0.999999999 )

Max Inbound Sessions

0

( Range: 0.999999999 )

Max Outbound Sessions

0

( Range: 0.999999999 )

Max Burst Rate

0

( Range: 0.999999999 )

Max Inbound Burst Rate

0

( Range: 0.999999999 )

Max Outbound Burst Rate

0

( Range: 0.999999999 )

Max Sustain Rate

0

( Range: 0.999999999 )

Max Inbound Sustain Rate

0

( Range: 0.999999999 )

Max Outbound Sustain Rate

0

( Range: 0.999999999 )

Min Asr

0

( Range: 0.100 )

Cac Trap Threshold

0

( Range: 0.99 )

Session Max Life Limit

0

Time To Resume

0

( Range: 0.999999999 )

Figure 80: Session Agent for Google CES (Cont.)

Figure 81: Session Agent for Google CES (Cont.)

Configuration

View Configuration

security

session-router

access-control

account-config

filter-config

ldap-config

local-policy

local-routing-config

media-profile

session-agent

session-group

session-recording-group

session-recording-server

Modify Session Agent

Options

SPL Options

Media Profiles

In Session Translations

No in session translation list to display. Please add.

Add

Out Session Translations

| Select                   | Action | Out Session Translation Id | State   |
|--------------------------|--------|----------------------------|---------|
| <input type="checkbox"/> | :      | addplus1                   | enabled |

Figure 82: Session Agent for Google CES (Cont.)

Configuration

View Configuration

media-manager

security

session-router

access-control

account-config

filter-config

ldap-config

local-policy

local-routing-config

media-profile

session-agent

session-group

session-recording-group

session-recording-server

session-translation

sip-config

sip-feature

sip-interface

sip-manipulation

sip-monitoring

translation-rules

Modify Session Agent

Trust Me

enable

Stop Recurse

Local Response Map

Ping Response

enable

In Manipulationid

Out Manipulationid

Manipulation String

Manipulation Pattern

Trunk Group

Max Register Sustain Rate

0

(Range: 0.999999999)

Invalidate Registrations

enable

Rfc2833 Mode

none

Rfc2833 Payload

0

(Range: 0.96.127)

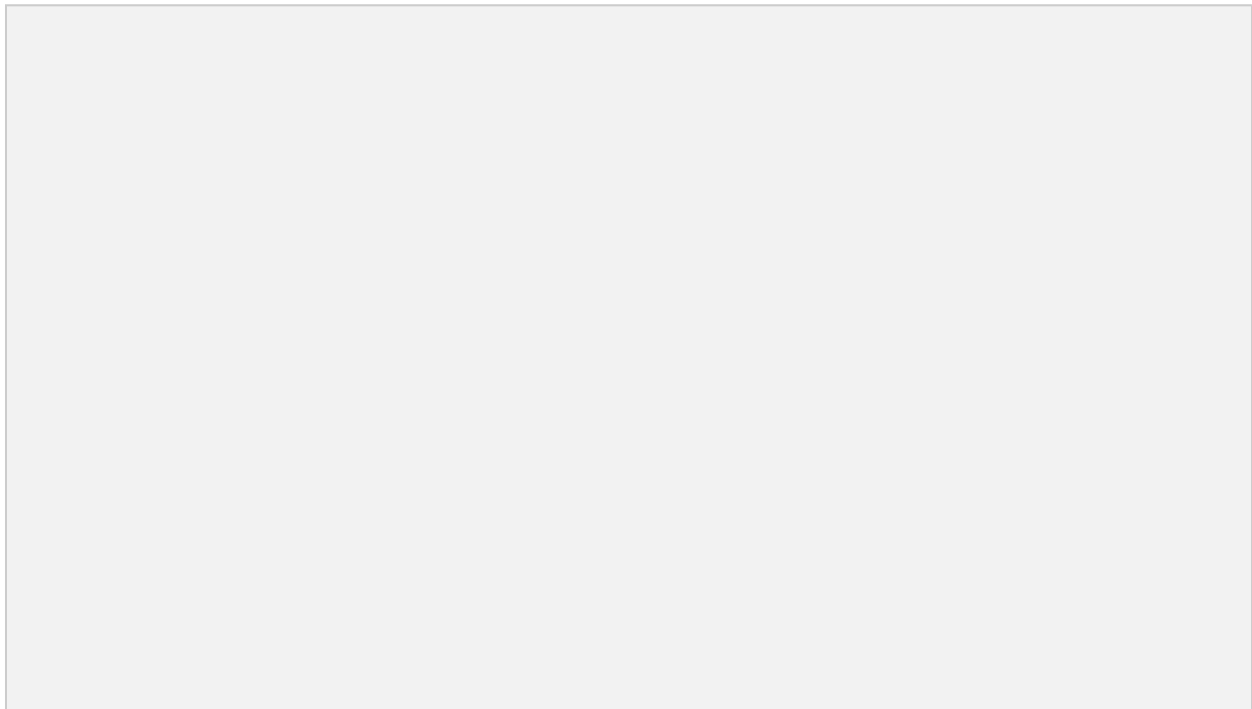
Codec Policy

Emergency Dscp Profile

Refer Call Transfer

disabled

Figure 83: Session Agent for Google CES (Cont.)



**Figure 84: Session Agent for Google CES (Cont.)**

**Configuration** View Configuration

security >

**session-router** v

- access-control
- account-config
- filter-config
- ldap-config
- local-policy
- local-routing-config
- media-profile
- session-agent**
- session-group
- session-recording-group
- session-recording-server
- session-translation
- sip-config
- sip-feature
- sip-interface
- sip-manipulation
- sip-monitoring
- translation-rules

system >

### Modify Session Agent

Auth Attribute

No auth attributes to display. Please add.

[Add](#)

|                            |                                                       |
|----------------------------|-------------------------------------------------------|
| Session Recording Server   | <input type="text"/>                                  |
| Session Recording Required | <input type="checkbox"/> enable                       |
| Hold Refer Reinvite        | <input type="checkbox"/> enable                       |
| Send TCP Fin               | <input type="checkbox"/> enable                       |
| SIP Recursion Policy       | <input type="text"/> v                                |
| Sm Icsi Match For Invite   | <input type="text"/>                                  |
| Sm Icsi Match For Message  | <input type="text"/>                                  |
| Ringback Trigger           | none v                                                |
| Ringback File              | <input type="text"/>                                  |
| Fax Servers                | <input type="text"/>                                  |
| Trigger Oos Alarm          | <input type="checkbox"/> enable                       |
| Static TCP Source Port     | <input type="text" value="0"/> (Range: 0,1025..65535) |

**Figure 85: Session Agent for Google CES (Cont.)**

- Configure the Session agent for PSTN Gateway as shown below.

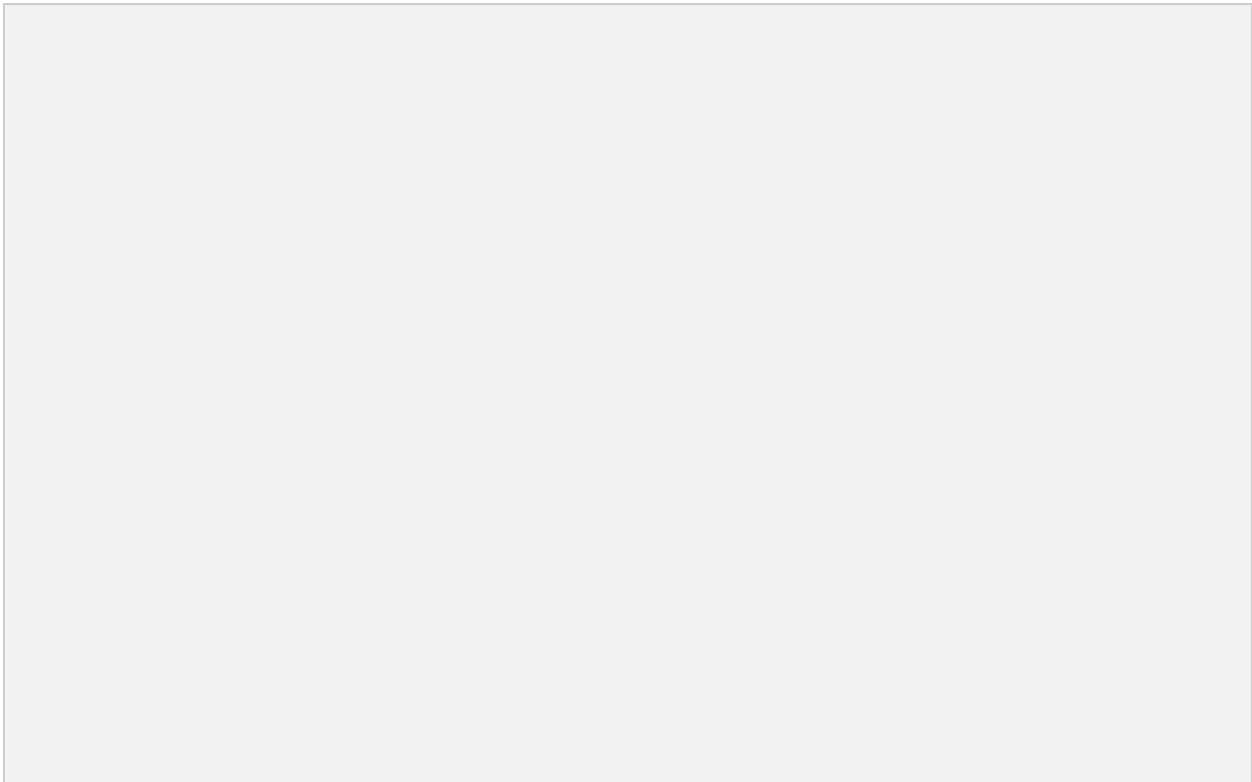


Figure 86: Session Agent for PSTN Gateway

Configuration

View Configuration

Q

security

session-router

access-control

account-config

filter-config

ldap-config

local-policy

local-routing-config

media-profile

session-agent

session-group

session-recording-group

session-recording-server

session-translation

sip-config

sip-feature

sip-interface

sip-manipulation

sip-monitoring

translation-rules

Modify Session Agent

Associated Agents

Constraints

☐ enable

Max Sessions

0

( Range: 0.999999999 )

Max Inbound Sessions

0

( Range: 0.999999999 )

Max Outbound Sessions

0

( Range: 0.999999999 )

Max Burst Rate

0

( Range: 0.999999999 )

Max Inbound Burst Rate

0

( Range: 0.999999999 )

Max Outbound Burst Rate

0

( Range: 0.999999999 )

Max Sustain Rate

0

( Range: 0.999999999 )

Max Inbound Sustain Rate

0

( Range: 0.999999999 )

Max Outbound Sustain Rate

0

( Range: 0.999999999 )

Min Asr

0

( Range: 0.300 )

Cac Trap Threshold

0

( Range: 0.99 )

Session Max Life Limit

0

Time To Resume

0

( Range: 0.999999999 )

Figure 87: Session Agent for PSTN Gateway (Cont.)

Configuration

View Configuration

Q

media-manager>security>session-router∨  
access-control  
account-config  
filter-config  
ldap-config  
local-policy  
local-routing-config  
media-profile  
session-agent  
session-group  
session-recording-group  
session-recording-server  
session-translation  
sip-config  
sip-feature  
sip-interface  
sip-manipulation  
sip-monitoring  
translation-rules

Modify Session Agent

Trust Me☐ enable

Stop Recurse

Local Response Map

Ping Response☒ enable

In Manipulationid

Out Manipulationid

Manipulation String

Manipulation Pattern

Trunk Group

Max Register Sustain Rate0(Range: 0.999999999)

Invalidate Registrations☐ enable

Rfc2833 Modenone

Rfc2833 Payload0(Range: 0.96.127)

Codec Policy

Emergency Dscp Profile

Refer Call Transferdisabled

Figure 88: Session Agent for PSTN Gateway (Cont.)

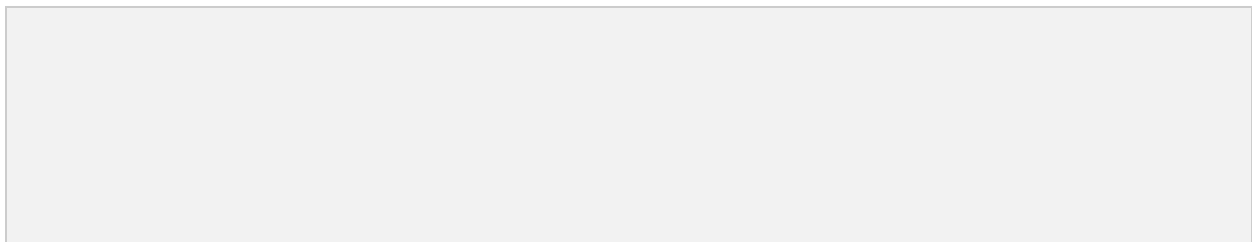
Figure 89: Session Agent for PSTN Gateway (Cont.)

The screenshot shows the 'Configuration' page with a sidebar on the left containing a tree view of configuration categories. The 'session-agent' category is selected and highlighted. The main content area is titled 'Modify Session Agent'. It includes an 'Auth Attribute' section with a message 'No auth attributes to display. Please add.' and an 'Add' button. Below this, there are several configuration options: 'Session Recording Server' (text input), 'Session Recording Required' (checkbox), 'Hold Refer Reinvite' (checkbox), 'Send TCP Fin' (checkbox), 'SIP Recursion Policy' (dropdown menu), 'Sim Icsi Match For Invite' (text input), 'Sim Icsi Match For Message' (text input), 'Ringback Trigger' (dropdown menu), 'Ringback File' (text input), 'Fax Servers' (text input), 'Trigger Oos Alarm' (checkbox), and 'Static TCP Source Port' (text input with a range constraint of 0 to 65535).

**Figure 90: Session Agent for PSTN Gateway (Cont.)**

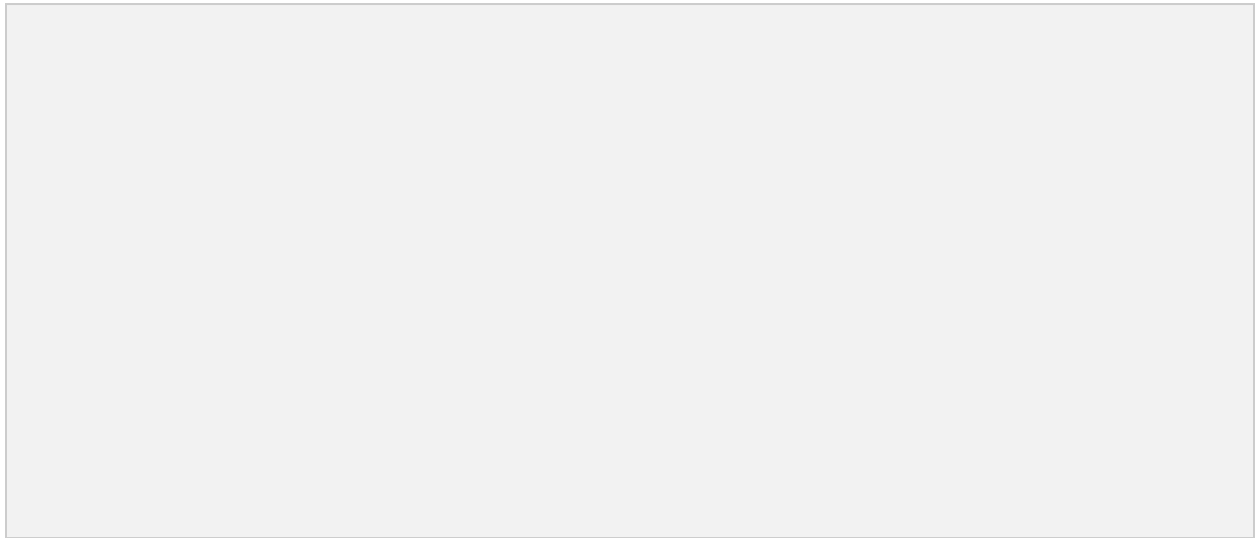
#### 7.4.20 Local Policy

- Local policy config allows for the Oracle E-SBC to route calls from one end of the network to the other based on routing criteria.
- Navigate to **Configuration** > **session-router** > **local-policy**.
- Configure local policy for Google CES and PSTN Gateway as shown below.

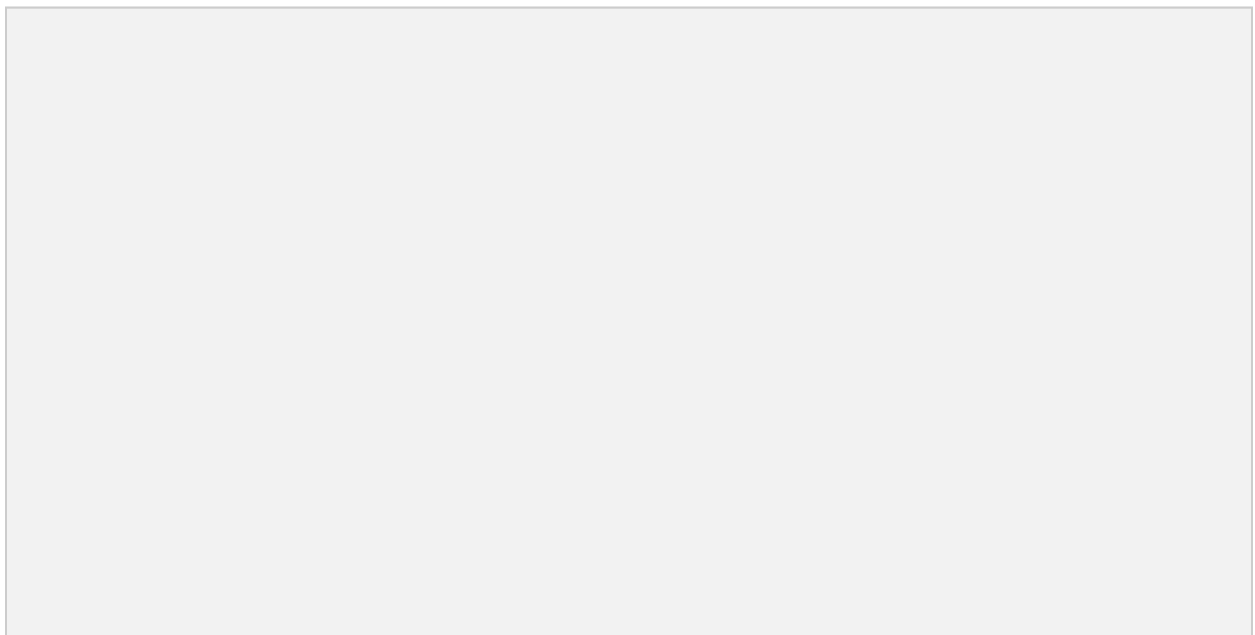


**Figure 91: Local Policy**

- Below Local Policy is used to route calls from PSTN Gateway to Google CES.



**Figure 92: Local Policy routing from PSTN Gateway to Google CES**



**Figure 93: Local Policy routing from PSTN Gateway to Google CES (Cont.)**

- Below Local Policy is used to route calls from Google CES towards PSTN Gateway

configuration

media-manager

security

session-router

access-control

account-config

filter-config

ldap-config

local-policy

local-routing-config

media-profile

session-agent

session-group

session-recording-group

session-recording-server

session-translation

slp-config

View Configuration

Modify Local Policy Entries

From Address

To Address

Source Realm

Description

State

Parallel Forking

Policy Priority

Policy Attributes

Google to PSTN

☒ enable

☐ enable

none

| Select                   | Action      | Next Hop | Realm | Action | Terminate Recursion | Cost | State   | App Protocol | Lookup | Next Key |
|--------------------------|-------------|----------|-------|--------|---------------------|------|---------|--------------|--------|----------|
| <input type="checkbox"/> | <div></div> | 172.16.  | PSTN  | none   | disabled            | 0    | enabled | SIP          | single |          |

Figure 94: Local Policy routing from Google CES to PSTN Gateway

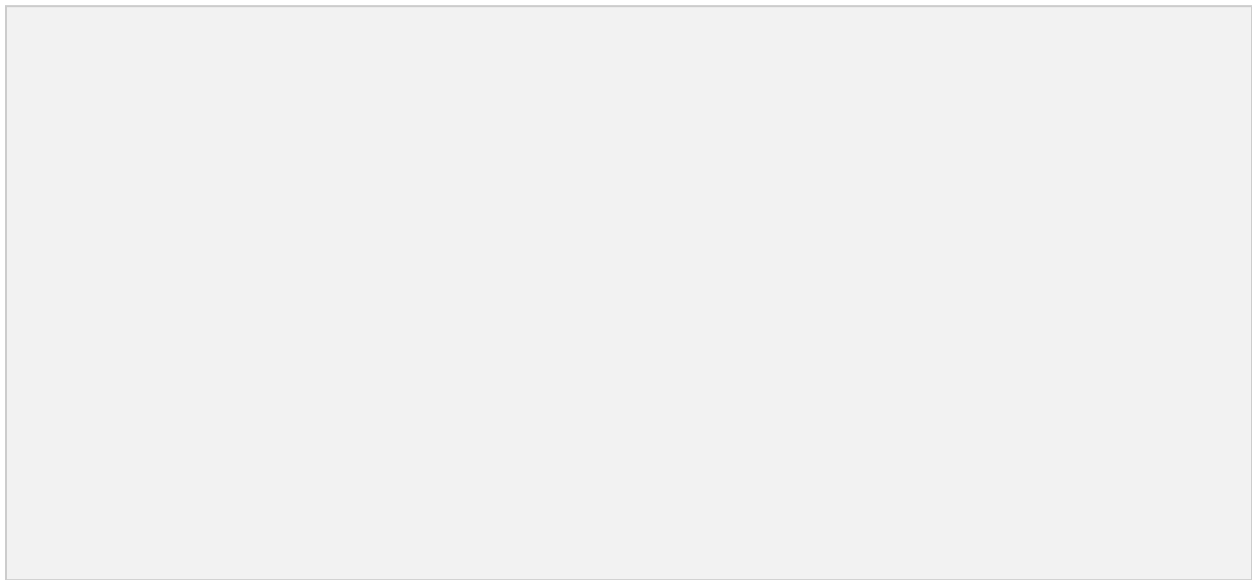
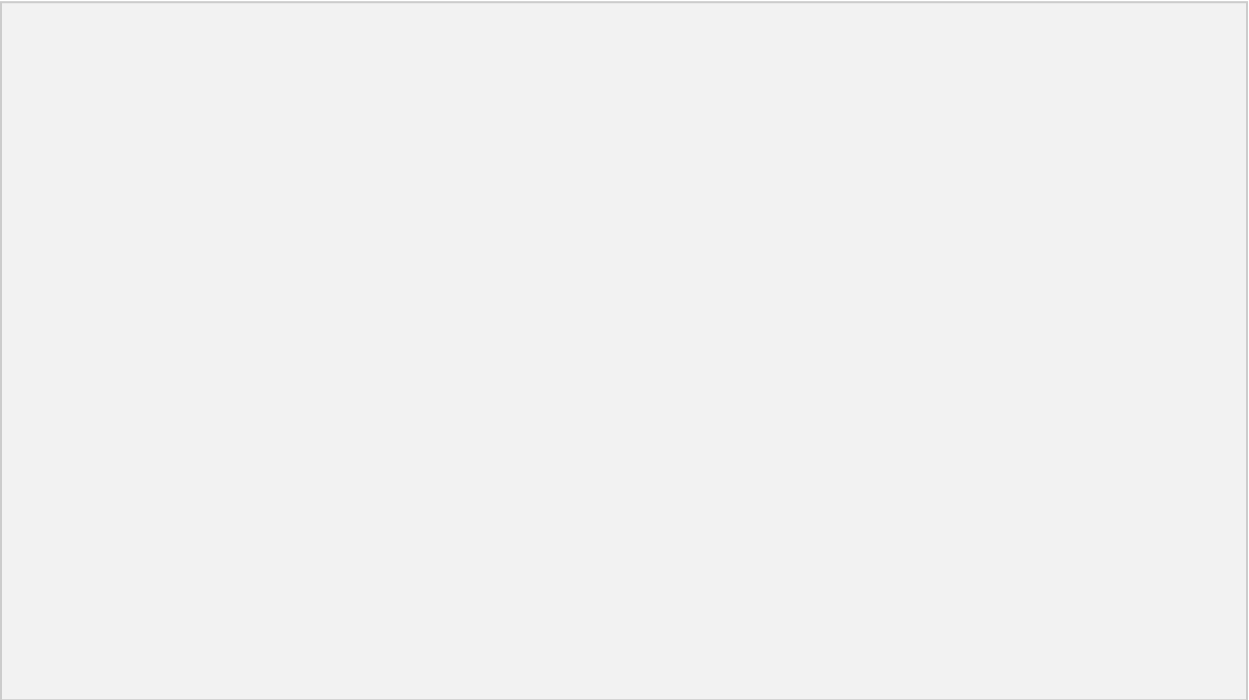


Figure 95: Local Policy routing from Google CES to PSTN Gateway

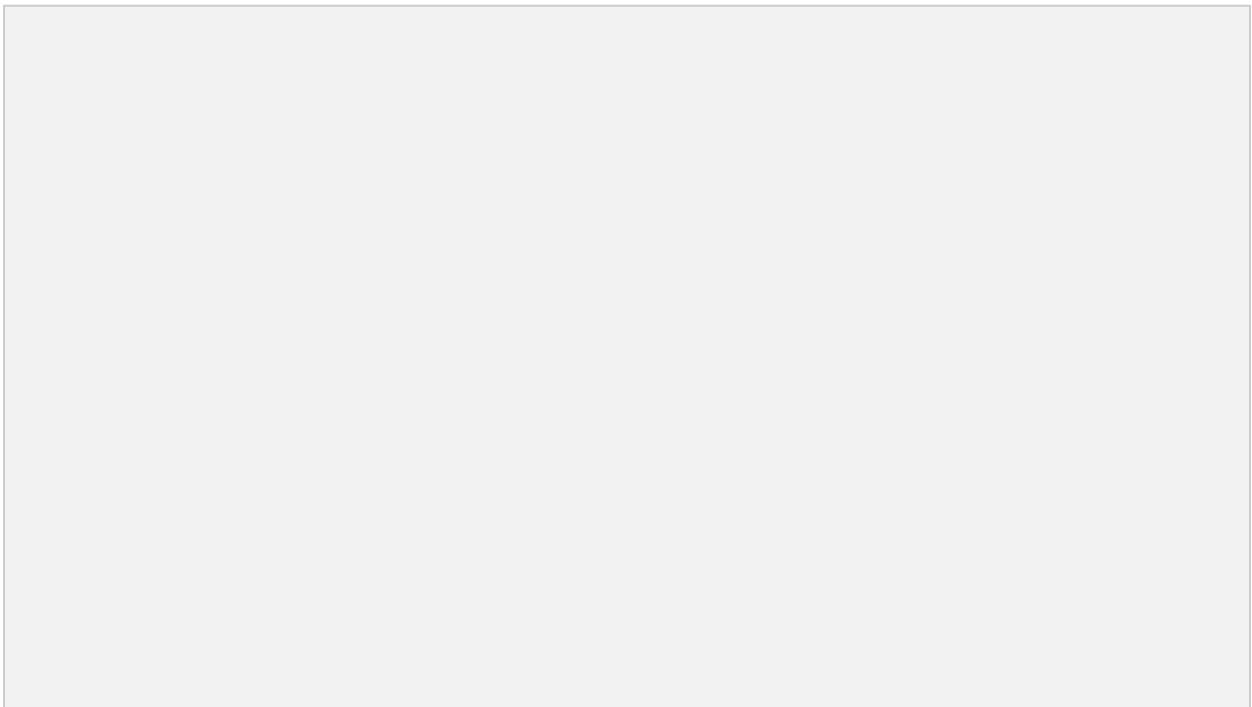
#### 7.4.21 SIP Manipulation

- Navigate to **Configuration** ▢ **session-router** ▢ **sip-manipulation**.
- Configure SIP manipulation towards Google CES as shown below.



**Figure 96: SIP Manipulation towards Google CES**

- Adds a header-rule for Google CES.



**Figure 97: Header rule addition for SIP Manipulation towards Google CES**

- Below header rule is created to change Request-URI host and user parts towards Google CES to us.telephony.goog:5672 and +1314944XXXX.

**Configuration** View Configuration  

media-manager >  
security >  
**session-router** ▾  
access-control  
account-config  
filter-config  
ldap-config  
local-policy  
local-routing-config  
media-profile  
session-agent  
session-group  
session-recording-group  
session-recording-server  
session-translation  
sip-config

Modify Sip manipulation / header rule

Name

Header Name

Action

Comparison Type

Msg Type

Methods

Match Value

New Value

CfgRules

Add ▾     

| Action | Name   | Element type |
|--------|--------|--------------|
| ⋮      | ReqURI | element-rule |
| ⋮      | AddURI | element-rule |

Figure 98: SIP Manipulation towards Google CES Request URI

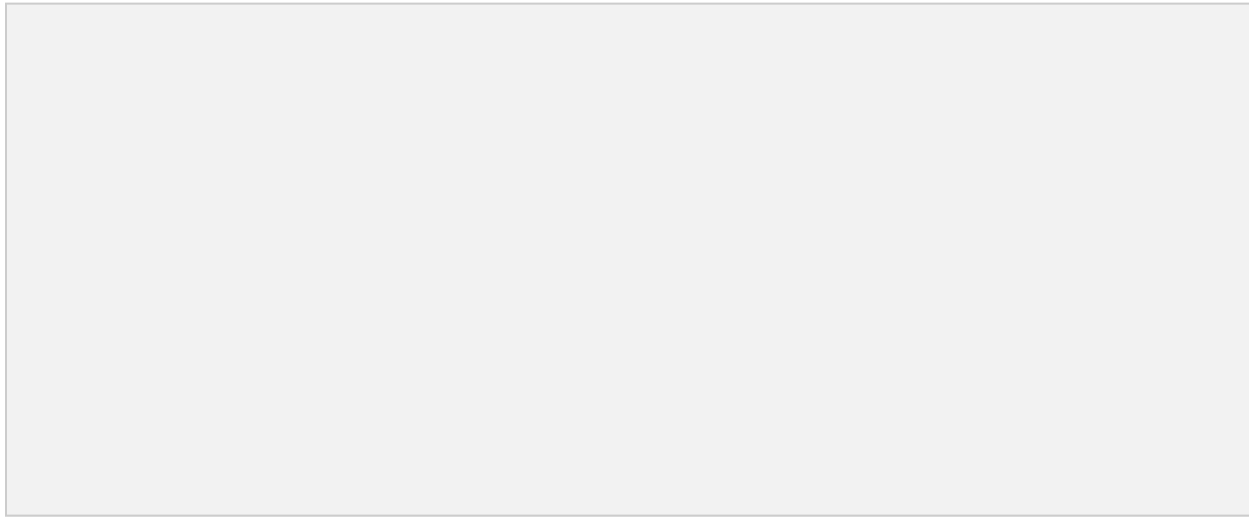
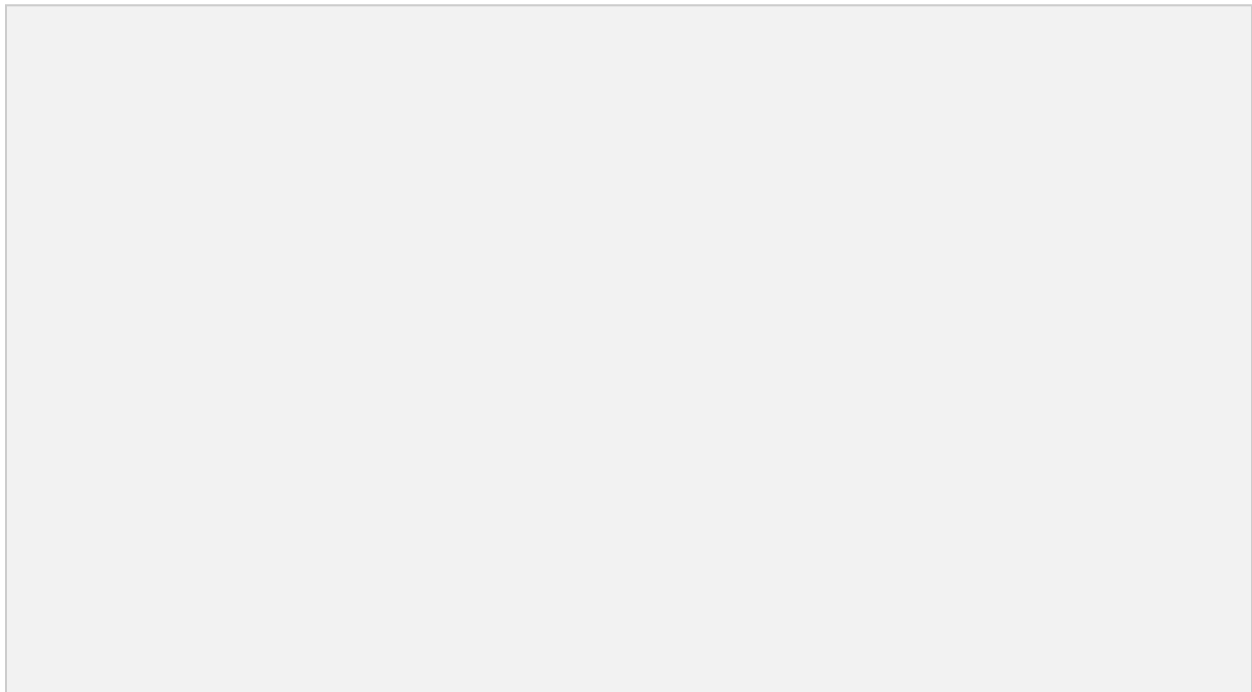


Figure 99: SIP Manipulation towards Google CES change Request URI-host



**Figure 100: SIP Manipulation towards Google CES change Request URI-user**

- Below header rule is created to change TO header host part towards Google CES to IP address of Google CES and user part with Google CES DID.

**Configuration** View Configuration

filter-config  
ldap-config  
local-policy  
**local-routing-config**  
media-profile  
session-agent  
session-group  
session-recording-group  
session-recording-server  
session-translation  
sip-config  
sip-feature  
sip-interface  
**sip-manipulation**  
sip-monitoring  
translation-rules

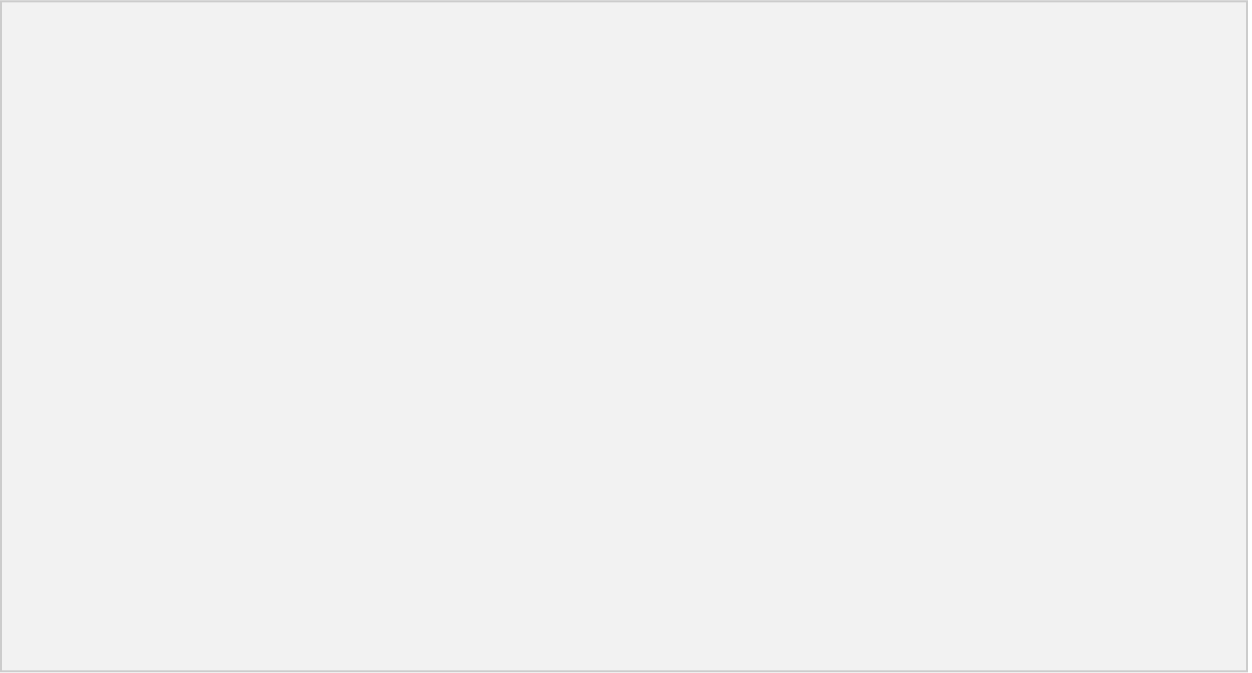
### Modify Sip manipulation / header rule

|                 |                    |
|-----------------|--------------------|
| Name            | changeToURlhost    |
| Header Name     | To                 |
| Action          | manipulate         |
| Comparison Type | pattern-rule       |
| Msg Type        | any                |
| Methods         | INVITE x OPTIONS x |
| Match Value     |                    |
| New Value       |                    |

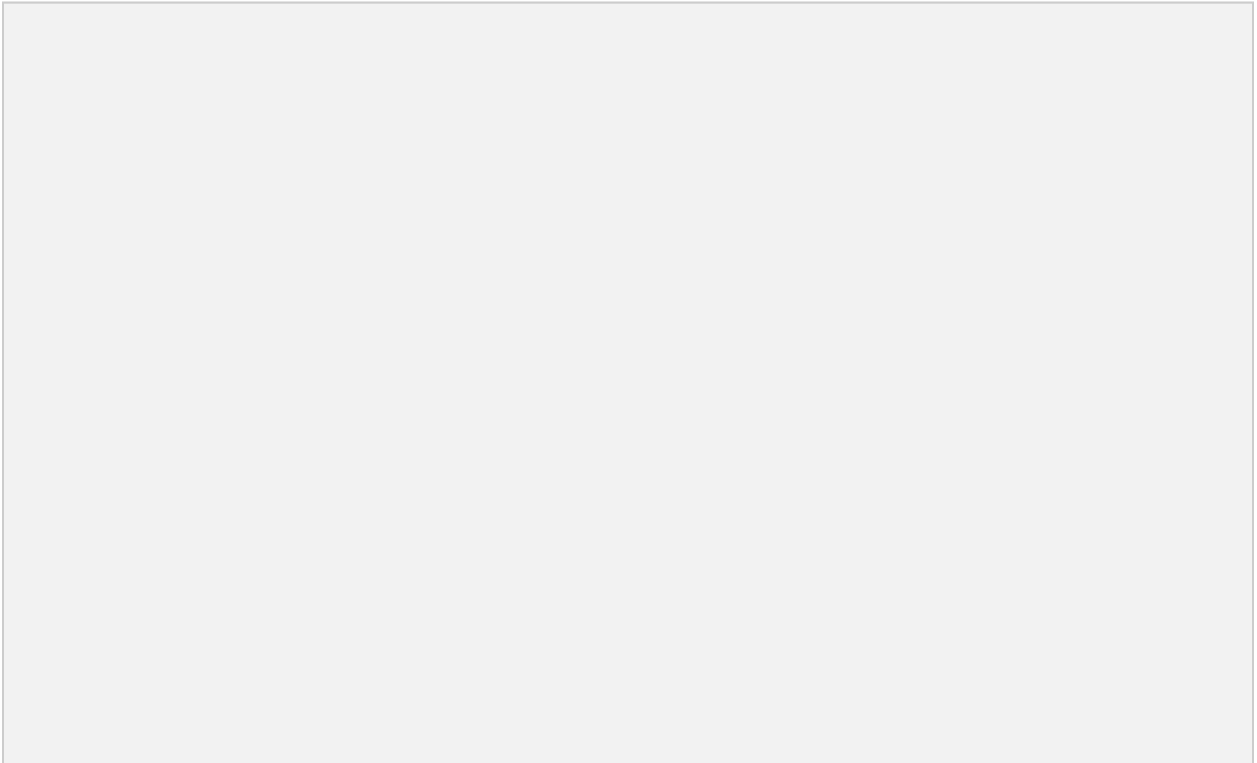
CfgRules

| Action | Name          | Element Type |
|--------|---------------|--------------|
| ⋮      | changeURlhost | element-rule |
| ⋮      | changetouser  | element-rule |

**Figure 101: SIP Manipulation towards Google CES TO header**



**Figure 102: SIP Manipulation towards Google CES – Change TO header Host**



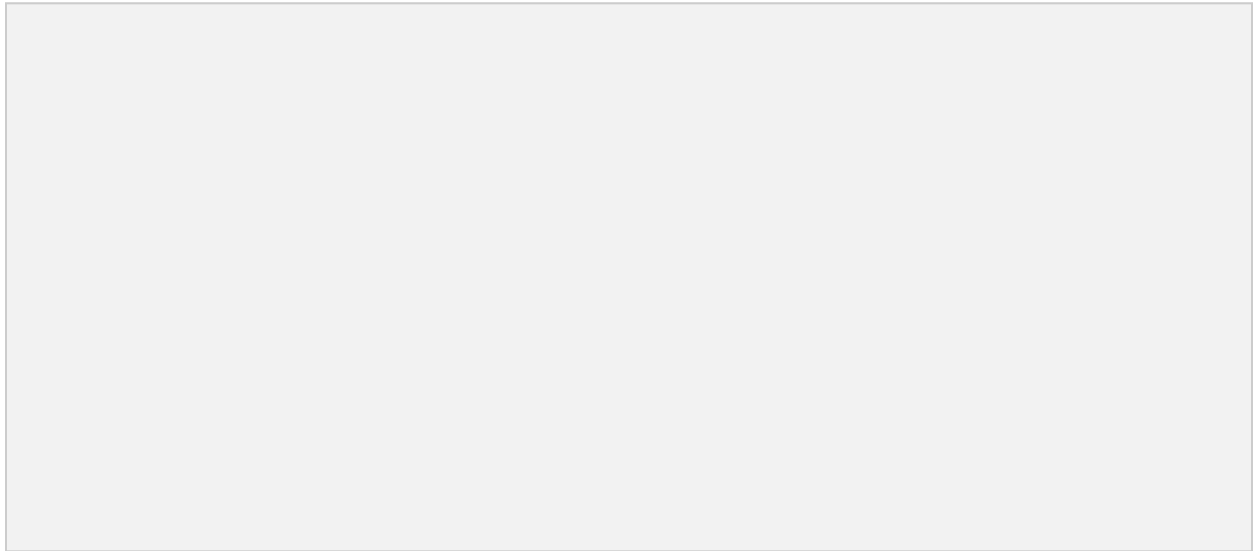
**Figure 103: SIP Manipulation towards Google CES – Change TO header User**

- Below header rule is created to add Call-Info header towards Google CES with the Dialog Flow API request along with the Conversation ID.
- Conversation on the Fly is set to True in Google CES using REST API. Conversation ID is randomly generated by Oracle E-SBC for each call.
- New Value is set to  
["<http://dialogflow.googleapis.com/v2beta1/projects/ccai-3898XX/conversations/OR\\_"+\\$CALL\\_ID.\\$0+";purpose=Goog-ContactCenter-Conversation"](http://dialogflow.googleapis.com/v2beta1/projects/ccai-3898XX/conversations/OR_)

The screenshot shows the Oracle E-SBC Configuration interface. On the left, a sidebar lists various configuration categories, with 'session-router' selected. The main area displays the 'Modify Sip manipulation / header rule' form. The form includes fields for Name, Header Name, Action, Comparison Type, Msg Type, Methods, Match Value, and New Value. The 'Name' field is set to 'AddCallInfoHeader', 'Header Name' is 'Call-info', 'Action' is 'add', 'Comparison Type' is 'case-sensitive', 'Msg Type' is 'any', and 'Methods' is 'INVITE'. The 'New Value' field contains the URL: "<http://dialogflow.googleapis.com/v2beta1/projects/ccai-3898XX/conversations/OR\_"+\$CALL\_ID.\$0+";purpose=Goog-ContactCenter-Conversation". Below the form, there is a section for 'CfgRules' with a message 'No rules to display. Please add.' and an 'Add' button.

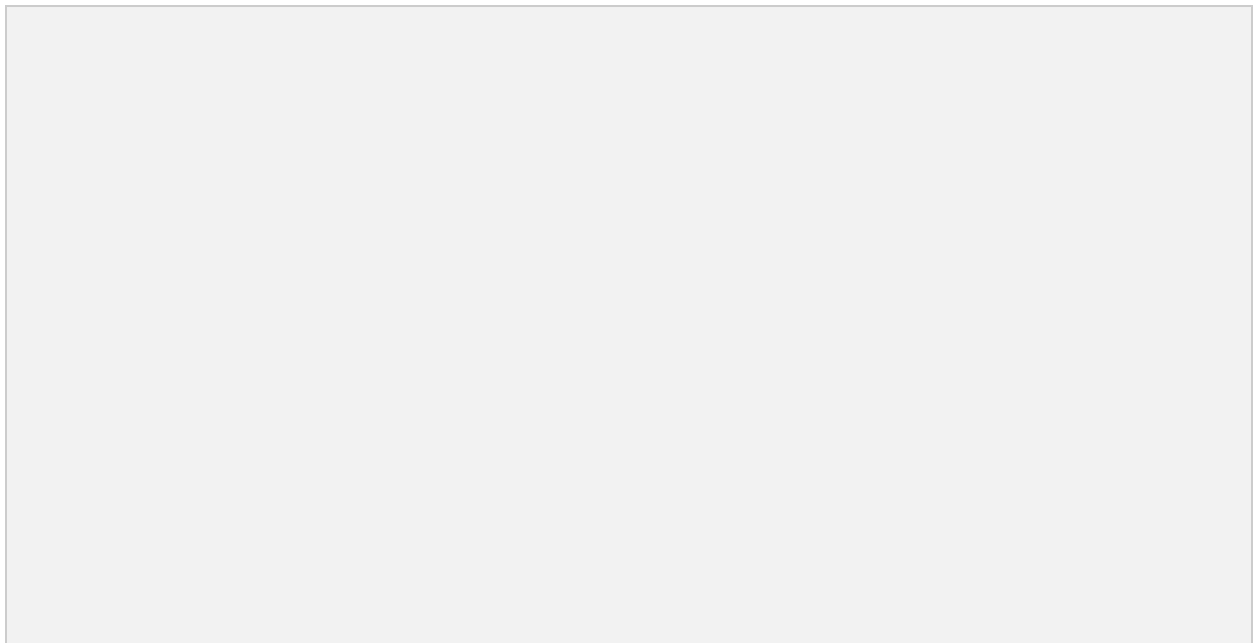
**Figure 104: SIP Manipulation towards Google CES – Add Call-Info**

- Below header rule is created to delete the Google CES FQDN generated by Oracle E-SBC during the creation of Conversation ID (this rule is applied only when Conversation on the Fly is set to True in Google CES).



**Figure 105: SIP Manipulation towards Google CES – Delete Call-Info host IP address**

- Below header rule is created to change the port number in the Request URI towards Google CES.



**Figure 106: SIP Manipulation towards Google CES – Change Request URI Port number**

**Configuration** View Configuration  

**media-manager** >

security >

**session-router** ▾

access-control

account-config

filter-config

ldap-config

local-policy

local-routing-config

media-profile

session-agent

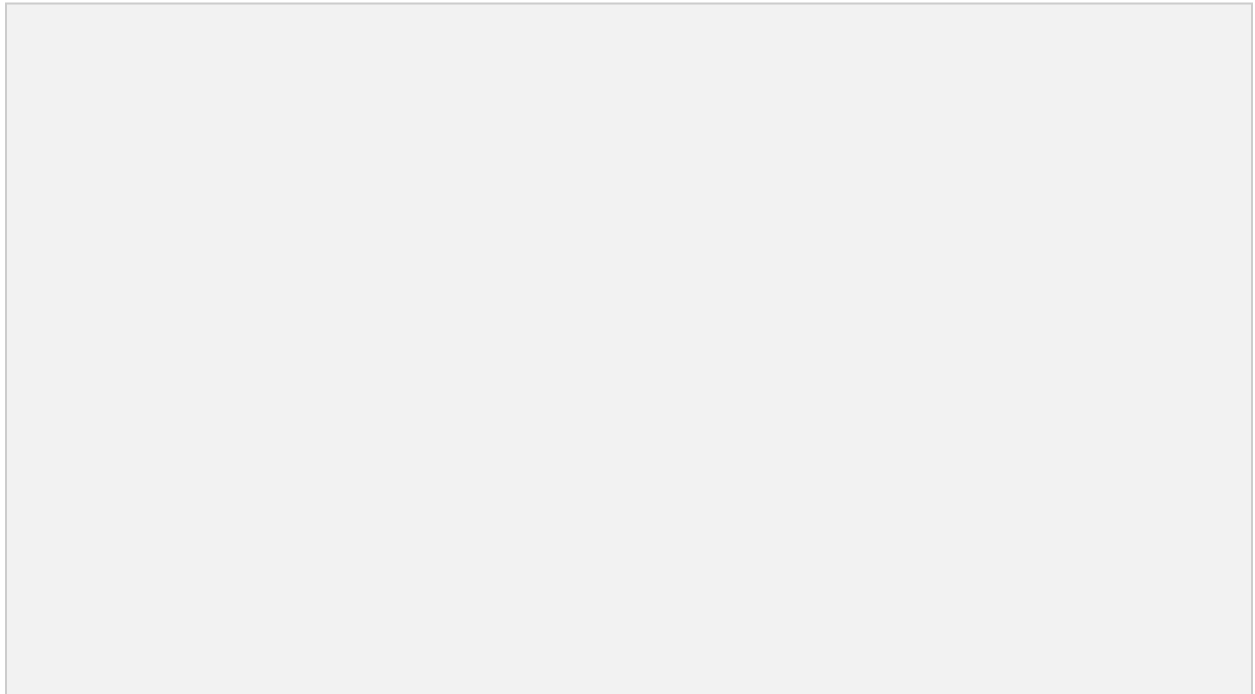
session-agent

Modify Sip manipulation / header rule / element rule

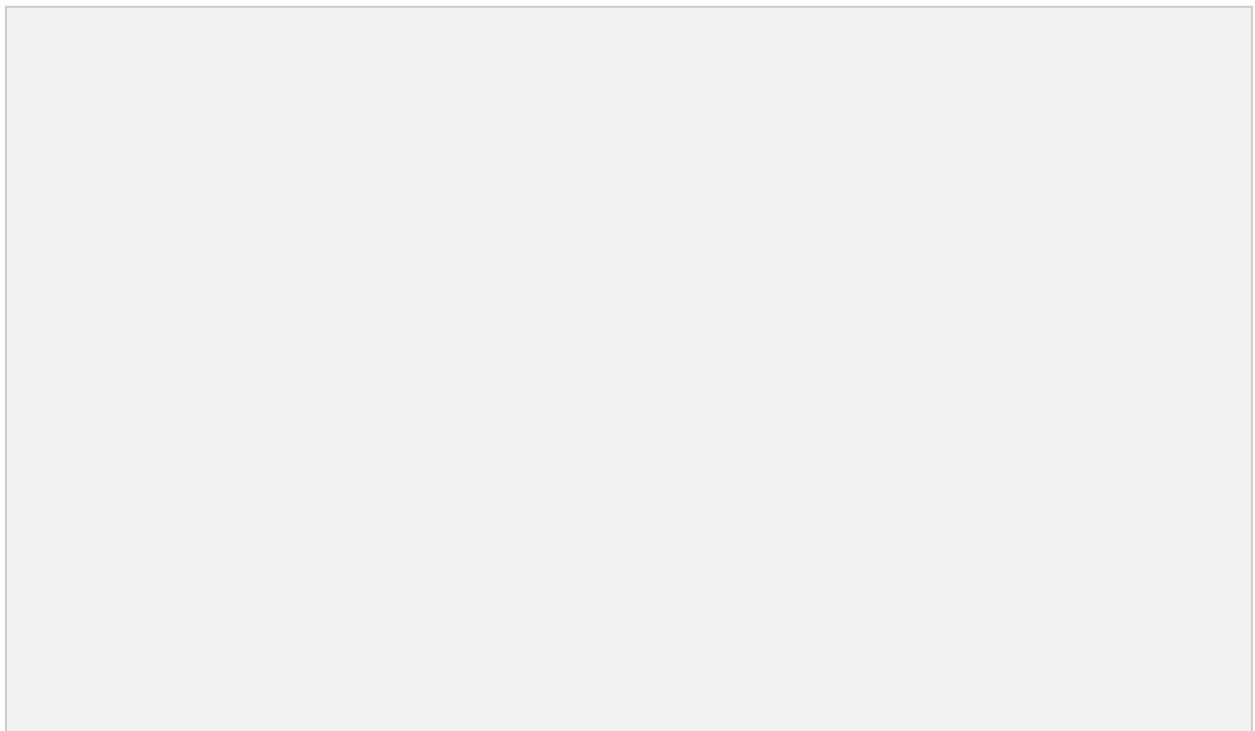
|                 |                       |
|-----------------|-----------------------|
| Name            | chnagetransportnumber |
| Parameter Name  |                       |
| Type            | uri-port ▾            |
| Action          | replace ▾             |
| Match Val Type  | any ▾                 |
| Comparison Type | case-sensitive ▾      |
| Match Value     |                       |
| New Value       | \$REMOTE_PORT         |

**Figure 107: SIP Manipulation towards Google CES – Change Request URI Port number (Cont.)**

- Below header rule is created to delete the transport parameter in the Request URI towards Google CES.



**Figure 108: SIP Manipulation towards Google CES – Delete Transport**



**Figure 109: SIP Manipulation towards Google CES – Delete Transport parameter (Cont.)**

## Manipulation for Inbound messages from Google CES

Below is the manipulation to modify Request-URI, To and REFER-To headers during call hand-off to an agent.

Configuration

View Configuration

Q

media-manager >

security >

session-router ▾

access-control

account-config

filter-config

ldap-config

local-policy

local-routing-config

media-profile

session-agent

session-group

session-recording-group

session-recording-server

session-translation

sip-config

sip-feature

sip-interface

sip-manipulation

Modify SIP Manipulation

Name

PSTNOUTBOUND

Description

PSTNOUTBOUND

Split Headers

Join Headers

CfgRules

Add ▾

| Action | Name         | Element Type |
|--------|--------------|--------------|
| ⋮      | changereqURI | header-rule  |
| ⋮      | changeTo     | header-rule  |
| ⋮      | Referto      | header-rule  |

Figure 110: SIP Manipulation towards PSTN Gateway

- Creates a Request URI sip header manipulation.

Figure 111: SIP Manipulation towards PSTN Gateway – Request URI

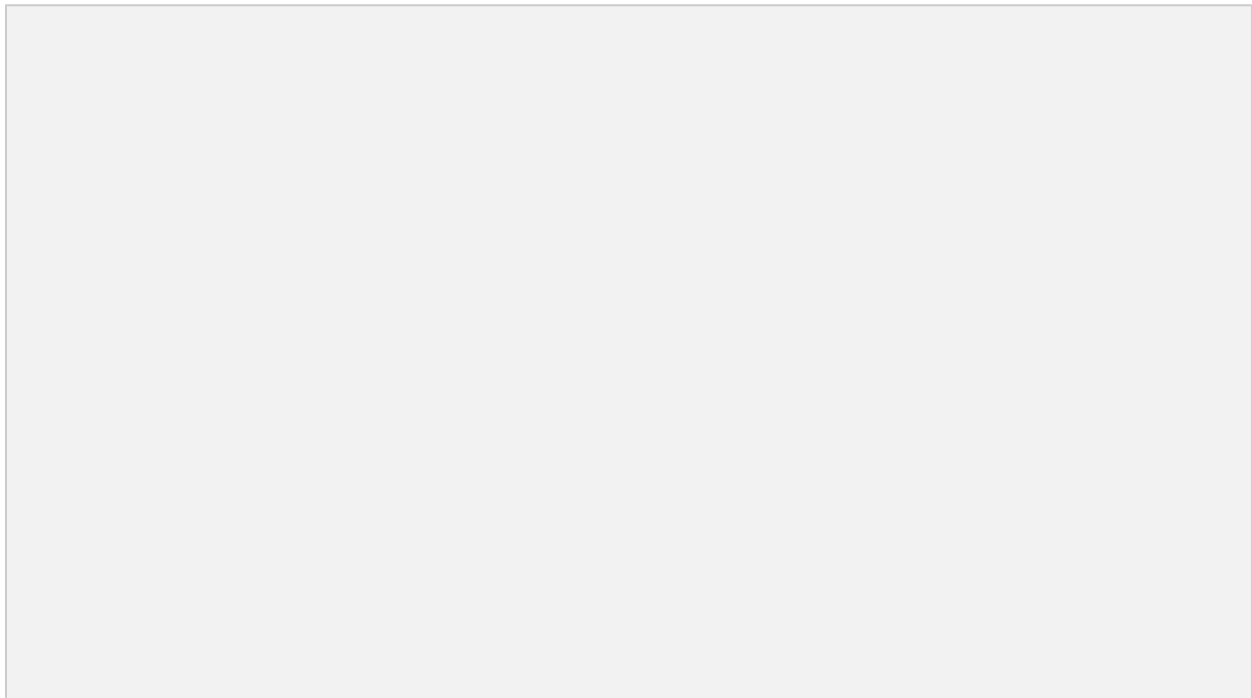


Figure 112: SIP Manipulation towards PSTN Gateway – Request URI User

- Creates a To sip header manipulation.

Configuration

View Configuration

Q

media-manager >

security >

session-router ▾

access-control

account-config

filter-config

ldap-config

local-policy

local-routing-config

media-profile

session-agent

session-group

session-recording-group

session-recording-server

session-translation

sip-config

sip-feature

sip-interface

sip-manipulation

Modify Sip manipulation / header rule

Name

changeTo

Header Name

To

Action

manipulate ▾

Comparison Type

pattern-rule ▾

Msg Type

any ▾

Methods

INVITE × REFER ×

Match Value

New Value

CfgRules

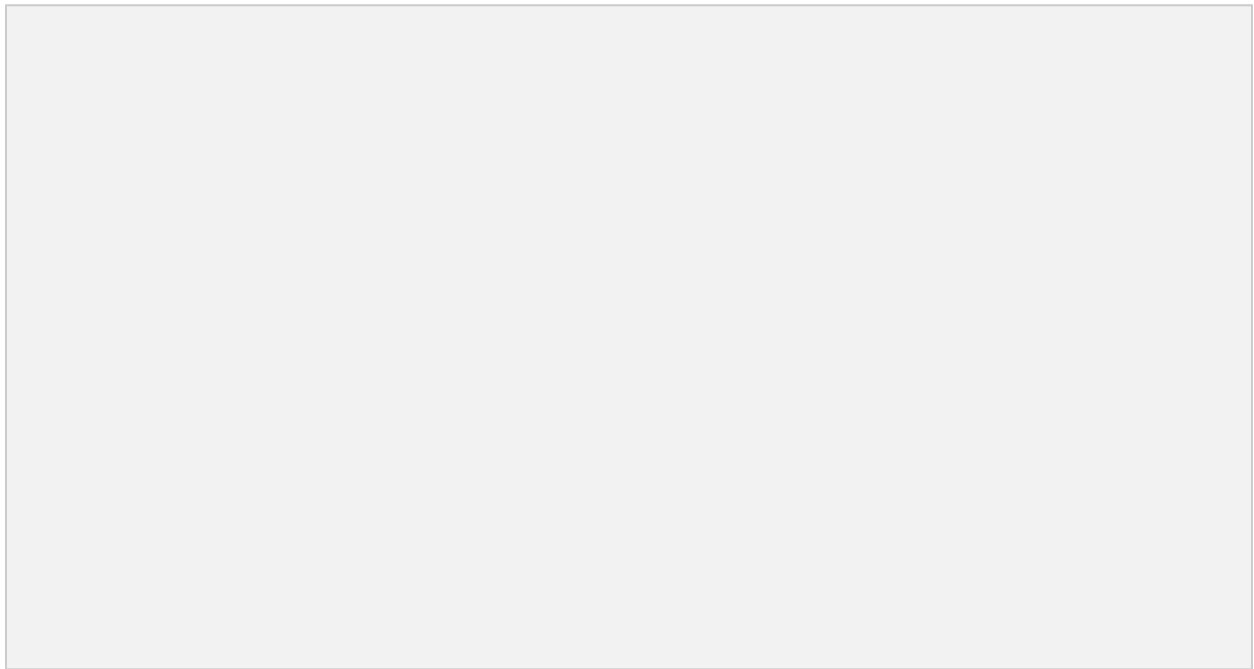
Add ▾

↑

↓

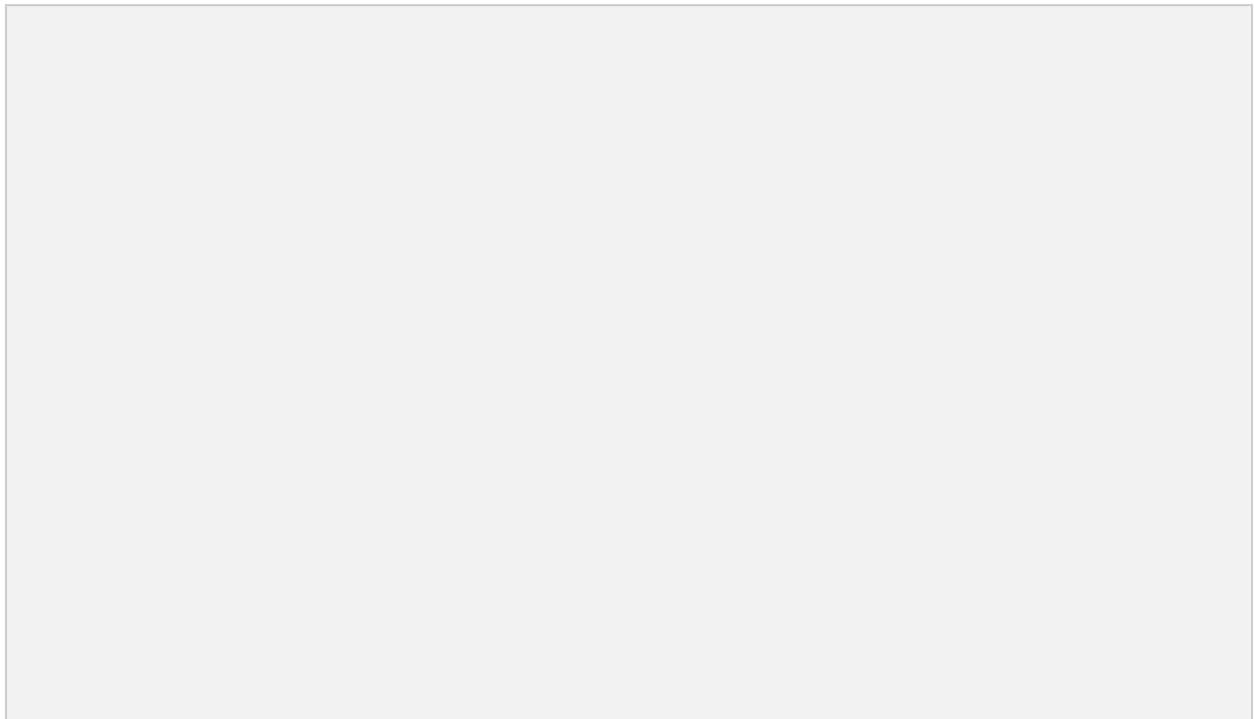
| Action | Name         | Element Type |
|--------|--------------|--------------|
| ⋮      | changetouser | element-rule |

Figure 113: SIP Manipulation towards PSTN Gateway – To Header



**Figure 114: SIP Manipulation towards PSTN Gateway – To Header User**

- Creates a Refer-To sip header manipulation



**Figure 115: SIP Manipulation towards PSTN Gateway – Refer-To Header**

Configuration

View Configuration

account-coming

filter-config

ldap-config

local-policy

local-routing-config

media-profile

session-agent

session-group

session-recording-group

session-recording-server

session-translation

sip-config

sip-feature

sip-interface

sip-manipulation

Modify Sip manipulation / header rule / element rule

Name

changereferertouser

Parameter Name

changereferertouser

Type

uri-user

Action

replace

Match Val Type

any

Comparison Type

pattern-rule

Match Value

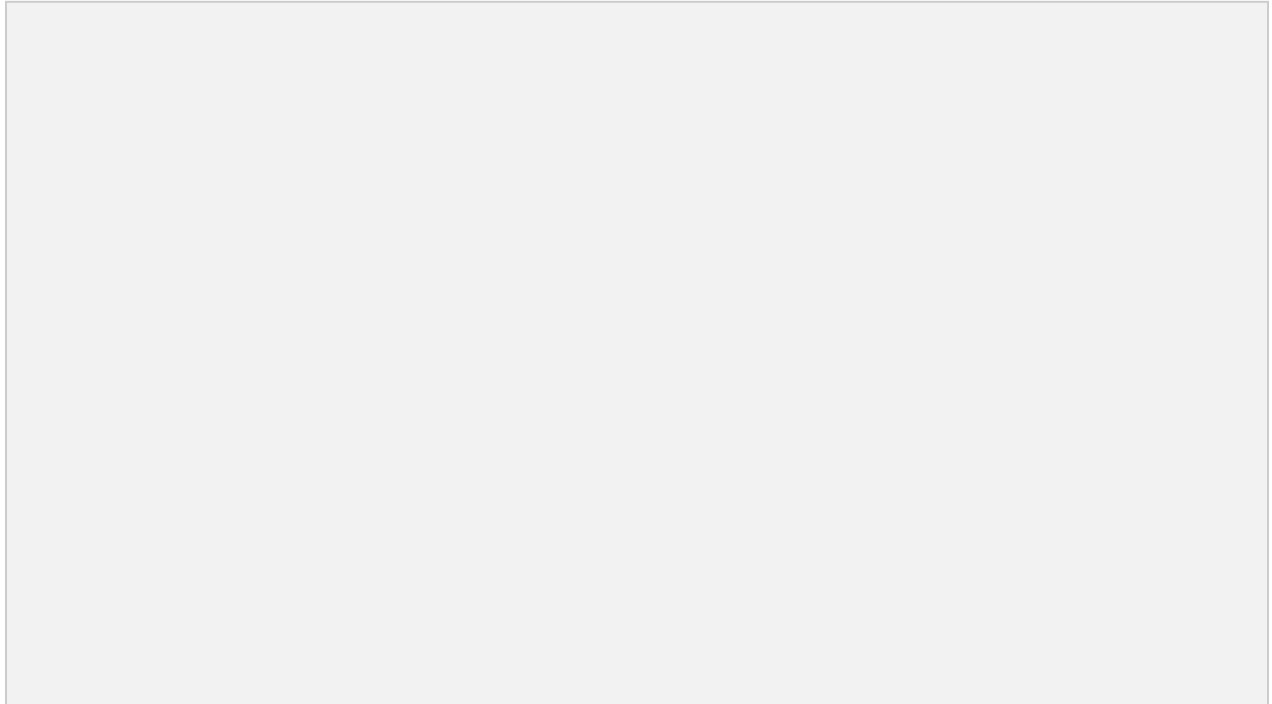
New Value

"972852;"

Figure 116: SIP Manipulation towards PSTN Gateway – Refer-To Header User

## Manipulations for Outbound messages to Google CES via UI header

- This SIP manipulation to insert a Hexa encoded User-to-User header required by Google CES to exchange session-related info to connect with Google CES Agent-Handoff.
- **The URL :**  
[http://dialogflow.googleapis.com/v2beta1/projects/ccai-3898XX/conversations/OR\\_QAZ](http://dialogflow.googleapis.com/v2beta1/projects/ccai-3898XX/conversations/OR_QAZ)
- **Hexa Encoded:** 6XXXXXXXXXXXX;encoding=hex;Goog-ContactCenter-Conversation"



**Figure 117: SIP Manipulation towards Google CES – UI Header**

## 8 SIP INVITE To Google CES

### 8.1 SIP INVITE for SIPREC call

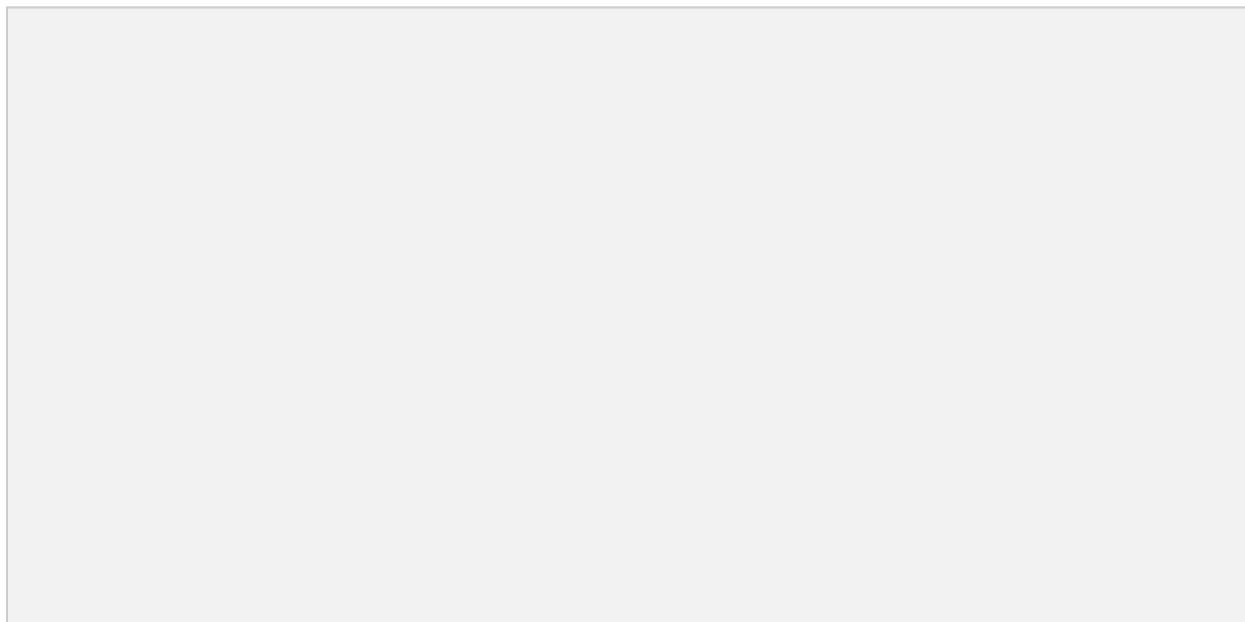


Figure 118: SIPREC Call

### 8.2 SIP INVITE for GTP call

INVITE sip:+13149000000@us.telephony.goog:5672 SIP/2.0

Via: SIP/2.0/TLS 192.65.100.100:5061;branch=z9hG4bK1b6trn0000e10aih

From: <sip:+19728522631@192.65.100.100>;tag=d6de37c9-7561-4937-a8b9-0ca72644801a

To: <sip:+13149000000@us.telephony.goog>

Contact: <sip:9728522631@192.65.100.100:5061;transport=tls>

Call-ID: 02e58ba8-b22e-41a5-aa3d-d3e88a671c0c

CSeq: 21261 INVITE

Allow: OPTIONS, INVITE, ACK, BYE, CANCEL, UPDATE, PRACK, REGISTER, SUBSCRIBE, NOTIFY, PUBLISH, MESSAGE, REFER

Supported: 100rel, timer, replaces, norefersub, histinfo

Session-Expires: 1800; refresher=uac

Min-SE: 90

Max-Forwards: 69

User-Agent: FPBX-16.0.40.13(20.4.0)

Content-Type: application/sdp

Content-Length: 405

Call-Info: <http://dialogflow.googleapis.com/v2beta1/projects/ccai-389/conversations/OR\_02e58ba8-b22e-41a5-aa3d-d3e88a671c0c>;purpose=Goog-ContactCenter-Conversation

v=0

o=- 1738828058 1738828058 IN IP4 192.65.100.100

s=Asterisk

c=IN IP4 192.65.100.100

t=0 0

m=audio 21204 RTP/SAVP 0 8 101 107

a=rtpmap:0 PCMU/8000

a=rtpmap:8 PCMA/8000

a=rtpmap:101 telephone-event/8000

a=ftmp:101 0-16

a=rtpmap:107 opus/48000/2

a=ftmp:107 useinbandfec=1

a=maxptime:20

a=sendrecv

a=ptime:20

a=crypto:1 AES CM 128 HMAC SHA1 80 inline:ydaFiGf4WVGacrEmG0HNx9d1V8cWcG0fdwG0x0PS

The INVITE Request-URI should include e.164 number obtained from Google and it should have respective regional host name with SIP Signaling port:5672

Google requires the Call-Info header, and it must contain a conversation ID. The conversation ID is unique, and the format of the conversation ID follows the regex "[a-zA-Z][a-zA-Z0-9\_-]" and is assigned for each call.

dialogflow.googleapis.com/v2beta1 - API endpoint

projects/ccai-389811 - Google Cloud CCAI project ID

conversations/OR\_xxxx - The unique conversation session ID that is assigned for that each

The connection IP toward Google CCAI must be a public IP, not a private one.

For GTP, there can be single media lines with a=sendrecv, for SIPREC there will be a multiple media line with a=sendonly

Encrypted SRTP and the allocated port range should be used (Port: 16384-32767) else CES will not receive audio.

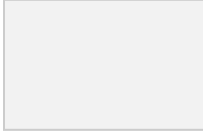
It must be a supported crypto suite by Google.

Figure 119: GTP Call

## 9 Oracle E-SBC Running configuration file

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Attached is the Oracle E-SBC running configuration file.



## 10 Summary of Tests and Results

| ID | Title                               | Description                                                                                                                                                                                                                                                                 | Expected Results                                                                                                   | Status (Passed or Failed etc.) | Observations                                                                                                                |
|----|-------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------------------------------------|
| 35 | UUI header test                     | Use the UUI header as opposed to call-info header to send conversation id                                                                                                                                                                                                   | Call should process as normal, and recording under conversation ID derived from UUI header as opposed to call-info | PASSED                         | Calls get successfully connected to Live agent when using UUI header instead of call-info header.                           |
| 36 | Keep_conversation_running=TRUE test | ConversationProfile needs to have SipConfig set with keepConversationRunning = TRUE. Send first call with a Call-Info header and have a call for 2 turns. End the call. Send second call with the SAME Call-Info header as above and have a call for 3 turns. End the call. | Two calls having the same call-info has both conversation details.                                                 | PASSED                         | Both call transcripts are present for the same conversation session id.                                                     |
| 37 | Live Agent Transfer                 | Call goes to virtual agent, initial live agent handoff and verify outgoing SIP INVITE, call connection and disconnection                                                                                                                                                    |                                                                                                                    | PASSED                         | Call gets connected successfully to BOT and INVITE sent successfully to connect with Agent.                                 |
| 38 | Live Agent Transfer                 | Call goes to virtual agent, initial live agent handoff and verify outgoing SIP INVITE, call connection and disconnection.<br><br>Make calls to +1314944XXXX, "speak                                                                                                         |                                                                                                                    | PASSED                         | Call was connected successfully with live agent and when performing conversation "Speak to an agent", a new INVITE was sent |

| ID | Title       | Description                                                                                                                                                                                                                                                                                             | Expected Results | Status (Passed or Failed etc.) | Observations                                                                                                                                                                       |
|----|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|--------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|    |             | to an agent",<br>+1-972-852-XXXX<br>should then ring and<br>get connected as the<br>agent                                                                                                                                                                                                               |                  |                                | from Google to<br>transfer to an<br>agent and call gets<br>connected<br>successfully with<br>both-way audio.                                                                       |
| 39 | UUI headers | Call goes to virtual<br>agent, say "end the<br>call", validate that the<br>SIP BYE has a UUI<br>header<br><br>Make calls to<br>+1314944XXXX, "end<br>the call", check SIP BYE<br>and ensure there is<br>one or more (identify if<br>there are 3 or 1) UUI<br>headers with purpose<br>Goog-Session-Param |                  | PASSED                         | Calls get<br>connected<br>successfully to live<br>agents and when<br>performing<br>conversation "End<br>the call", the call<br>gets disconnected<br>normally with 3 UUI<br>header. |
| 40 | SIP REFER   | Call goes to virtual<br>agent, say "send a sip<br>refer", validate that a<br>SIP REFER is received<br>to 972-852-XXXX.<br><br>Make calls to<br>+1314944XXXX, "send a<br>sip refer", SIP REFER<br>should be received<br>with refer to set to<br>972-852-XXXX                                             |                  | PASSED                         | REFER request and<br>transfer are<br>successful.                                                                                                                                   |