



ORACLE

Oracle SBC integration with Cisco CUCM and Generic Sip Trunk

Technical Application Note

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COMMUNICATIONS

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Revision History

Version	Description of Changes	Date Revision Completed
1.0	Oracle SBC integration with Cisco CUCM and Generic SIP Trunk	10 th May 2022

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1. Intended Audience

This document is intended for use by Oracle Systems Engineers, third party Systems Integrators, Oracle Enterprise customers and partners and end users of the Oracle Enterprise Session Border Controller (SBC). It is assumed that the reader is familiar with basic operations of the Oracle Enterprise Session Border Controller platform along with Cisco Call Manager (Cisco CUCM).

2. Document Overview

This Oracle technical application note outlines how to configure the Oracle SBC to interwork between Generic Sip Trunk with on premises Cisco CUCM. The solution contained within this document has been tested using Oracle Communication SBC with **OS900p2**

Please find the related documentation links below:

2.1. Cisco Call Manager (Cisco CUCM)

Cisco Unified Call Manager provides industry-leading reliability, security, scalability, efficiency, and enterprise call and session management and is the core call control application of the collaboration portfolio.

It should be noted that while this application note focuses on the optimal configurations for the Oracle SBC in an enterprise **Cisco CUCM 12.5** environment, the same SBC configuration model can also be used for other enterprise applications with a few tweaks to the configuration for required features.

In addition, it should be noted that the SBC configuration provided in this guide focuses strictly on the Cisco CUCM Server associated parameters. Many SBC applications may have additional configuration requirements that are specific to individual customer requirements. These configuration items are not covered in this guide. Please contact your Oracle representative with any questions pertaining to this topic.

For additional information on **CUCM 12.5**, please visit

<https://www.cisco.com/c/en/us/products/unified-communications/unified-communications-manager-version-12-5/index.html>

Please note that the IP Addresses, FQDN and configuration names and details given in this document are used for reference purposes only. These same details cannot be used in customer configurations. End users of this document can use the configuration details according to their network requirements. There are some public facing IPs (externally routable IPs) that we use for our testing are masked in this document for security reasons. The customers can configure any publicly routable IPs for these sections as per their network architecture needs.

3. Introduction

3.1. Audience

This is a technical document intended for telecommunications engineers with the purpose of configuring Cisco CUCM 12.5 version using Oracle Enterprise SBC. There will be steps that require navigating the CUCM 12.5 server configuration, Oracle SBC GUI interface, understanding the basic concepts of TCP/UDP, IP/Routing, DNS server and SIP/RTP are also necessary to complete the configuration and for troubleshooting, if necessary.

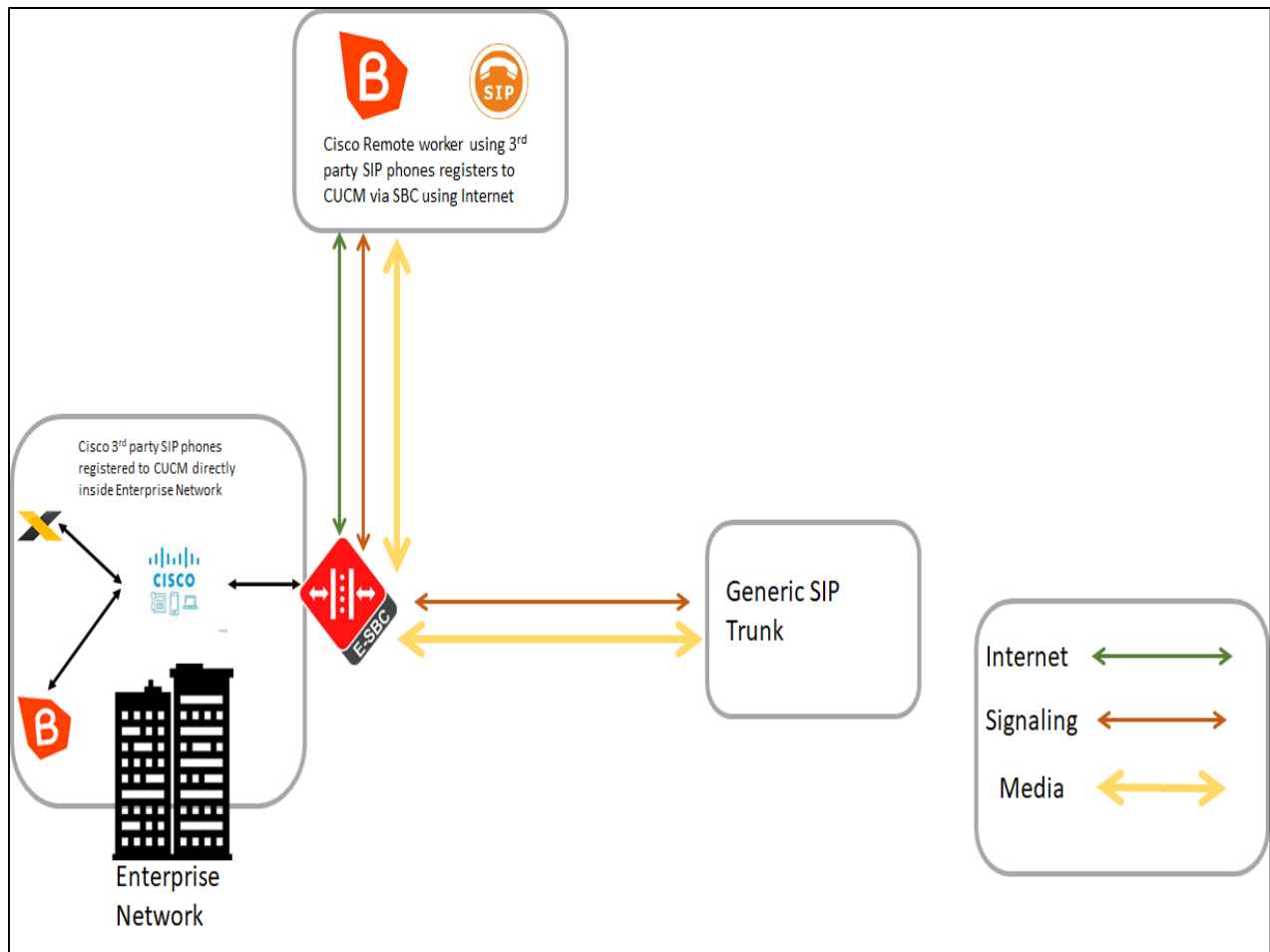
3.2. Requirements

- Fully functioning Cisco CUCM 12.5 version
- Oracle Enterprise Session Border Controller (hereafter Oracle SBC) running 9.0.0 version

The below revision table explains the versions of the software used for each component:
This table is Revision 1 as of now:

Software Used	SBC Version	Cisco CUCM Version
Revision 1	9.0.0	12.5

3.3. Architecture

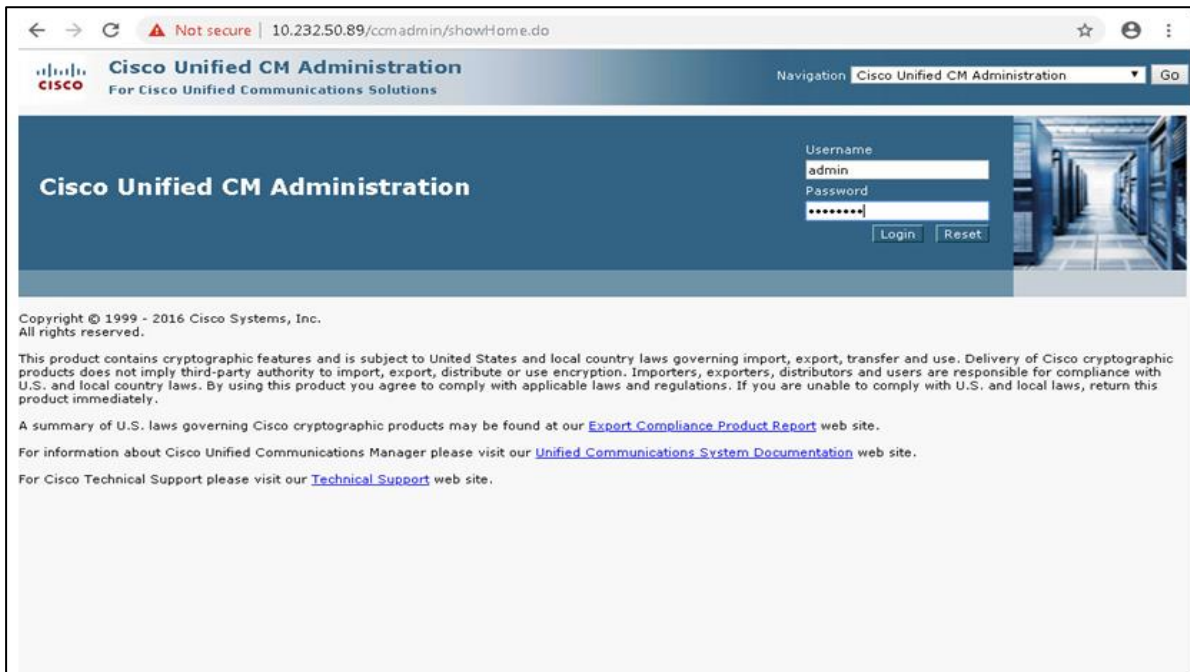


The configuration, validation and troubleshooting are the focuses of this document and will be described in two phases:

- Phase 1 – Configuring the Cisco Unified Call Manager v12.5 for Oracle SBC.
- Phase 2 – Configuring the Oracle SBC.

4. Configuring the Cisco Call Manager (Cisco CUCM)

Please login to Cisco CUCM admin web GUI with proper login credentials (Username and password). After that, perform the steps below in the given order.



4.1. Configuring a new SIP Trunk

- 01) Go to Device ----- Trunk ----- Add New
- 02) Select Trunk Type – SIP Trunk and then Click Next
- 03) In the Device Name field, enter the SIP Trunk name and optionally provide a description.
- 04) In the Device Pool drop-down list, select a device pool id created already else select Default
- 05) Enter the Destination Address and Destination Port of the SBC under SIP Information.
- 06) Select appropriate SIP profile and SIP trunk security profile from the dropdown menu.
- 07) Click Save

← → ↻ Not secure | 10.232.50.89/camadmin/trunkEdit.do?prod=95

Cisco Unified CM Administration
For Cisco Unified Communications Solutions

Navigation Cisco Unified CM Administration Go
admin | Search Documentation | About | Logout

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

Trunk Configuration Related Links: Back To Find/List Go

➔ Next

Status
Status: Ready

Trunk Information

Trunk Type* SIP Trunk
Device Protocol* SIP
Trunk Service Type* None(Default)

Next

*- indicates required item.

Cisco Unified CM Administration
For Cisco Unified Communications Solutions

Navigation Cisco Unified CM Administration
admin | Search Documentation | About

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

Trunk Configuration Related Links: Back To Find/List

Save Delete Reset Add New

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

Media Termination Point Required
 Retry Video Call as Audio
 Path Displacement Support

Cisco Unified CM Administration
For Cisco Unified Communications Solutions

Navigation: Cisco Unified CM Administration
admin | Search Documentation | About

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

Trunk Configuration Related Links: Back To Find/List

Save Delete Reset Add New

SIP Information

Destination

Destination Address is an SRV

Destination Address	Destination Address IPV6	Destination Port	Status	Status Reason	Duration
1* 10.232.50.78		5060	up		Time Up: 0 day 0 hour 21 minutes

MTP Preferred Originating Codec* 711ulaw

BLF Presence Group* Standard Presence group

SIP Trunk Security Profile* Non Secure SIP Trunk Profile

Rerouting Calling Search Space < None >

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

SUBSCRIBE Calling Search Space < None >

SIP Profile* Standard Sip Profile - Options Enabled ISR [View Details](#)

DTMF Signaling Method* RFC 2833

Normalization Script

Normalization Script < None >

Enable Trace

4.2. Configure a new Route Pattern

- 01) Go to Call Routing ----- Route/Hunt ----- Route Pattern and click Add New
- 02) Enter a Route Pattern according to the network requirements and calling plan.
- 03) From the Gateway/Route List drop-down list, select the created SIP Trunk device name.
- 04) Click Save. We can create other route patterns in the same way as shown below.

Cisco Unified CM Administration
For Cisco Unified Communications Solutions

Navigation: Cisco Unified CM Administration
admin | Search Documentation | About

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

Route Pattern Configuration Related Links: Back To Find/List

Save Delete Copy Add New

Status

Status: Ready

Pattern Definition

Route Pattern* 1XXXXXXXX

Route Partition < None >

Description Route to SBC

Numbering Plan -- Not Selected --

Route Filter < None >

MLPP Precedence* Default

Apply Call Blocking Percentage

Resource Priority Namespace Network Domain < None >

Route Class* Default

Gateway/Route List* CUCM-SBC [\(Edit\)](#)

Route Option

Route this pattern

Block this pattern No Error

The route patterns that has been created is shown below:

The screenshot shows the Cisco Unified CM Administration interface for 'Find and List Route Patterns'. The status indicates '2 records found'. The table below lists the route patterns:

Pattern	Description	Partition	Route Filter	Associated Device	Copy
1XXXXXXXXXX	Route to SBC			CUCM-SBC	
91XXXXXXXXXX	Route to SBC			CUCM-SBC	

The created SIP trunk associated with the route pattern is shown below:

The screenshot shows the Cisco Unified CM Administration interface for 'Find and List Trunks'. The status indicates '4 records found'. The table below lists the SIP trunks, with two rows highlighted in red:

Name	Description	Calling Search Space	Device Pool	Route Pattern	Partition	Route Group	Priority	Trunk Type	SIP Trunk Status	SIP Trunk Duration	SIP Trunk Security Profile
CUCM-ECB			Default					SIP Trunk	Full Service	Time In Full Service: 9 days 16 hours 37 minutes	Non Secure SIP Trunk Profile
CUCM-SBC			Default	1XXXXXXXXXX				SIP Trunk	Full Service	Time In Full Service: 0 day 0 hour 41 minutes	Non Secure SIP Trunk Profile
CUCM-SBC			Default	91XXXXXXXXXX				SIP Trunk	Full Service	Time In Full Service: 0 day 0 hour 41 minutes	Non Secure SIP Trunk Profile
sbcc			Default					SIP Trunk	No Service	Time not in Full Service: 7 days 19 hours 33 minutes	Non Secure SIP Trunk Profile

4.3. End User Configuration

- 01) Go to User Management ---- End User and click Add New
- 02) Enter in your User ID, password, pin, and Last Name
- 03) You must also enter in a password in the Digest Credentials and Confirm.
- 04) Click Save (remember the User ID and Password and DN of the device)

The screenshot shows the 'End User Configuration' page in Cisco Unified CM Administration. The 'User Information' section is active, displaying the following fields and values:

User Status	Enabled Local User
User ID*	isrvoip1
Password Edit Credential
Confirm Password
Self-Service User ID	18507904044
PIN Edit Credential
Confirm PIN
Last name*	isrvoip1
Middle name	
First name	
Display name	
Title	
Directory URI	
Telephone Number	18507904044

The screenshot shows the 'End User Configuration' page in Cisco Unified CM Administration. The 'Service Settings' section is active, displaying the following fields and values:

Home Number	
Mobile Number	
Pager Number	
Mail ID	
Manager User ID	
Department	
User Locale	< None >
Associated PC/Site Code	
Digest Credentials
Confirm Digest Credentials
User Profile	Standard (Factory Default) User Profile View Details
User Rank*	1-Default User Rank

Service Settings

- Home Cluster
 - Enable User for Unified CM IM and Presence (Configure IM and Presence in the associated UC Service Profile)
 - Include meeting information in presence(Requires Exchange Presence Gateway to be configured on CUCM IM and Presence server)
- UC Service Profile: Use System Default [View Details](#)

4.4. Adding SIP Phone in CUCM

- 01) Go to Device ---- Phone and click Add New
- 02) Select Third Party Sip Device (Basic) and click Next
- 03) Enter in a 12 digit MAC address (any dummy MAC address)
- 04) Enter the pertinent information for the SIP DEVICE settings – it should mostly be configured the same as a standard phone on your system except for the following settings
 - a) in the owner user ID field select the user you created above
 - b) in the Device Security Profile field select the security profile you created above
 - c) in the Digest User field select the user you created above
- 05) Click Save.
- 06) Configure the line settings for the SIP device – the line settings should match the line settings of your standard user's Cisco IP phones
There are no special attributes that we need to worry about on the line configuration.

The screenshot displays the Cisco Unified CM Administration web interface for configuring a SIP device. The page title is "Cisco Unified CM Administration" with the subtitle "For Cisco Unified Communications Solutions". The navigation bar includes "Navigation" (Cisco Unified CM Administration), "admin", "Search Documentation", "About", and "Log". The breadcrumb trail is "System > Call Routing > Media Resources > Advanced Features > Device > Application > User Management > Bulk Administration > Help". The main heading is "Phone Configuration" with a "Related Links" dropdown set to "Back To Find/List".

Below the heading is a toolbar with icons for Save, Delete, Copy, Reset, Apply Config, and Add New. The "Status" section shows "Status: Ready".

The "Association" section contains a table with two entries:

Modify Button Items	
1	Line [1] - 18507904044 (no partition)
----- Unassigned Associated Items -----	
2	Line [2] - Add a new DN

The "Phone Type" section shows:

- Product Type: Third-party SIP Device (Basic)
- Device Protocol: SIP

The "Real-time Device Status" section shows:

- Registration: Registered with Cisco Unified Communications Manager CUCM-Cisco.pe.oracle.com
- IPv4 Address: 10.232.50.2
- Active Load ID: None
- Download Status: None

The "Device Information" section shows:

- Device is Active
- Device is not trusted
- MAC Address*: 00AABB11CCFF
- Description: ISRVolp1
- Device Pool*: Default [View Details](#)
- Common Device Configuration: < None > [View Details](#)
- Phone Button Template*: Third-party SIP Device (Basic)

Cisco Unified CM Administration
For Cisco Unified Communications Solutions

Navigation: Cisco Unified CM Administration
admin | Search Documentation | About

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

Phone Configuration Related Links: Back To Find/List

Save Delete Copy Reset Apply Config Add New

Phone Button Template*	Third-party SIP Device (Basic)
Common Phone Profile*	Standard Common Phone Profile View Details
Calling Search Space	< None >
AAR Calling Search Space	< None >
Media Resource Group List	< None >
Location*	Hub_None
AAR Group	< None >
Device Mobility Mode*	Default View Current Device Mobility Settings
Owner	<input checked="" type="radio"/> User <input type="radio"/> Anonymous (Public/Shared Space)
Owner User ID*	isrvoip1
Mobility User ID	< None >
Use Trusted Relay Point*	Default
Always Use Prime Line*	Default
Always Use Prime Line for Voice Message*	Default
Geolocation	< None >

Ignore Presentation Indicators (Internal calls only)
 Logged Into Hunt Group
 Remote Device

Apps AvayaSystemMan AvayaCM EOM ESBC NTT-SBC

Cisco Unified CM Administration
For Cisco Unified Communications Solutions

Navigation: Cisco Unified CM Administration Go
admin | Search Documentation | About | Logout

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

Phone Configuration Related Links: Back To Find/List Go

Save Delete Copy Reset Apply Config Add New

Remote Number

Calling Party Transformation CSS: < None >
 Use Device Pool Calling Party Transformation CSS (Device Mobility Related Information)

Protocol Specific Information

BLF Presence Group*: Standard Presence group
MTP Preferred Originating Codec*: 711ulaw
Device Security Profile*: Third-party SIP Device Basic - Standard SIP Non-Se
Rerouting Calling Search Space: < None >
SUBSCRIBE Calling Search Space: < None >
SIP Profile*: Standard Sip Profile - Options Enabled ISR [View Details](#)
Digest User: isrvoip1

Media Termination Point Required
 Unattended Port
 Require DTMF Reception

MLPP and Confidential Access Level Information

MLPP Domain: < None >
Confidential Access Mode: < None >

Name: Tarc

4.5. Associating End User to Phone

- 01) Go to User Management ----- End Users and search for the sip user you created above, once you find it, click on it
- 02) Scroll down to Device Association and click on the Device Association button
- 03) Locate and select the sip device you created above
- 04) Check the checkbox next to this device and click Save Selected/Changes
- 05) Click Go next to the Back to User related link near the upper right-hand corner
- 06) Click Save one more time on the End User Configuration screen.

The screenshot displays the Cisco Unified CM Administration web interface for the 'End User Configuration' page. The browser address bar shows the URL: 10.232.50.89/ccmadmin/userEdit.do?key=d464a40a-663c-b7a0-dad8-ca576d745f9d. The page header includes the Cisco logo and navigation links for 'admin', 'Search Documentation', 'About', and 'Logout'. The main navigation menu includes 'System', 'Call Routing', 'Media Resources', 'Advanced Features', 'Device', 'Application', 'User Management', 'Bulk Administration', and 'Help'. The 'End User Configuration' section has a 'Save' button (highlighted in red), 'Delete', and 'Add New' options. The form contains the following fields and sections:

- Main ID:** Text input field.
- Manager User ID:** Text input field.
- Department:** Text input field.
- User Locale:** Dropdown menu with '< None >' selected.
- Associated PC/Site Code:** Text input field.
- Digest Credentials:** Password field with masked characters.
- Confirm Digest Credentials:** Password field with masked characters.
- User Profile:** Dropdown menu with 'Standard (Factory Default) User Profile' selected and a 'View Details' link.
- User Rank*:** Dropdown menu with '1-Default User Rank' selected.
- Service Settings:**
 - Home Cluster
 - Enable User for Unified CM IM and Presence (Configure IM and Presence in the associated UC Service Profile)
 - Include meeting information in presence (Requires Exchange Presence Gateway to be configured on CUCM IM and Presence server)
 - UC Service Profile:** Dropdown menu with 'Use System Default' selected and a 'View Details' link.
- Device Information:**
 - Controlled Devices:** A list containing the device ID 'SEP00DC296352B'.
 - Device Association:** A section for 'Line Appearance Association for Presence'.

With these steps, the CUCM configuration is complete.

5. Configuring the SBC

This chapter provides step-by-step guidance on how to configure Oracle SBC for Cisco Call Manager (Cisco CUCM) and Generic SIP Trunk. If the Oracle SBC being deployed is new, with no existing configuration, the simplest way to configure it to interface with Cisco Call Manager (Cisco CUCM) is by utilizing the [Configuration Assistant](#) feature.

5.1. Validated Oracle SBC version

Oracle conducted tests with Oracle SBC 9.0 software – this software with the configuration listed below can run on any of the following products:

- AP 1100
- AP 3900
- AP 4600
- AP 6300
- AP 6350
- AP 3950 (Starting from SBC 9.0 version)
- AP 4900 (Starting from SBC 9.0 version)
- VME

6. New SBC configuration

If the customer is looking to setup a new SBC from scratch, please follow the section below.

6.1. Establishing a serial connection to the SBC

Connect one end of a straight-through Ethernet cable to the front console port (which is active by default) on the SBC and the other end to console adapter that ships with the SBC, connect the console adapter (a DB-9 adapter) to the DB-9 port on a workstation, running a terminal emulator application such as Putty. Start the terminal emulation application using the following settings:

- Baud Rate=115200
- Data Bits=8
- Parity=None
- Stop Bits=1
- Flow Control=None

Power on the SBC and confirm that you see the following output from the boot-up sequence

```
Starting tLemd...
Starting tServiceHealth...
Starting tCollect...
Starting tAtcpd...
Starting tAsctpd...
Starting tMbcd...
Starting tCommMonitord...
Starting tFped...
Starting tAlgd...
Starting tRadd...
Starting tEbmd...
Starting tSipd...
Starting tH323d...
Starting tbfdd...
Starting tIPTd...
Starting tSecured...
Starting tAuthd...
Starting tCertd...
Starting tIked...
Starting tTscfd...
Starting tFcgid...
Starting tauditd...
Starting tauditpusher...
Starting tSnmpd...
Starting tIFMIBd...
Start platform alarm...
Starting display manager...
Initializing /opt/ Cleaner
Starting tLogCleaner task
Bringing up shell...

Starting acliMgr...
password secure mode is enabled
Admin Security is disabled
Password: █
```

Enter the default password to log in to the SBC. Note that the default SBC password is “acme” and the default super user password is “packet”.

Both passwords have to be changed according to the rules shown below.

```
Password:
%
% Only alphabetic (upper or lower case), numeric and punctuation
% characters are allowed in the password.
% Password must be 8 - 64 characters,
% and have 3 of the 4 following character classes :
%   - lower case alpha
%   - upper case alpha
%   - numerals
%   - punctuation
%
Enter New Password:
Confirm New Password:
Password is acceptable.
```

Now set the management IP of the SBC by setting the IP address in bootparam.

To access bootparam. Go to Configure terminal->bootparam.

```

NN4600-139(configure)# bootparam

'.' = clear field; '-' = go to previous field; q = quit

Boot File      : /boot/nnSCZ900p2.bz
IP Address     : 10.138.194.139
VLAN           : 0
Netmask        : 255.255.255.192
Gateway        : 10.138.194.129
IPv6 Address   :
IPv6 Gateway   :
Host IP        :
FTP username   : vxftp
FTP password   : *****
Flags          :
Target Name    : NN4600-139
Console Device : COM1
Console Baudrate : 115200
Other          :

NOTE: These changed parameters will not go into effect until reboot.
Also, be aware that some boot parameters may also be changed through
PHY and Network Interface Configurations.

      ERROR   : space in /boot      (Percent Free: 30)

NN4600-139(configure)#
NN4600-139(configure)#
```

Note: There is no management IP configured by default.

Setup product type to Enterprise Session Border Controller as shown below.

To configure product type, type in setup product in the terminal

```

NN3900-101# setup product

-----
WARNING:
Alteration of product alone or in conjunction with entitlement
changes will not be complete until system reboot

Last Modified 2020-07-21 04:51:24
-----
 1 : Product      : Enterprise Session Border Controller

Enter 1 to modify, d' to display, 's' to save, 'q' to exit. [s]: █
```

Enable the features for the ESBC using the setup entitlements command as shown

Save the changes and reboot the SBC.

```
Entitlements for Enterprise Session Border Controller
Last Modified: Never
-----
 1 : Session Capacity           : 0
 2 : Advanced                   :
 3 : Admin Security             :
 4 : Data Integrity (FIPS 140-2) :
 5 : Transcode Codec AMR Capacity : 0
 6 : Transcode Codec AMRWB Capacity : 0
 7 : Transcode Codec EVRC Capacity : 0
 8 : Transcode Codec EVRCB Capacity : 0
 9 : Transcode Codec EVS Capacity : 0
10 : Transcode Codec OPUS Capacity : 0
11 : Transcode Codec SILK Capacity : 0

Enter 1 - 11 to modify, d' to display, 's' to save, 'q' to exit. [s]: 1
  Session Capacity (0-128000)           : 500

Enter 1 - 11 to modify, d' to display, 's' to save, 'q' to exit. [s]: 3
*****
CAUTION: Enabling this feature activates enhanced security
functions. Once saved, security cannot be reverted without
resetting the system back to factory default state.
*****
  Admin Security (enabled/disabled)      :

Enter 1 - 11 to modify, d' to display, 's' to save, 'q' to exit. [s]: 5
  Transcode Codec AMR Capacity (0-102375) : 50

Enter 1 - 11 to modify, d' to display, 's' to save, 'q' to exit. [s]: 2
  Advanced (enabled/disabled)           : enabled

Enter 1 - 11 to modify, d' to display, 's' to save, 'q' to exit. [s]: 10
  Transcode Codec OPUS Capacity (0-102375) : 50

Enter 1 - 11 to modify, d' to display, 's' to save, 'q' to exit. [s]: 11
  Transcode Codec SILK Capacity (0-102375) : 50
```

The SBC comes up after reboot and is now ready for configuration.

Go to configure terminal->system->http-server-config.

Enable the http-server-config to access the SBC using Web GUI. Save and activate the config.

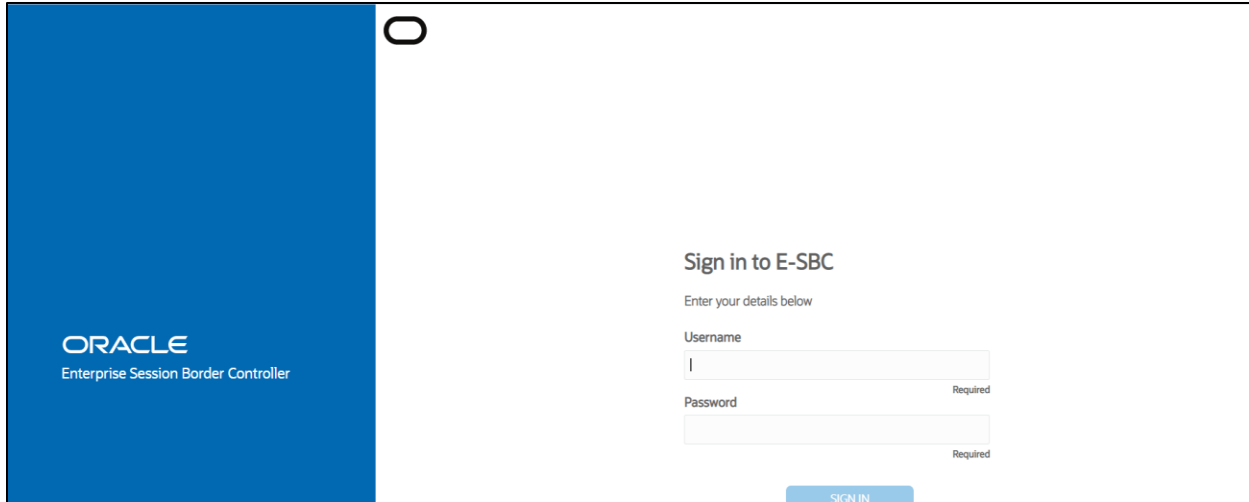
```
NN3900-101(http-server)# show
http-server
  name                webServerInstance
  state               enabled
  realm
  ip-address
  http-state          enabled
  http-port           80
  https-state         disabled
  https-port          443
  http-interface-list GUI
  http-file-upload-size 0
  tls-profile
  auth-profile
  last-modified-by    @
  last-modified-date  2020-10-06 00:28:26

NN3900-101(http-server)#
NN3900-101(http-server)#
```

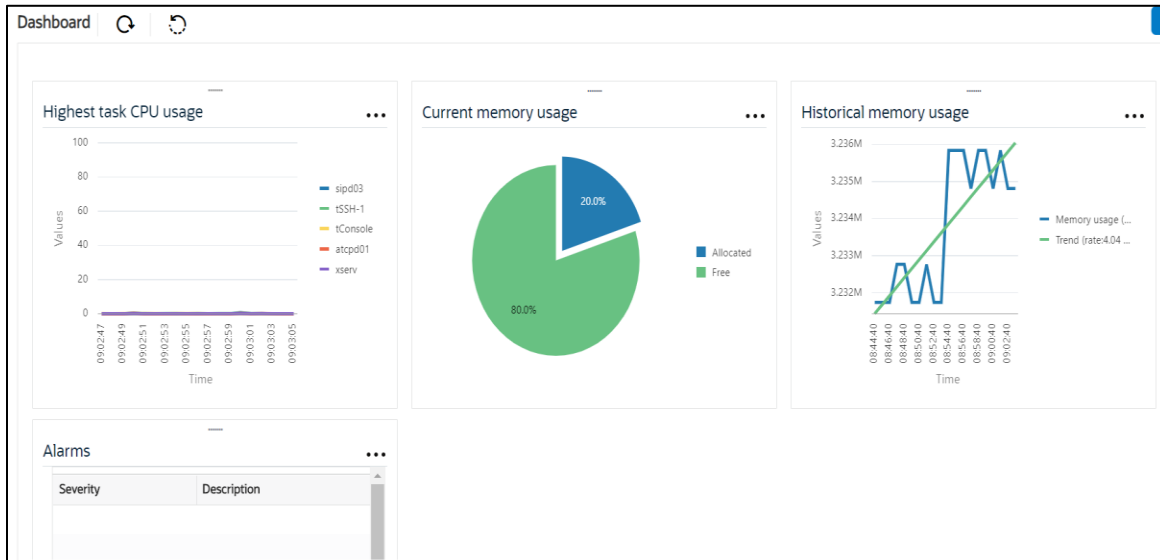
6.2. Configure SBC using Web GUI

In this app note, we configure SBC using the WebGUI.

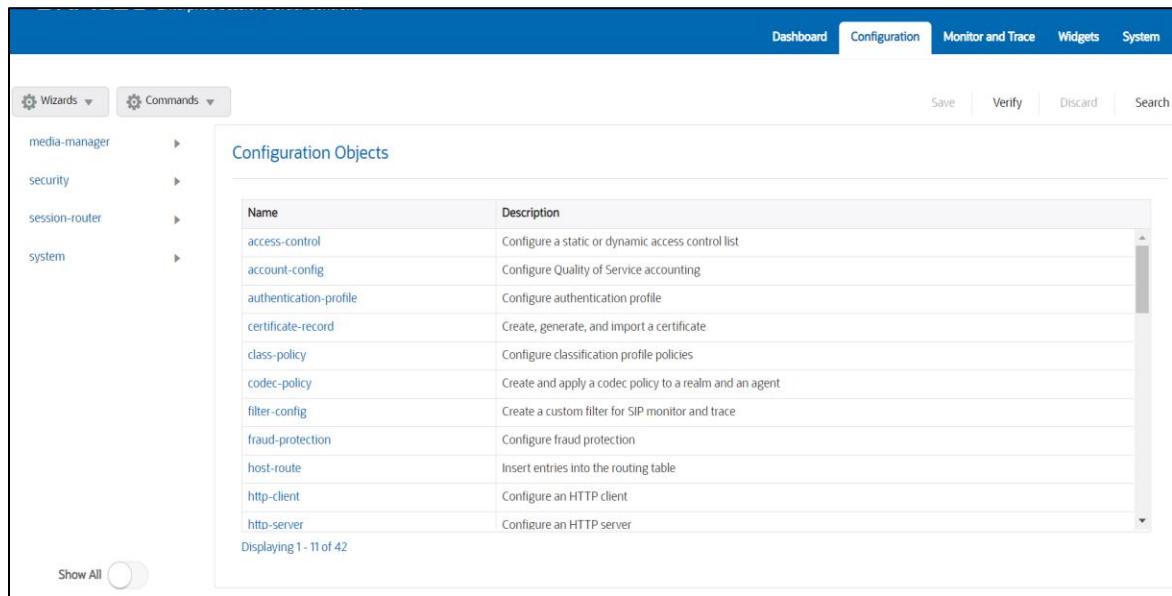
The Web GUI can be accessed through the url http://<SBC_MGMT_IP>.



The username and password is the same as that of CLI.



Go to Configuration as shown below, to configure the SBC



Kindly refer to the GUI User Guide given below for more information.

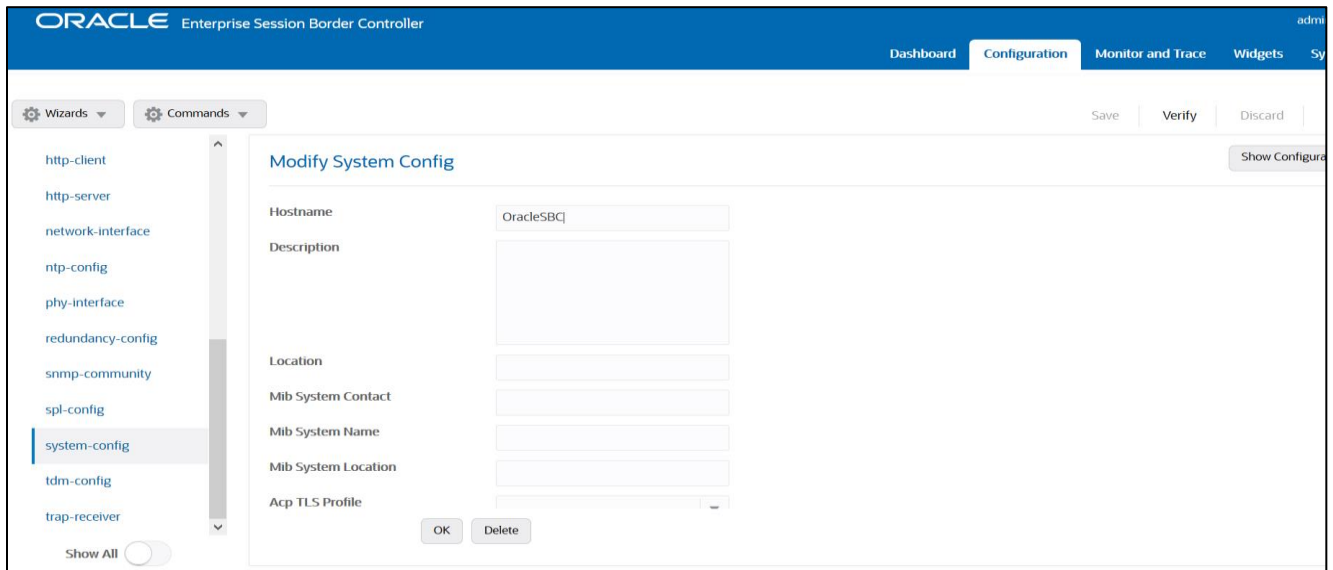
<https://docs.oracle.com/en/industries/communications/enterprise-session-border-controller/9.0.0/webgui/web-gui-guide.pdf>

The expert mode is used for configuration.

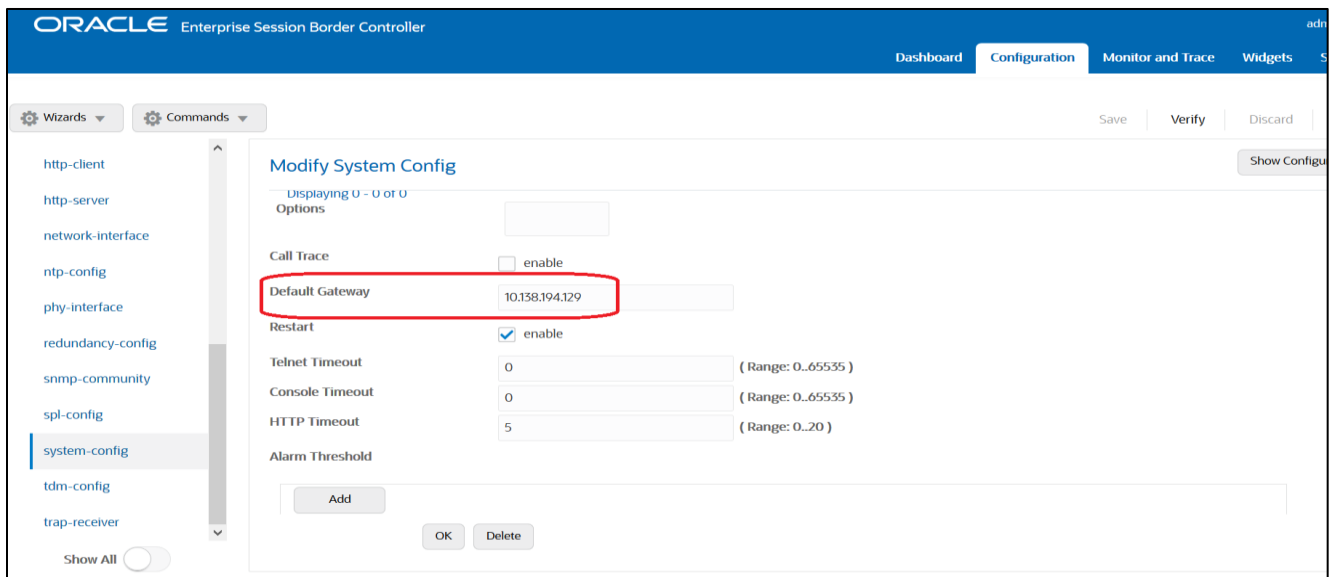
Tip: To make this configuration simpler, one can directly search the element to be configured, from the Objects tab available.

6.3. Configure system-config

Go to system->system-config



Please enter the default gateway value in the system config page.



For VME, transcoding cores are required. Please refer the documentation here for more information

<https://docs.oracle.com/en/industries/communications/enterprise-session-border-controller/9.0.0/releasenotes/esbc-release-notes.pdf>

The above step is needed only if any transcoding is used in the configuration. If there is no transcoding involved, then the above step is not needed.

6.4. Configure Physical Interface values

To configure physical Interface values, go to System->phy-interface.

Please configure M10 for Generic Trunk side and M11 for Cisco side.

Parameter Name	Generic Sip Trunk side (M00)	Cisco side (M01)
Slot	0	1
Port	0	0
Operation Mode	Media	Media

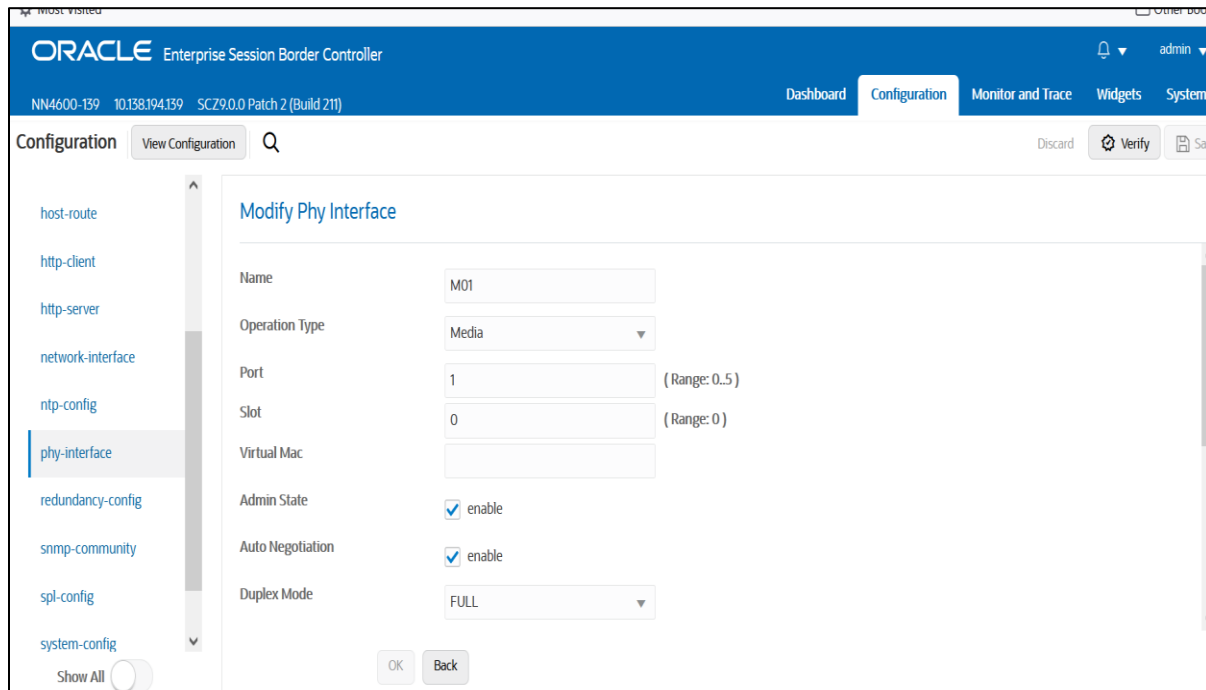
Please configure M00 interface as below.

The screenshot shows the Oracle Enterprise Session Border Controller configuration interface. The main title is "ORACLE Enterprise Session Border Controller". The navigation bar includes "Dashboard", "Configuration", "Monitor and Trace", "Widgets", and "System". The current page is "Configuration" and the sub-page is "Modify Phy Interface". The interface shows the following configuration for the M00 interface:

- Name: M00
- Operation Type: Media
- Port: 0 (Range: 0.5)
- Slot: 0 (Range: 0)
- Virtual Mac: (empty)
- Admin State: enable
- Auto Negotiation: enable
- Duplex Mode: FULL

The left sidebar shows a list of configuration categories: host-route, http-client, http-server, network-interface, ntp-config, phy-interface (selected), redundancy-config, snmp-community, spl-config, and system-config. The bottom of the form has "OK" and "Back" buttons.

Please configure M01 interface as below



6.5. Configure Network Interface values

To configure network-interface, go to system->Network-Interface. Configure interface

The table below lists the parameters, to be configured for both the interfaces.

Parameter Name	Generic Sip Trunk Side Network Interface(M00)	Cisco side Network Interface(M01)
Name	M00	M01
Host Name		
IP Address	155.212.214.105	10.232.50.79
Net Mask	255.255.255.0	255.255.255.0
Gateway	155.212.214.65	10.232.50.1

Please configure network interface M00 as below

The screenshot shows the Oracle Enterprise Session Border Controller configuration interface. The top navigation bar includes 'ORACLE Enterprise Session Border Controller', 'admin', 'Dashboard', 'Configuration', 'Monitor and Trace', 'Widgets', and 'System'. The configuration page is titled 'Modify Network Interface' and features a left-hand navigation menu with categories like 'media-manager', 'security', 'session-router', 'system', 'fraud-protection', 'host-route', 'http-client', 'http-server', 'network-interface', and 'ntp-config'. The 'network-interface' category is selected. The main configuration area contains the following fields: 'Name' (M00), 'Sub Port Id' (0, with a range of 0-4095), 'Description' (empty), 'Hostname' (empty), 'IP Address' (155.212.214.105), and 'Pri Utility Addr' (empty). At the bottom, there are 'OK' and 'Back' buttons.

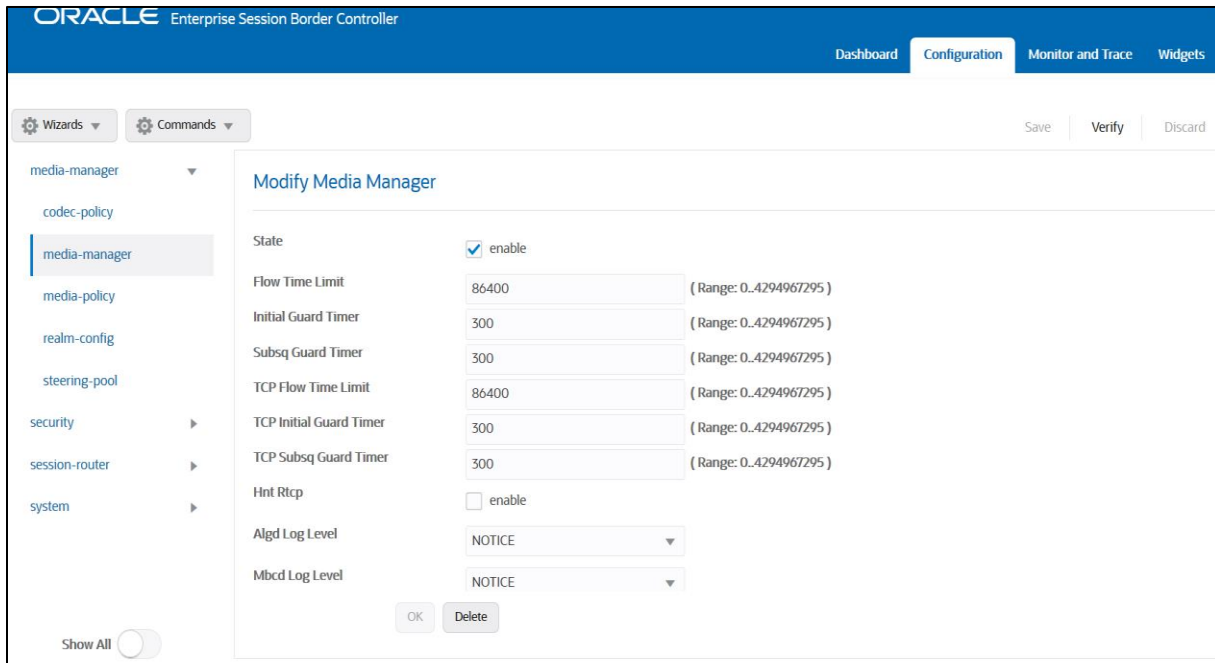
Similarly, configure network interface M01 as below

The screenshot shows the Oracle Enterprise Session Border Controller configuration interface for network interface M01. The layout is identical to the previous screenshot, but the 'Name' field is set to 'M01'. The 'IP Address' field is now '10.232.50.79', and the 'Hostname' field is also '10.232.50.79'. The 'Sub Port Id' remains '0' and the 'Pri Utility Addr' remains empty. The 'OK' and 'Back' buttons are present at the bottom.

6.6. Enable media manager

Media-manager handles the media stack required for SIP sessions on the SBC. Enable the media manager option as below.

In addition to the above config, please set the max and min untrusted signaling values to 1. Go to Media-Manager->Media-Manager



ORACLE Enterprise Session Border Controller

Dashboard Configuration Monitor and Trace Widgets

Wizards Commands Save Verify Discard

media-manager

codecs-policy

media-manager

media-policy

realm-config

steering-pool

security

session-router

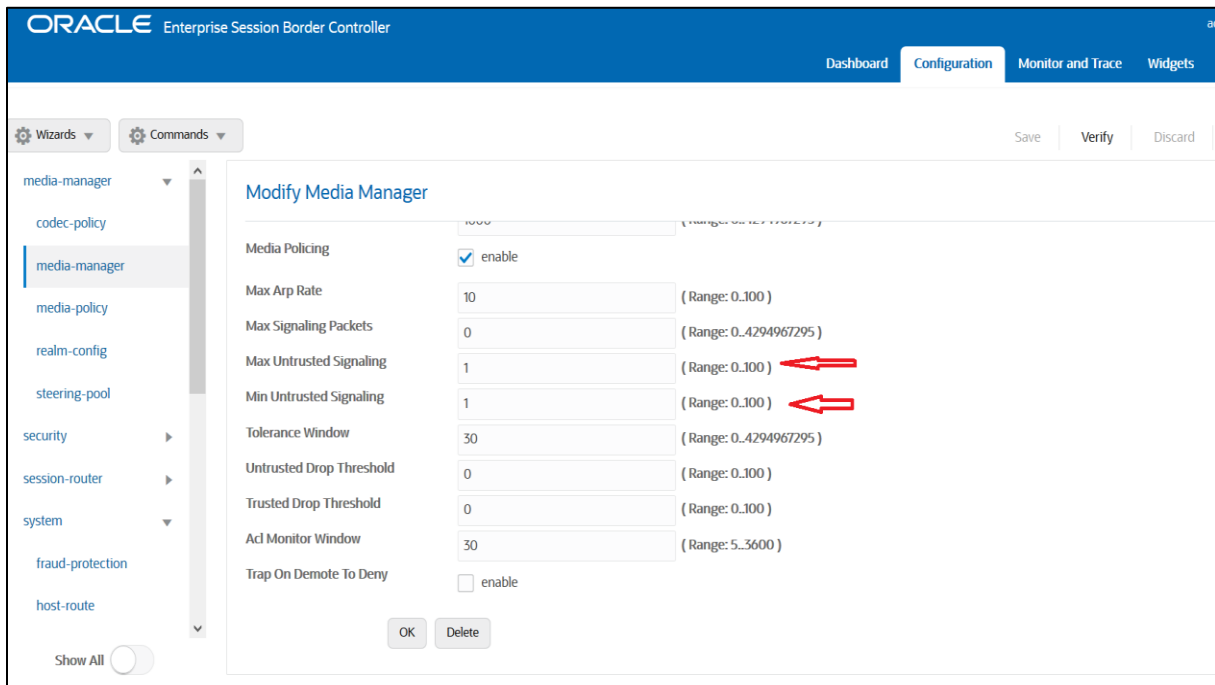
system

Show All

Modify Media Manager

State	<input checked="" type="checkbox"/>	enable	
Flow Time Limit	<input type="text"/>	86400	(Range: 0..4294967295)
Initial Guard Timer	<input type="text"/>	300	(Range: 0..4294967295)
Subsq Guard Timer	<input type="text"/>	300	(Range: 0..4294967295)
TCP Flow Time Limit	<input type="text"/>	86400	(Range: 0..4294967295)
TCP Initial Guard Timer	<input type="text"/>	300	(Range: 0..4294967295)
TCP Subsq Guard Timer	<input type="text"/>	300	(Range: 0..4294967295)
Hnt Rtcp	<input type="checkbox"/>	enable	
Algd Log Level	<input type="text"/>	NOTICE	
Mbcd Log Level	<input type="text"/>	NOTICE	

OK Delete



ORACLE Enterprise Session Border Controller

Dashboard Configuration Monitor and Trace Widgets

Wizards Commands Save Verify Discard

media-manager

codecs-policy

media-manager

media-policy

realm-config

steering-pool

security

session-router

system

fraud-protection

host-route

Show All

Modify Media Manager

Media Policing	<input checked="" type="checkbox"/>	enable	
Max Arp Rate	<input type="text"/>	10	(Range: 0..100)
Max Signaling Packets	<input type="text"/>	0	(Range: 0..4294967295)
Max Untrusted Signaling	<input type="text"/>	1	(Range: 0..100)
Min Untrusted Signaling	<input type="text"/>	1	(Range: 0..100)
Tolerance Window	<input type="text"/>	30	(Range: 0..4294967295)
Untrusted Drop Threshold	<input type="text"/>	0	(Range: 0..100)
Trusted Drop Threshold	<input type="text"/>	0	(Range: 0..100)
Acl Monitor Window	<input type="text"/>	30	(Range: 5..3600)
Trap On Demote To Deny	<input type="checkbox"/>	enable	

OK Delete

6.7. Configure Realms

Navigate to realm-config under media-manager and configure a realm as shown below
The name of the Realm can be any relevant name according to the user convenience.

Use the following table as a configuration example for the two realms used in this configuration:

Config Parameter	Generic SIP Trunk	Cisco Side
Identifier	SIPTrunk	CUCMRealm
Network Interface	M00	M01
Mm in realm	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
FQDN		
Media Sec policy	RTP	RTP
Access Control Trust Level	High	High

In the below case, Realm name is given as SIPTrunk for Generic SIP Trunk Side
Please set the Access Control Trust Level as high for this realm

The screenshot displays the Oracle Enterprise Session Border Controller configuration interface. The top navigation bar includes the Oracle logo, version information (NN4600-139, 10.138.194.139, SCZ9.0.0 Patch 2 (Build 211)), and menu options (Dashboard, Configuration, Monitor and Trace, Widgets, System). The 'Configuration' menu is active, and the 'realm-config' option is selected in the left sidebar. The main content area shows the 'Modify Realm Config' dialog with the following fields:

- Identifier: SIPTrunk
- Description: (Empty text area)
- Addr Prefix: 0.0.0.0
- Network Interfaces: M00:0.4 X
- Media Realm List: (Empty list)

At the bottom of the dialog, there are 'OK' and 'Back' buttons.

The screenshot shows the Oracle Enterprise Session Border Controller interface. The top navigation bar includes 'Dashboard', 'Configuration', and 'Monitor and Trace'. The left sidebar lists various configuration categories, with 'realm-config' selected. The main content area is titled 'Add Realm Config' and contains several configuration fields:

- Out Translationid: [Dropdown]
- In Manipulationid: [Dropdown]
- Out Manipulationid: [Dropdown]
- Average Rate Limit: 0 (Range: 0..4294967295)
- Access Control Trust Level: high (indicated by a red arrow)
- 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: [Field]

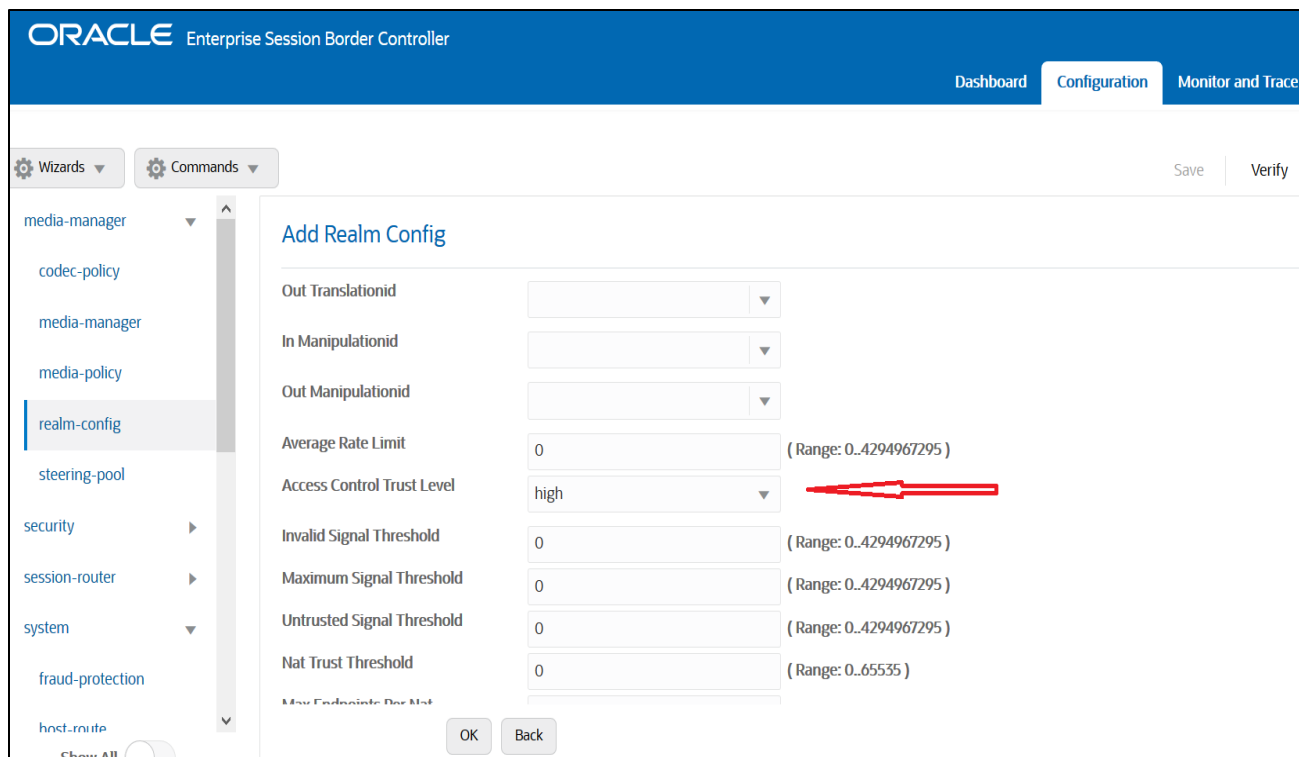
Buttons for 'OK' and 'Back' are located at the bottom of the configuration area.

Similarly, Realm name is given as CUCMRealm for Cisco side.
Please set the Access Control Trust Level as high for this realm too.

The screenshot shows the Oracle Enterprise Session Border Controller interface for 'Modify Realm Config'. The top navigation bar includes 'Dashboard', 'Configuration', 'Monitor and Trace', 'Widgets', and 'System'. The left sidebar lists various configuration categories, with 'realm-config' selected. The main content area is titled 'Modify Realm Config' and contains several configuration fields:

- Identifier: CUCMRealm
- Description: [Text Area]
- Addr Prefix: 0.0.0.0
- Network Interfaces: M01:0.4 X
- Media Realm List: [Text Area]
- Media Realm: [Text Area]

Buttons for 'OK' and 'Back' are located at the bottom of the configuration area.



For more information on Access Control Trust Level, please refer to SBC Security guide link given below:

<https://docs.oracle.com/en/industries/communications/session-border-controller/9.0.0/security/security-guide.pdf>

6.8. Configure SIP Interfaces

Navigate to sip-interface under session-router and configure the sip-interface as shown below. Please configure the below settings under the sip-interface.

Please Configure sip-interface for the Generic SIP Trunk side as below.

Set allow-anonymous to agents-only to ensure traffic to this sip-interface only comes from the particular Session agents added to the SBC.

Configuration View Configuration Q Discard Verify Save

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

Show All

Modify SIP Interface

State enable

Realm ID SIPTrunk

Description

SIP Ports

Action	Select	Address	Port	Transport Protocol	TLS Profile	Allow Anonymous	Multi Home Addr
:	<input type="checkbox"/>	155.212.214.105	5060	UDP		agents-only	
:	<input type="checkbox"/>	155.212.214.105	5060	TCP		agents-only	

OK Back

Similarly, Please Configure sip-interface for the Cisco side as below:

ORACLE Enterprise Session Border Controller admin

NN4600-139 10.138.194.139 SCZ9.0.0 Patch 2 (Build 211) Dashboard Configuration Monitor and Trace Widgets System

Configuration View Configuration Q Discard Verify Save

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 SIP Interface

State enable

Realm ID CUCMRealm

Description

SIP Ports

Action	Select	Address	Port	Transport Protocol	TLS Profile	Allow Anonymous	Multi Home Addr
:	<input type="checkbox"/>	10.232.50.79	5060	UDP		agents-only	
:	<input type="checkbox"/>	10.232.50.79	5060	TCP		agents-only	

OK Back

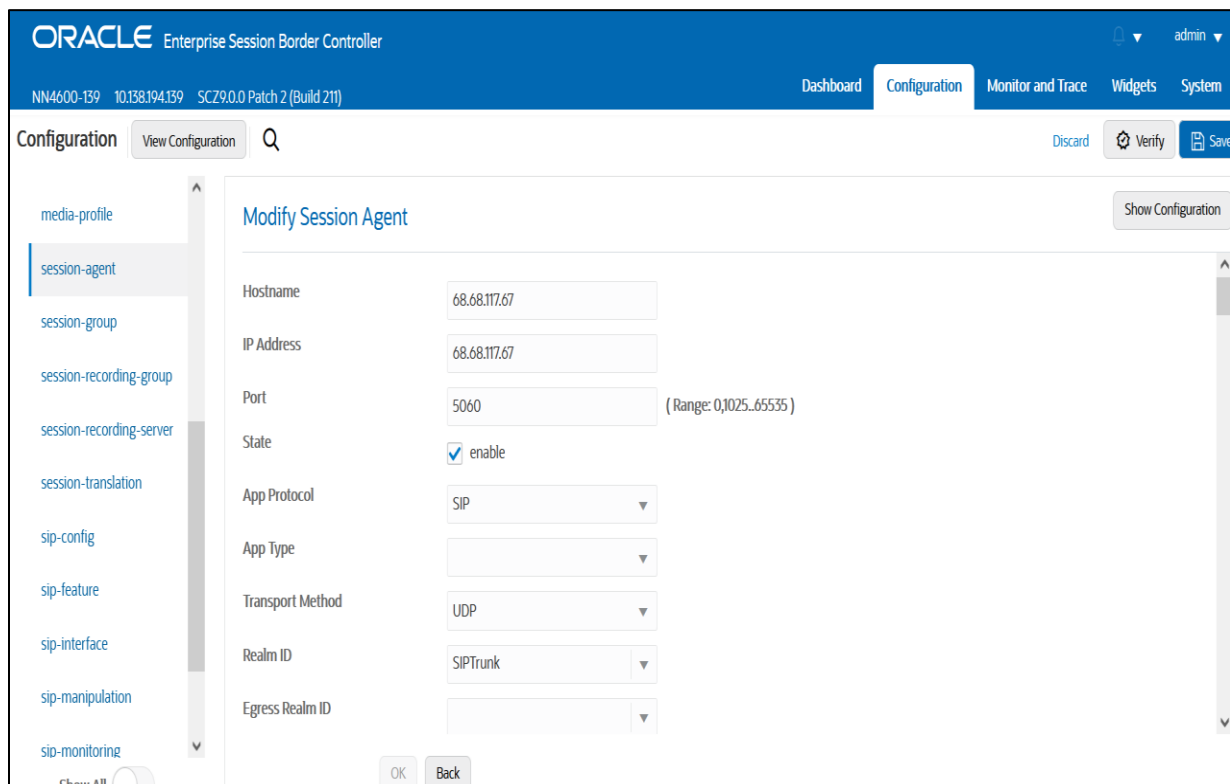
Once sip-interface is configured – the SBC is ready to accept traffic on the allocated IP address.

6.9. Configure session-agent

Session-agents are config elements which are trusted agents who can send/receive traffic from the SBC with direct access to trusted data path. Session-agents are config elements which are trusted agents who can send/receive traffic from the SBC with direct access to trusted data path.

Go to session-router->Session-Agent and Configure the session-agents for the Generic SIP Trunk

- Host name to “68.68.117.67”, port to 5060
- realm-id – needs to match the realm created for the Generic SIP Trunk



The screenshot displays the Oracle Enterprise Session Border Controller configuration interface. The top navigation bar includes the Oracle logo, the product name 'Enterprise Session Border Controller', and the user 'admin'. The main navigation menu shows 'Configuration' as the active tab. The left sidebar lists various configuration categories, with 'session-agent' selected. The main content area is titled 'Modify Session Agent' and contains the following fields:

Hostname	68.68.117.67
IP Address	68.68.117.67
Port	5060 (Range: 0,1025..65535)
State	<input checked="" type="checkbox"/> enable
App Protocol	SIP
App Type	
Transport Method	UDP
Realm ID	SIPTrunk
Egress Realm ID	

At the bottom of the form, there are 'OK' and 'Back' buttons. The interface also includes a search bar, a 'View Configuration' button, and a 'Show Configuration' button.

Similarly, configure the session-agents for the Cisco Side as below:

- Host name to FQDN of CUCM which is “CUCM-Cisco.pe.oracle.com” in our example. **We can also give Cisco CUCM IP address if there is no host name configured.**
- The same FQDN value should be configured in Cisco CUCM under System --- Enterprise Parameter ----Cluster FQDN.

ORACLE Enterprise Session Border Controller

Dashboard Configuration Monitor and Trace Widgets

Wizards Commands Save Verify Discard

media-profile
session-agent
 session-group
 session-recording-group
 session-recording-server
 session-translation
 sip-config
 sip-feature
 sip-interface
 sip-manipulation
 sip-monitoring

Show All

Add Session Agent

Hostname: CUCM-Cisco.pe.oracle.com

IP Address: 10.232.50.89

Port: 5060 (Range: 0,1025..65535)

State: enable

App Protocol: SIP

App Type:

Transport Method: UDP+TCP

Realm ID: CUCMRealm

Egress Realm ID:

OK Back

Nct secure | 10.232.50.89/ccm admin/serviceParamEd t.do?service=11&showall=false

Cisco Unified CM Administration
 For Cisco Unified Communications Solutions

Navigation Cisco Unified CM Administration Go
 admin | Search Documentation | About | Logout

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

Enterprise Parameters Configuration

Save Set to Default Reset Apply Config

[Syncing Mode for Enterprise Groups](#) * Differential Sync Differential Sync

Service Manager TCP ports parameters

[Service Manager TCP Server communication port number](#) 8883 8888

[Service Manager TCP Client communication port number](#) 8883 8889

CRS Application Parameters

[Auto Attendant Installed](#) * false

[PCC Express Installed](#) * false

Clusterwide Domain Configuration

[Organization Top Level Domain](#) pe.oracle.com

[Cluster Fully Qualified Domain Name](#) CUCM-Cisco.pe.oracle.com

Denial-of-Service Protection

[Denial-of-Service Protection](#) * True True

TLS Handshake Timer

[TLS Handshake Timer](#) * 60 60

TLS Resumption Timer

[TLS Resumption Timer](#) * 3603 3600

6.10. Configure local-policy

Local policy config allows for the SBC to route calls from one end of the network to the other based on routing criteria. To configure local-policy, go to Session-Router->local-policy.

To route the calls from Cisco side to Generic SIP trunk side, Use the below local –policy

The screenshot shows the 'Add Local Policy' configuration page in the Oracle Enterprise Session Border Controller. The page is titled 'Add Local Policy' and is located under the 'Configuration' tab. The left sidebar shows a list of configuration options, with 'local-policy' selected. The main content area contains the following fields:

- From Address: * X
- To Address: * X
- Source Realm: CUCMRealm X |
- Description: (empty text area)
- State: enable
- Policy Priority: none

Buttons for 'OK' and 'Back' are visible at the bottom of the form.

The screenshot shows the 'Modify Local Policy' configuration page in the Oracle Enterprise Session Border Controller. The page is titled 'Modify Local Policy' and is located under the 'Configuration' tab. The left sidebar shows a list of configuration options, with 'local-policy' selected. The main content area contains the following fields:

- State: enable
- Policy Priority: none

Below the fields is a 'Policy Attributes' table with the following data:

Action	Select	Next Hop	Realm	Action	Terminate ...	Cost	State	App Protocol	Lookup	Next Key	Auth
:	<input type="checkbox"/>	68.68.117.67	SIPTrunk	none	disabled	0	enabled		single		

Buttons for 'OK' and 'Back' are visible at the bottom of the form.

To route the calls from the Generic SIP Trunk side to Cisco side, Use the below local –policy

The screenshot shows the 'Modify Local Policy' configuration page in the Oracle Enterprise Session Border Controller. The left sidebar lists various configuration categories, with 'local-policy' selected. The main area contains the following fields:

- From Address:** A text input field containing '* X'.
- To Address:** A text input field containing '* X'.
- Source Realm:** A dropdown menu with 'SIPTrunk' selected.
- Description:** A large empty text area.
- State:** A checkbox labeled 'enable' which is checked.
- Policy Priority:** A dropdown menu with 'none' selected.

At the bottom of the form are 'OK' and 'Back' buttons. The top navigation bar includes 'Dashboard', 'Configuration', 'Monitor and Trace', 'Widgets', and 'System'.

This screenshot shows the 'Modify Local Policy' configuration page with the 'Policy Attributes' section expanded. It includes a table with the following data:

Next Hop	Realm	Action	Terminate Recursion	Cost	State	App Protocol	Lookup	Next Key
CUCM-Cisco.pe.oracle.com	CUCMRealm	replace-uri	disabled	0	enabled		single	

The 'Policy Attributes' section also includes an 'Add' button and 'OK'/'Back' buttons at the bottom. The left sidebar shows 'local-policy' selected. The top navigation bar includes 'Dashboard', 'Configuration', 'Monitor and Trace', and 'Widgets'.

6.11. Configure steering-pool

Steering-pool config allows configuration to assign IP address(es), ports & a realm.

Cisco side steering pool.

The screenshot shows the Oracle Enterprise Session Border Controller configuration interface. The top navigation bar includes the Oracle logo, product name, version information (NN4600-139, 10.138.194.139, SCZ9.0.0 Patch 2 (Build 211)), and menu items for Dashboard, Configuration, Monitor and Trace, Widgets, and System. The left sidebar lists configuration categories: media-manager, codec-policy, media-manager, media-policy, realm-config, steering-pool (selected), security, session-router, and system. The main content area is titled 'Modify Steering Pool' and contains the following fields:

IP Address	<input type="text" value="10.232.50.79"/>
Start Port	<input type="text" value="25000"/> (Range: 0,1..65535)
End Port	<input type="text" value="29999"/> (Range: 0,1..65535)
Realm ID	<input type="text" value="CUCMRealm"/>
Network Interface	<input type="text"/>

At the bottom of the form are 'OK' and 'Back' buttons, and a 'Show All' toggle switch.

Generic SIP trunk side steering pool.

The screenshot shows the Oracle Enterprise Session Border Controller configuration interface, similar to the previous one. The top navigation bar and left sidebar are identical. The main content area is titled 'Modify Steering Pool' and contains the following fields:

IP Address	<input type="text" value="155.212.214.105"/>
Start Port	<input type="text" value="10000"/> (Range: 0,1..65535)
End Port	<input type="text" value="19999"/> (Range: 0,1..65535)
Realm ID	<input type="text" value="SIPTrunk"/>
Network Interface	<input type="text"/>

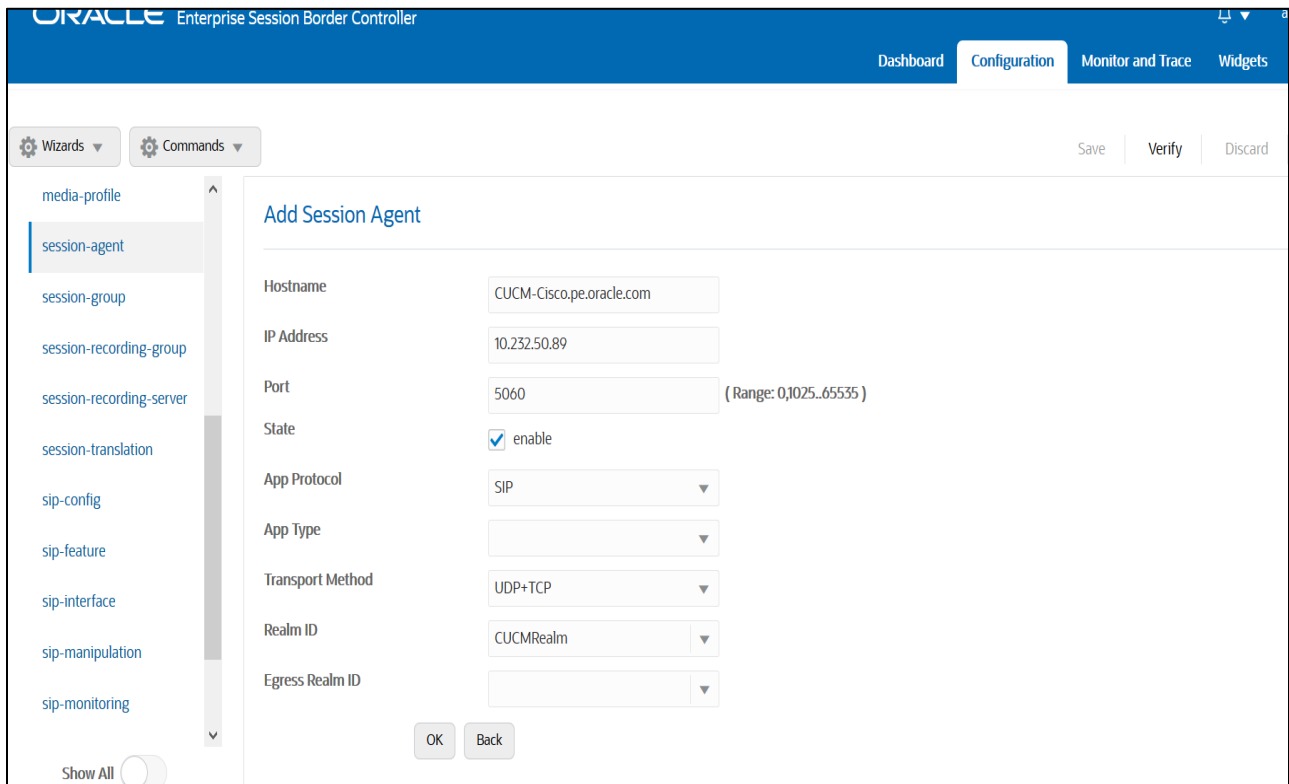
At the bottom of the form are 'OK' and 'Back' buttons, and a 'Show All' toggle switch.

6.12. Configure Ping Response

To simplify the ORACLE SBC configuration, from GA Release SCZ830m1p7, there is a new parameter introduced under the **Session agent** configuration element. The parameter name is **Ping response**.

Ping Response:

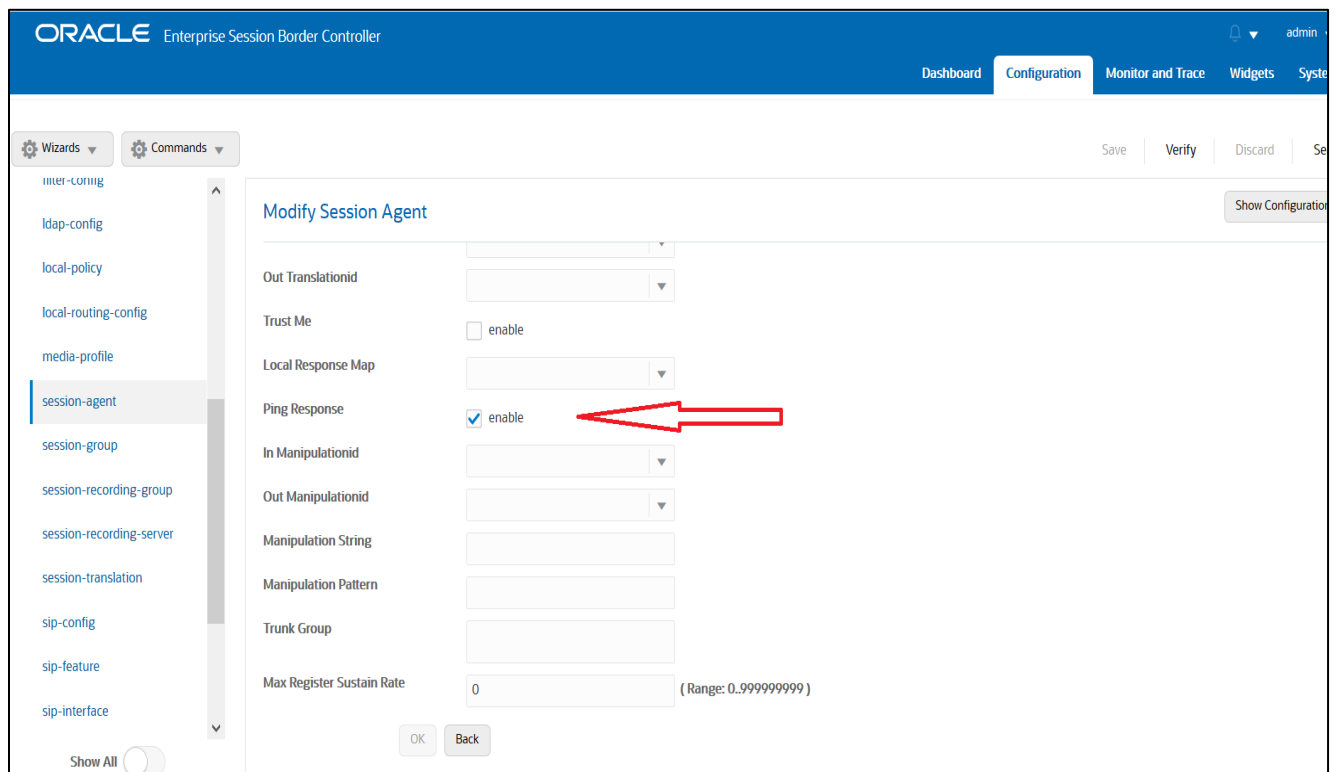
When this parameter is enabled, the SBC responds with a 200 OK to all Sip Options Pings it receives from trusted agents. This takes the place of the current Sip Manipulation, RepondOptions.



The screenshot displays the ORACLE Enterprise Session Border Controller configuration interface. The top navigation bar includes 'Dashboard', 'Configuration', 'Monitor and Trace', and 'Widgets'. The left sidebar lists various configuration elements, with 'session-agent' selected. The main area shows the 'Add Session Agent' form with the following fields:

Field	Value
Hostname	CUCM-Cisco.pe.oracle.com
IP Address	10.232.50.89
Port	5060 (Range: 0,1025..65535)
State	<input checked="" type="checkbox"/> enable
App Protocol	SIP
App Type	
Transport Method	UDP+TCP
Realm ID	CUCMRealm
Egress Realm ID	

Buttons for 'OK' and 'Back' are located at the bottom of the form. The 'Save', 'Verify', and 'Discard' buttons are located in the top right corner of the configuration area.



6.13. SBC config for Cisco Offer less INVITE

When CUCM sends INVITE without SDP towards SBC and in that case, SBC needs to send out INVITE with SDP towards Generic SIP trunk and vice versa. To do that, please set the parameter "**Add SDP Invite**" as both under sip interface (both SIP interfaces) as highlighted below. When this option is enabled, codecs have to be configured under the parameter "**Add SDP profiles**". The configured codecs is also shown below.

Note: this is an optional config – configure this only if CUCM sends offer less INVITE towards SBC.

Configuration

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

View Configuration

Modify SIP Interface

State enable

Realm ID SIPTrunk

Description

SIP Ports

Action	Select	Address	Port	Transport Protocol	TLS Profile	Allow Anonymous	Multi Home Addr
:	<input type="checkbox"/>	155.212.214.105	5060	UDP		agents-only	
:	<input type="checkbox"/>	155.212.214.105	5060	TCP		agents-only	

OK Back

ORACLE Enterprise Session Border Controller

Dashboard Configuration Monitor and Trace Widgets

Wizards Commands

session-group
session-recording-group
session-recording-server
session-translation
sip-config
sip-feature
sip-interface
sip-manipulation
sip-monitoring
sti-server
translation-rules

Save Verify Discard

Modify SIP Interface

Service Profile

TCP Keepalive none

Add SDP Invite both

Add SDP In Msg

P Early Media Header disabled

P Early Media Direction

Add SDP Profiles PCMU X PCMA X G729 X

Add SDP Profiles In Msg

OK Back

6.14. Configure Translation Rules

The translation rules sub-element is where the actual translation rules are created. Go to Session router → translation-rules and create the below rule.

The screenshot shows the Oracle Enterprise Session Border Controller configuration interface. The left sidebar lists various configuration elements, with 'translation-rules' selected. The main area is titled 'Add Translation Rules' and contains the following fields:

Id	addplus
Type	replace
Add String	+
Add Index	0
Delete String	
Delete Index	0 (Range: 0..999999999)

Buttons for 'OK' and 'Back' are visible at the bottom.

The screenshot shows the Oracle Enterprise Session Border Controller configuration interface. The left sidebar lists various configuration elements, with 'translation-rules' selected. The main area is titled 'Add Translation Rules' and contains the following fields:

Id	removeplus
Type	delete
Add String	
Add Index	0
Delete String	+
Delete Index	0 (Range: 0..999999999)

Buttons for 'OK' and 'Back' are visible at the bottom.

6.15. Configure Session Translation Rules

A session translation defines how translation rules are applied to calling and called numbers. Go to Session Router → session-translation and configure the below translation rules.

Add the below translation rule to Cisco side.

The screenshot shows the Oracle Enterprise Session Border Controller configuration interface. The 'Configuration' tab is active. On the left, a navigation menu lists various configuration sections, with 'session-translation' selected. The main area is titled 'Add Session Translation'. It contains several input fields: 'Id' is set to 'toCUCM'; 'Rules Calling' and 'Rules Called' each have a 'removeplus X' button; 'Rules Asserted Id', 'Rules Redirect', 'Rules Isup Cdpn', and 'Rules Isup Cgpn' are empty. At the bottom, there are 'OK' and 'Back' buttons. The top right corner has 'Save', 'Verify', and 'Discard' buttons.

Add the below translation rule to SIP trunk side as PSTN expects call with + sign.

The screenshot shows the Oracle Enterprise Session Border Controller configuration interface. The 'Configuration' tab is active. On the left, a navigation menu lists various configuration sections, with 'session-translation' selected. The main area is titled 'Modify Session Translation'. It contains several input fields: 'Id' is set to 'toPSTN'; 'Rules Calling' and 'Rules Called' each have an 'addPlus X' button; 'Rules Asserted Id' is empty; a tooltip for '<pattern>' explains it 'Manipulates the SIP P-Asserted-Id header'; 'Rules History Info', 'Rules Isup Cdpn', and 'Rules Isup Cgpn' are empty. At the bottom, there are 'OK' and 'Back' buttons. The top right corner has 'Discard', 'Verify', and 'Save' buttons.

Please add the above session translation rules to Cisco realm as shown below

The screenshot shows the Oracle Enterprise Session Border Controller configuration interface. The top navigation bar includes 'ORACLE Enterprise Session Border Controller', user 'admin', and menu items: 'Dashboard', 'Configuration', 'Monitor and Trace', 'Widgets', and 'System'. The configuration page title is 'Configuration' with a search icon and buttons for 'View Configuration', 'Discard', 'Verify', and 'Save'. The left sidebar lists configuration categories: media-manager, codec-policy, media-manager, media-policy, realm-config (selected), steering-pool, security, session-router, and system. The main content area is titled 'Modify Realm Config' and contains the following fields:

- Identifier: CUCMRealm
- Description: (empty text area)
- Addr Prefix: 0.0.0.0
- Network Interfaces: M0:0.4
- Media Realm List: (empty list)

At the bottom of the form are 'OK' and 'Back' buttons.

This screenshot shows the same 'Modify Realm Config' page but with advanced settings visible. The left sidebar now includes 'access-control', 'account-config', and 'filter-config' in addition to the previous categories. The main content area includes the following additional fields:

- SIP inactive only: enable
- DTLS Srtplib Profile: (dropdown menu)
- Srtplib Msm Passthrough: enable
- Class Profile: (dropdown menu)
- In Translationid: toPSTN
- Out Translationid: toCUCM
- In Manipulationid: (dropdown menu)
- Out Manipulationid: (dropdown menu)
- Average Rate Limit: 0 (Range: 0..4294967295)
- Access Control Trust Level: (dropdown menu)

'OK' and 'Back' buttons are also present at the bottom.

With this, SBC configuration is complete

7. SBC configuration for Cisco Remote Worker

This section of Cisco Remote Worker configuration is included for Cisco remote endpoints that register through the Oracle SBC to the Cisco Call Manager (Cisco CUCM). This would require additional configuration to be configured on the Oracle SBC along with the SIP trunking config as mentioned in the earlier description of the test bed. To complete the particular testing, we have configured Cisco endpoints which will register to Cisco CUCM through the SBC. SBC will handle the calls based on the registration information present in the cache. **Please note that Cisco Remote worker Access side is secured (TLS/SRTP) and Cisco Core side is unsecured (UDP or TCP/RTP)**

Note: Remote worker configuration through TLS for Jabber clients is not supported by CUCM.

In order to achieve the requirement, we have made below configuration on the Oracle SBC

Access and Core Realm for Cisco Remote worker
Steering Pool associated with the Realm for Cisco Remote worker
Sip-interface associated with the Realm for Cisco Remote worker
(Optional) A local policy to route the registration requests from this Realm to the SIP Server.

Note -The local-policy element is optional as we can enable the Route to registrar parameter on the sip-interface config to route the requests to the Registrar.

The registrar host and port are configured in the sip-config element on the SBC. The remote endpoint sends register requests from Cisco Access Realm onto the SBC and then SBC registers these endpoints onto the Cisco Core Realm maintaining the registration cache in its database to route inbound calls to these endpoints.

Below are the snippets from the Oracle SBC Web GUI for the Remote worker configuration.

7.1. Configure Realms

Navigate to realm-config under media-manager and configure a realm as shown below
The name of the Realm can be any relevant name according to the user convenience.

Use the following table as a configuration example for the two realms used in this configuration:

Config Parameter	Cisco Access Side	Cisco Core Side
Identifier	CUCMpublicRealm	CUCMCoreRealm
Network Interface	M10	M11
Mm in realm	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
FQDN		
Media Sec policy	sdespolicy	RTP
Access Control Trust Level	High	High

In the below example, Realm name is given as CUCMpublicRealm for Cisco Access Side. Please set the Access Control Trust Level as medium for this realm

ORACLE Enterprise Session Border Controller

Dashboard Configuration Monitor and Trace Widgets

Wizards Commands Save Verify Discard

media-manager
codec-policy
media-manager
media-policy
realm-config
steering-pool
security
session-router
system

Modify Realm Config

Identifier	CUCMpublicRealm
Description	
Addr Prefix	0.0.0.0
Network Interfaces	M10:0.4 X
Media Realm List	
Mm In Realm	<input checked="" type="checkbox"/> enable

OK Back

Show All

ORACLE Enterprise Session Border Controller

Dashboard Configuration Monitor and Trace Widgets

Wizards Commands Save Verify Discard

media-manager
codec-policy
media-manager
media-policy
realm-config
steering-pool
security
session-router
system

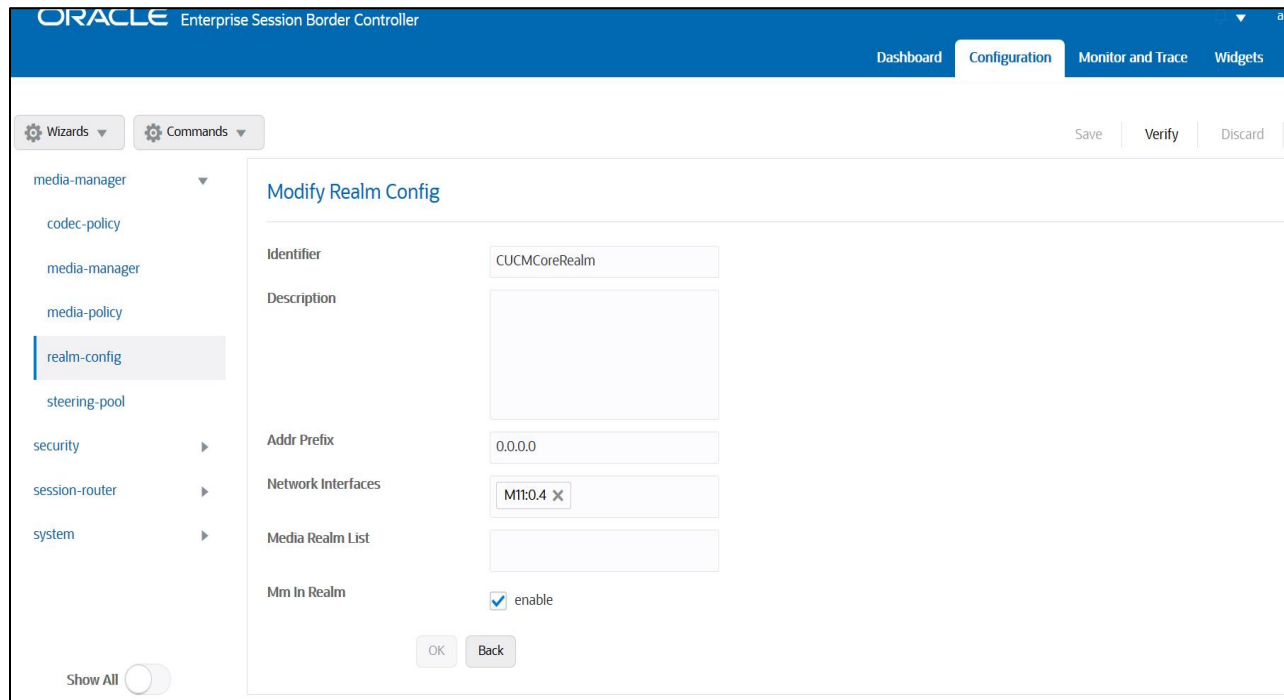
Modify Realm Config

Out Manipulationid	
In Manipulationid	
Out Manipulationid	
Average Rate Limit	0 (Range: 0..4294967295)
Access Control Trust Level	medium
Invalid Signal Threshold	10 (Range: 0..4294967295)
Maximum Signal Threshold	30 (Range: 0..4294967295)
Untrusted Signal Threshold	10 (Range: 0..4294967295)
Nat Trust Threshold	0 (Range: 0..65535)
Max Endpoints Per Nat	0 (Range: 0..65535)

OK Back

Show All

Similarly, Realm name is given as CUCMCoreRealm for Cisco Core side



7.2. Enable sip-config

SIP config enables SIP handling in the SBC.

Make sure the home realm-id, registrar-domain and registrar-host are configured.

Also add the options to the sip-config as shown below.

To configure sip-config, Go to Session-Router->sip-config and in options, add the below

- add max-udp-length =0
- reg-cache-mode=from

This option is used so that the userinfo from the From header is copied to the userinfo of the forwarded Contact header

ORACLE Enterprise Session Border Controller

Dashboard Configuration Monitor and Trace Widgets

Wizards Commands Save Verify Discard

Modify SIP Config

Slate	<input checked="" type="checkbox"/>	enable
Dialog Transparency	<input checked="" type="checkbox"/>	enable
Home Realm ID		CUCMCoreRealml
Egress Realm ID		
Nat Mode		None
Registrar Domain		*
Registrar Host		*
Registrar Port		5060 (Range: 0,1025..65535)
Init Timer		500 (Range: 0..4294967295)

OK Delete

ORACLE Enterprise Session Border Controller

Dashboard Configuration Monitor and Trace Widgets

Wizards Commands Save Verify Discard

Modify SIP Config

Trans Expire		32 (Range: 0..4294967295)
Initial Inv Trans Expire		0 (Range: 0..999999999)
Invite Expire		180 (Range: 0..4294967295)
Session Max Life Limit		0
Enforcement Profile		
Red Max Trans		10000 (Range: 0..50000)
Options		max-udp-length=0 X reg-cache-mode=from X
SPL Options		
SIP Message Len		4096 (Range: 0..65535)

OK Delete

7.3. Enable media manager

Media-manager handles the media stack required for SIP sessions on the SBC. Enable the media manager option as below.

In addition to the above config, please set the max and min untrusted signaling values to 9 which takes care of Access Realm. Go to Media-Manager->Media-Manager

The screenshot shows the 'Modify Media Manager' configuration page in the Oracle Enterprise Session Border Controller. The 'State' checkbox is checked and labeled 'enable'. Other configuration items include:

Parameter	Value	Range
Flow Time Limit	86400	(Range: 0..4294967295)
Initial Guard Timer	300	(Range: 0..4294967295)
Subsq Guard Timer	300	(Range: 0..4294967295)
TCP Flow Time Limit	86400	(Range: 0..4294967295)
TCP Initial Guard Timer	300	(Range: 0..4294967295)
TCP Subsq Guard Timer	300	(Range: 0..4294967295)
Hnt Rtcp	<input type="checkbox"/> enable	
Algd Log Level	NOTICE	
Mbcd Log Level	NOTICE	

Buttons: OK, Delete

The screenshot shows the 'Modify Media Manager' configuration page in the Oracle Enterprise Session Border Controller. The 'Media Policing' checkbox is checked and labeled 'enable'. Other configuration items include:

Parameter	Value	Range
Red Sync Comp Time	1000	(Range: 0..4294967295)
Media Policing	<input checked="" type="checkbox"/> enable	
Max Signaling Bandwidth	10000000	(Range: 71000..10000000)
Max Untrusted Signaling	9	(Range: 0..100)
Min Untrusted Signaling	9	(Range: 0..100)
Tolerance Window	30	(Range: 0..4294967295)
Untrusted Drop Threshold	0	(Range: 0..100)
Trusted Drop Threshold	0	(Range: 0..100)
Acl Monitor Window	30	(Range: 5..3600)
Trap On Demote To Deny	<input type="checkbox"/> enable	

Buttons: OK, Delete

7.4. Configure SIP Interfaces

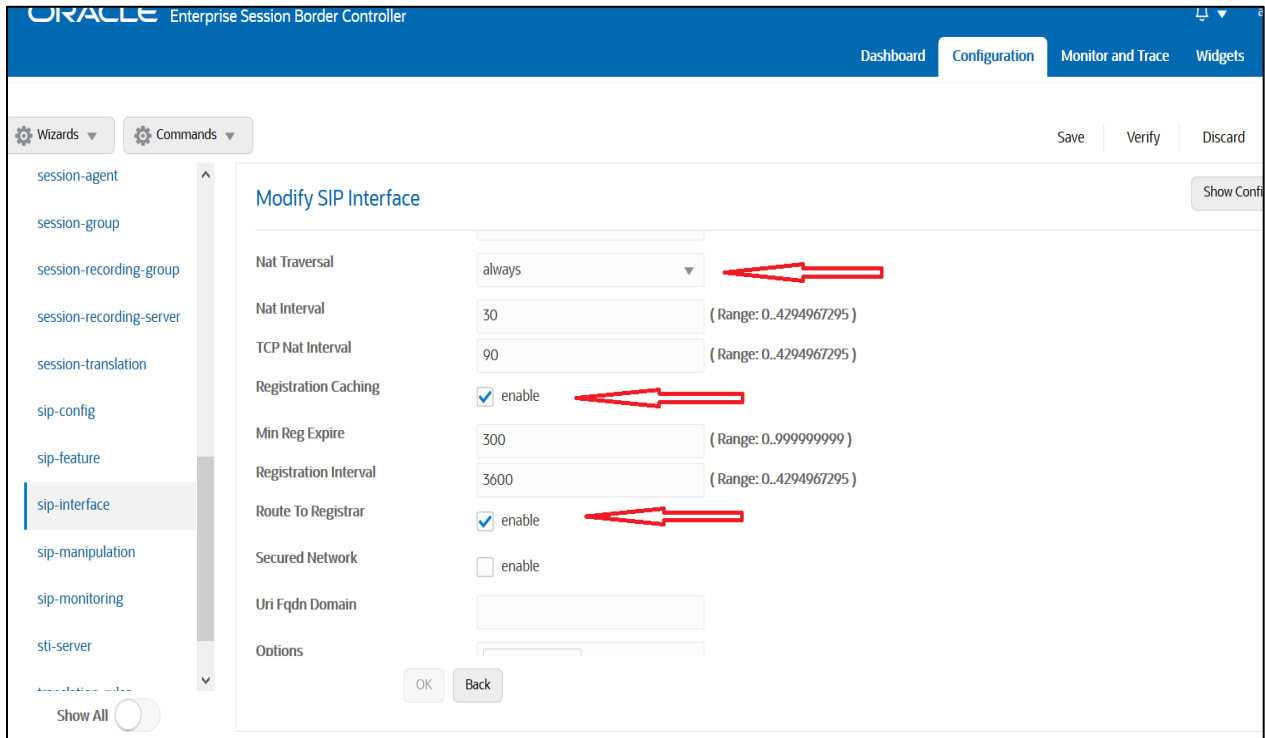
Navigate to sip-interface under session-router and configure the sip-interface as shown below. Please configure the below settings under the sip-interface.

Please Configure sip-interface for the for Cisco Access side as below:

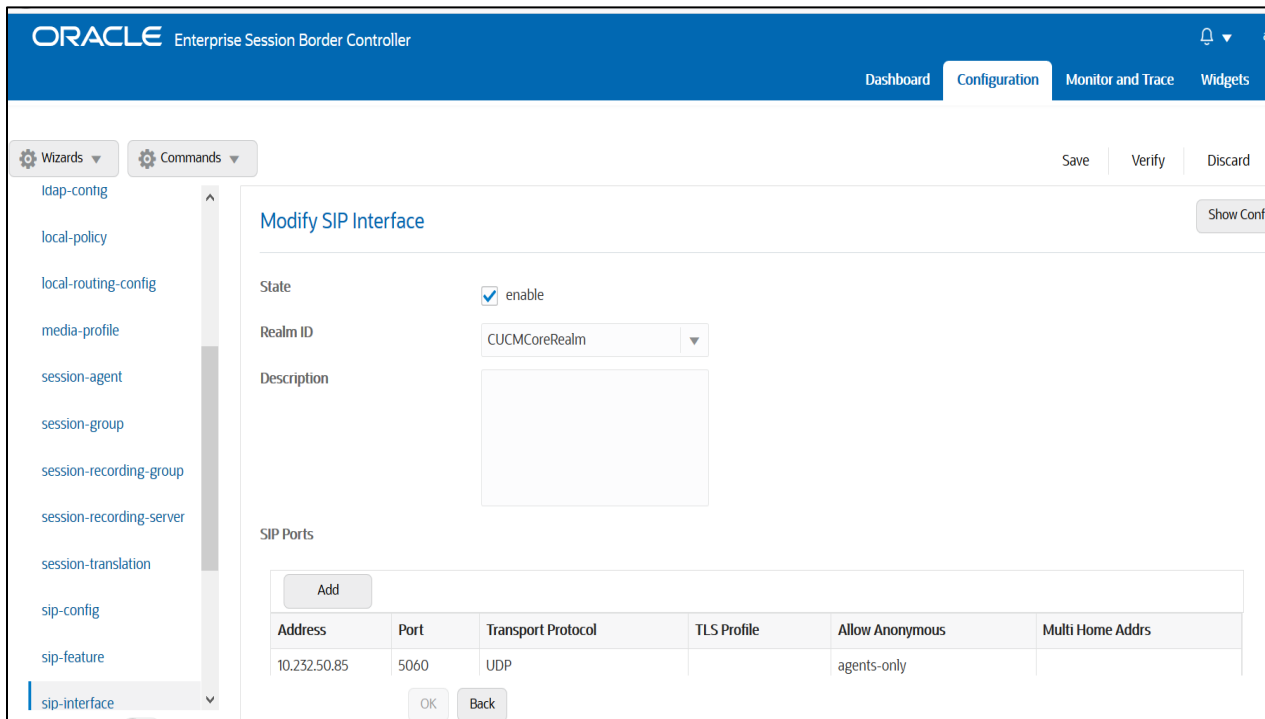
- Set allow-anonymous to Registered to ensure traffic to this sip-interface only comes from the registered user.
- Set NAT traversal to always for the remote workers to register.
- Enable Registration Caching and Route to Register

The screenshot shows the Oracle Enterprise Session Border Controller configuration page for a SIP Interface. The interface is titled "Modify SIP Interface" and includes a left-hand navigation menu with options like "local-routing-config", "media-profile", "session-agent", "session-group", "session-recording-group", "session-recording-server", "session-translation", "sip-config", "sip-feature", "sip-interface", and "sip-manipulation". The "sip-interface" option is selected. The main configuration area includes a "State" checkbox set to "enable", a "Realm ID" dropdown menu set to "CUCMpublicRealm", and a "Description" text area. Below these fields is a "SIP Ports" section with an "Add" button and a table. The table has columns for "Address", "Port", "Transport Protocol", "TLS Profile", "Allow Anonymous", and "Multi Home Addr". One row is visible with "5061" in the "Port" column, "TLS" in the "Transport Protocol" column, and "registered" in the "Allow Anonymous" column. There are "OK" and "Back" buttons at the bottom of the table.

Address	Port	Transport Protocol	TLS Profile	Allow Anonymous	Multi Home Addr
	5061	TLS	TLSProfile	registered	



Similarly, Please Configure sip-interface for the Cisco Core side as below:

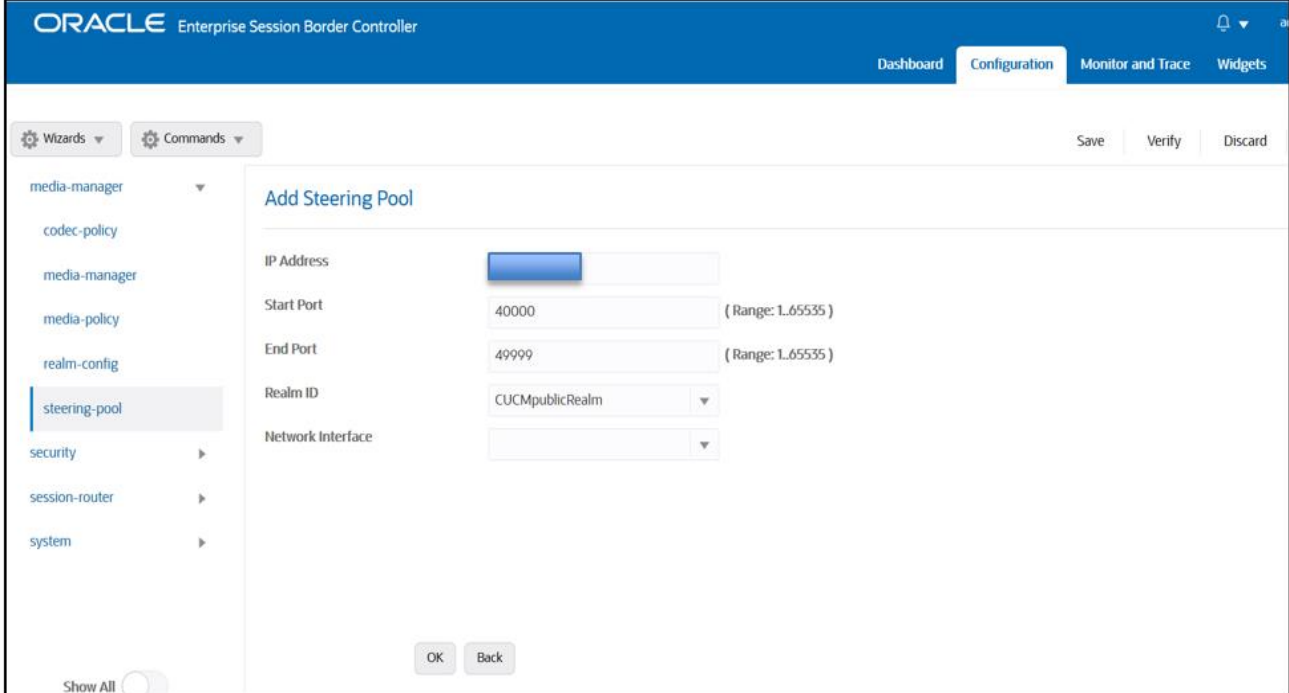


Once sip-interface is configured – the SBC is ready to accept traffic on the allocated IP address.

7.5. Configure steering-pool

Steering-pool config allows configuration to assign IP address(es), ports & a realm.

Cisco Access side steering pool.

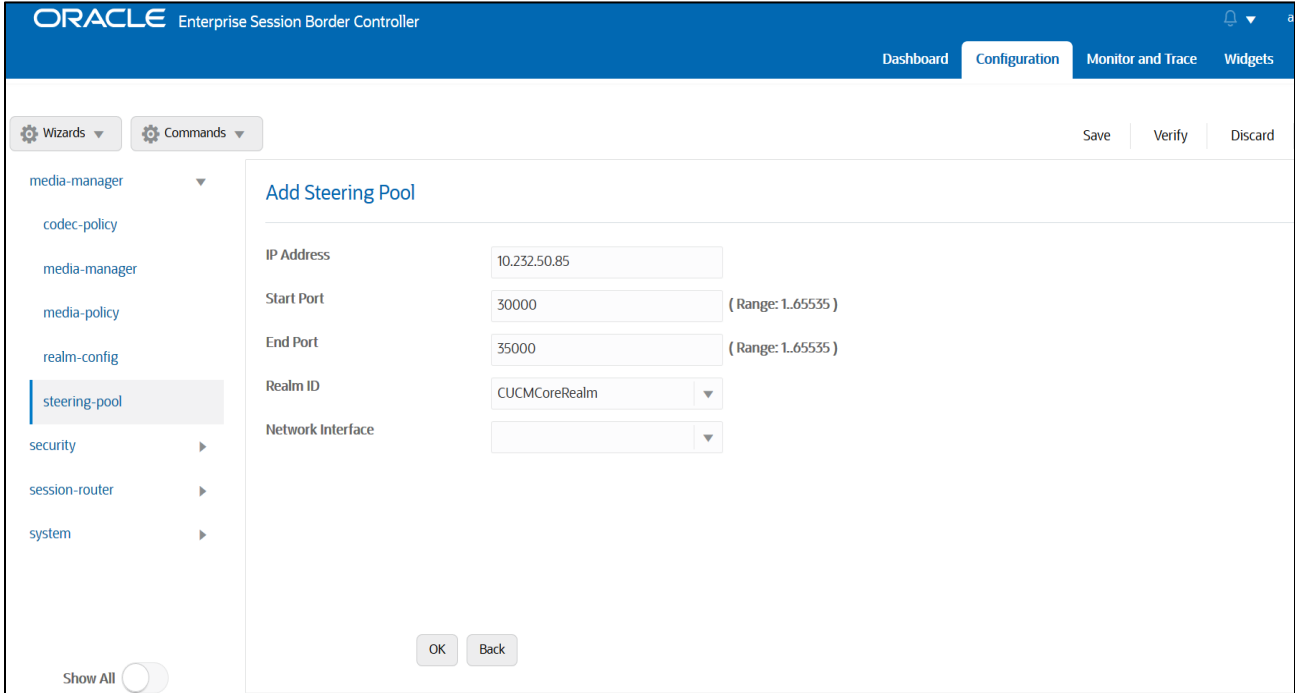


The screenshot shows the Oracle Enterprise Session Border Controller configuration interface. The page title is "Add Steering Pool". The configuration fields are as follows:

Field	Value	Notes
IP Address	[Empty]	
Start Port	40000	(Range: 1.65535)
End Port	49999	(Range: 1.65535)
Realm ID	CUCMpublicRealm	Dropdown menu
Network Interface	[Empty]	Dropdown menu

Buttons: Save, Verify, Discard, OK, Back. A "Show All" toggle is visible at the bottom left.

Cisco Core side steering pool.



The screenshot shows the Oracle Enterprise Session Border Controller configuration interface. The page title is "Add Steering Pool". The configuration fields are as follows:

Field	Value	Notes
IP Address	10.232.50.85	
Start Port	30000	(Range: 1.65535)
End Port	35000	(Range: 1.65535)
Realm ID	CUCMCoreRealm	Dropdown menu
Network Interface	[Empty]	Dropdown menu

Buttons: Save, Verify, Discard, OK, Back. A "Show All" toggle is visible at the bottom left.

7.6. Configure local policy (Optional)

Local policy config allows for the SBC to route calls from one end of the network to the other based on routing criteria. To configure local-policy, go to Session-Router->local-policy.

To route the calls from Cisco Access side to Cisco Core side and vice versa, Use the below local –policy

The screenshot shows the Oracle Enterprise Session Border Controller configuration interface. The left sidebar lists various configuration sections, with 'local-policy' selected under the 'session-router' category. The main content area is titled 'Modify Local Policy' and contains the following fields:

- From Address:** A text input field with a clear button (X).
- To Address:** A text input field with a clear button (X).
- Source Realm:** A dropdown menu showing 'CUCMpublicRealm' with a clear button (X).
- Description:** A large text area for entering a description.
- State:** A checkbox labeled 'enable' which is checked.
- Policy Priority:** A dropdown menu showing 'none'.

At the bottom of the form are 'OK' and 'Back' buttons. The top navigation bar includes 'Dashboard', 'Configuration', 'Monitor and Trace', and 'Widgets' tabs. The top right corner shows a notification bell icon and a user profile icon.

This screenshot shows the same 'Modify Local Policy' configuration page, but with the 'Policy Attributes' section expanded. It includes an 'Add' button and a table with the following data:

Next Hop	Realm	Action	Terminate Recursion	Cost	State	App Protocol	Lookup	Next Key
CUCM-Cisco.pe.oracle.com	CUCMCoreRealm	replace-uri	disabled	0	enabled	SIP	single	

The 'State' checkbox is checked, and the 'Policy Priority' dropdown is set to 'none'. 'OK' and 'Back' buttons are at the bottom.

Cisco Offer less INVITE can happen in the Remote worker scenarios too.

In that case, please set the parameter "**Add SDP Invite**" as both and "**Add SDP profiles**" under [Cisco Access side sip-interface](#). The configuration is similar to what we have done in [Sec 6.13](#).

8. New SBC config/Deployment Using Configuration Assistant

When you first log on to the E-SBC, the system requires you to set the configuration parameters necessary for basic operation. To help you set the initial configuration with minimal effort, the E-SBC provides the Configuration Assistant. The Configuration Assistant, which you can run from the Web GUI or the Acme Command Line Interface (ACLI), asks you questions and uses your answers to set parameters for managing and securing call traffic. You can use the Configuration Assistant for the initial set up to make to the basic configuration. Please check "Configuration Assistant Operations" in the [Web GUI User Guide](#) and "Configuration Assistant Workflow and Checklist" in the [ACLI Configuration Guide](#)

Please note, applying a configuration to the SBC via the Configuration Assistant will overwrite any existing configuration currently applied to the SBC. **We highly recommend this only be used for initial setup of the SBC. This feature is not recommended to be used to make changes to existing configurations.**

8.1. Section Overview and Requirements

This section describes how to use our Configuration Assistant feature as a quick and simple way to configure the Oracle SBC for integration with Cisco Call Manager and Generic SIP Trunking. The pre-requisite is given below.

- SBC running release SCZ840p7 or later which will have this template package by default added to the SBC code.

The following outline assumes you have established initial access to the SBC via console and completed the following steps:

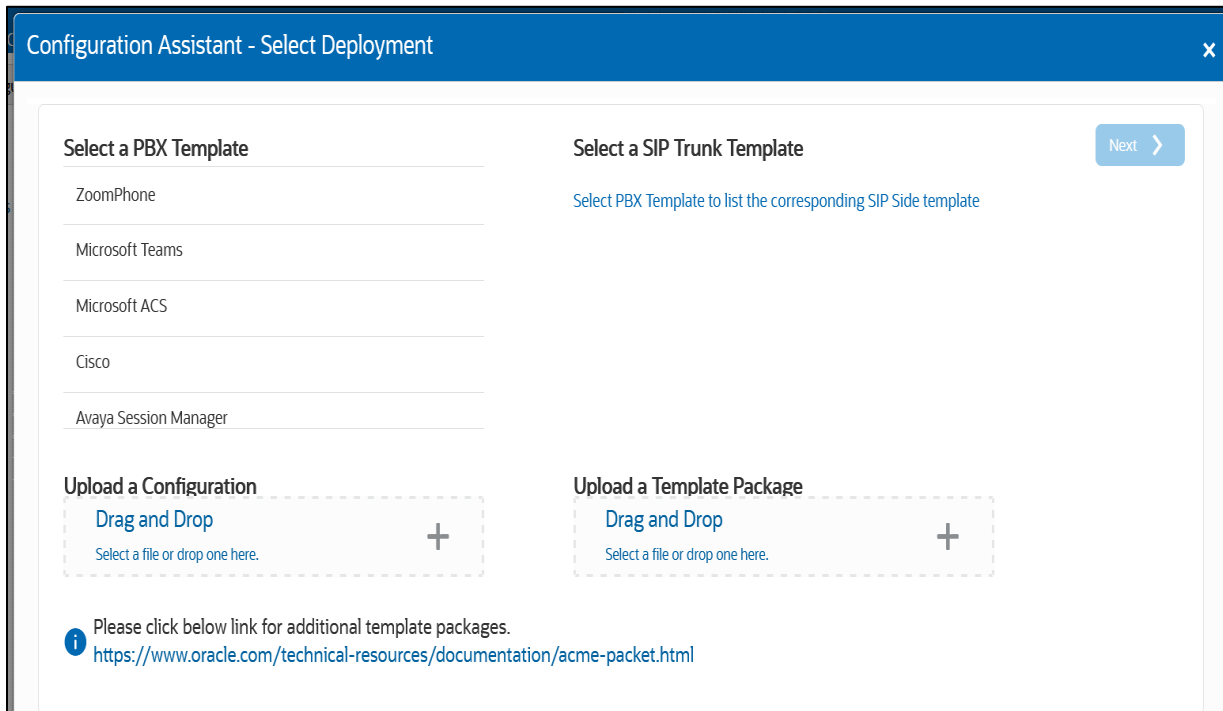
- Configured boot parameters for management access
- Setup Product
- Set Entitlements
- Configured HTTP-Server to establish access to SBC GUI

8.2. Initial GUI Access

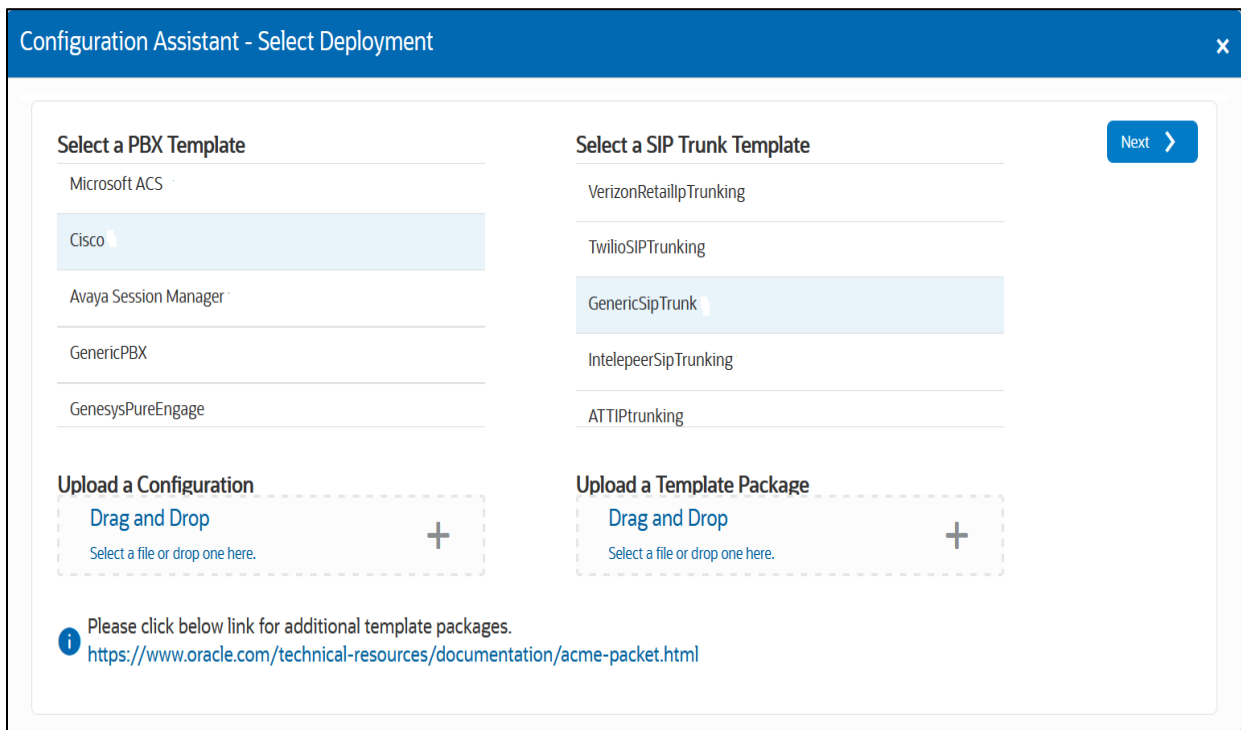
The Oracle SBC WebGui can be accessed by entering the following in your web browser:
`http(s)://<SBC Management IP>`.

The username and password are the same as that of the CLI.

If there is no configuration on the SBC, the configuration assistant will show immediately upon login to the SBC GUI as shown below



As we can see, there are some templates of PBX populated in the template and we can select the PBX template that we want to use with Generic SIP trunk and for this document, we have selected Cisco template and once we select that, it asks us to select the SIP trunk template. After we select Generic SIP trunk template, the Next option would be enabled.



Click **Next**. The following “Notes” will be displayed related to pre-requisite

The screenshot shows a window titled "Configuration Assistant - Notes" with a close button (X) in the top right. It contains two columns of information:

- Left Column: PBX Template**
 - Link: [Notes for Cisco](#)
 - Warning: Proceeding with the Configuration Assistant results in erasing the existing configuration.
 - Pre-requisites:
 - This template is used to configure Cisco CUCM with Oracle SBC and any SIP trunk
 - Connect Port 0 of the Session Border Controller (SBC) to your network.
 - Ensure that Transcoding resources are installed on your system (Hardware only).
 - Configure at least one Transcoding core on your system (Virtual Machine Edition only).
 - This template supports ONLY UDP/TCP configuration.
 - Enable the Advanced entitlement on the system.
 - Set Session Capacity in the entitlement.
 - Set the system time.
- Right Column: SIP Trunk Template**
 - Link: [Notes for GenericSipTrunk](#)
 - Warning: Proceeding with the Configuration Assistant results in erasing the existing configuration.
 - Pre-requisites:
 - This template is used to configure generic settings to connect the SBC to PSTN services
 - Connect Port 1 of the Session Border Controller (SBC) to your network.
 - Ensure that Transcoding resources are installed on your system (Hardware only).
 - Configure at least one Transcoding core on your system (Virtual Machine Edition only).
 - This template supports ONLY UDP/TCP configuration.
 - Set Session Capacity in the entitlement.
 - Set the system time.

Click **Next** and we get the below screen where we need to enter the details for SBC configuration.

The screenshot shows a window titled "Configuration Assistant - Configure CUCM Network here" with a close button (X) in the top right. It features a progress bar at the top with 8 steps:

1. Configure CUCM Network here (Active)
2. Offerless SDP configuration
3. Transcoding
4. Additional Configuration
5. PSTN Network
6. PSTN Session Agent
7. Transcoding
8. Additional Configuration

Navigation buttons: Back (left arrow), Skip (right arrow).

Instruction: **Let's configure the interface that communicates with your CUCM**

Form fields:

- Realm Name [?] Required
- Enter CUCM hostname here [?] Required
- Enter the CUCM IP here [?]
- Enter the CUCM port here [?]

8.3. Configuration Assistant Template Navigation

8.3.1. Page 1-Cisco Call Manager (CUCM) Network

Page 1 of the template is where you will configure the network information to connect Cisco Call Manager. On this page, we will enter the CUCM hostname, IP and port which will be the next hop IP address/hostname for sip signaling to and from your CUCM

Configuration Assistant - Configure CUCM Network here

1 — 2 — 3 — 4 — 5 — 6 — 7 — 8

Configure CUCM Network here Offerless SDP configuration Transcoding Additional Configuration PSTN Network PSTN Session Agent Transcoding Additional Configuration

Let's configure the interface that communicates with your CUCM

Realm Name ⓘ
Required

Enter CUCM hostname here ⓘ
Required

Enter the CUCM IP here ⓘ

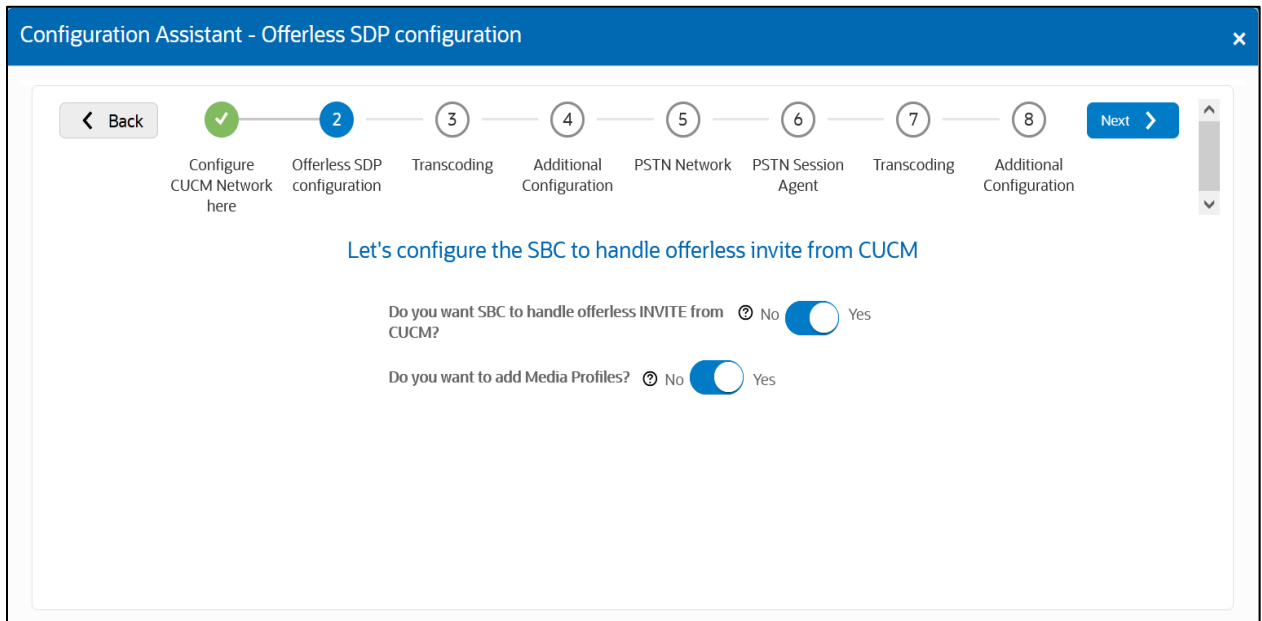
Enter the CUCM port here ⓘ

Next to each field is a help icon. If you hover over the icon, you will be provided with a description or definition of each field. Also, pay close attention to which fields are listed as “required”.

8.3.2. Page 2-Offerless SDP Invite

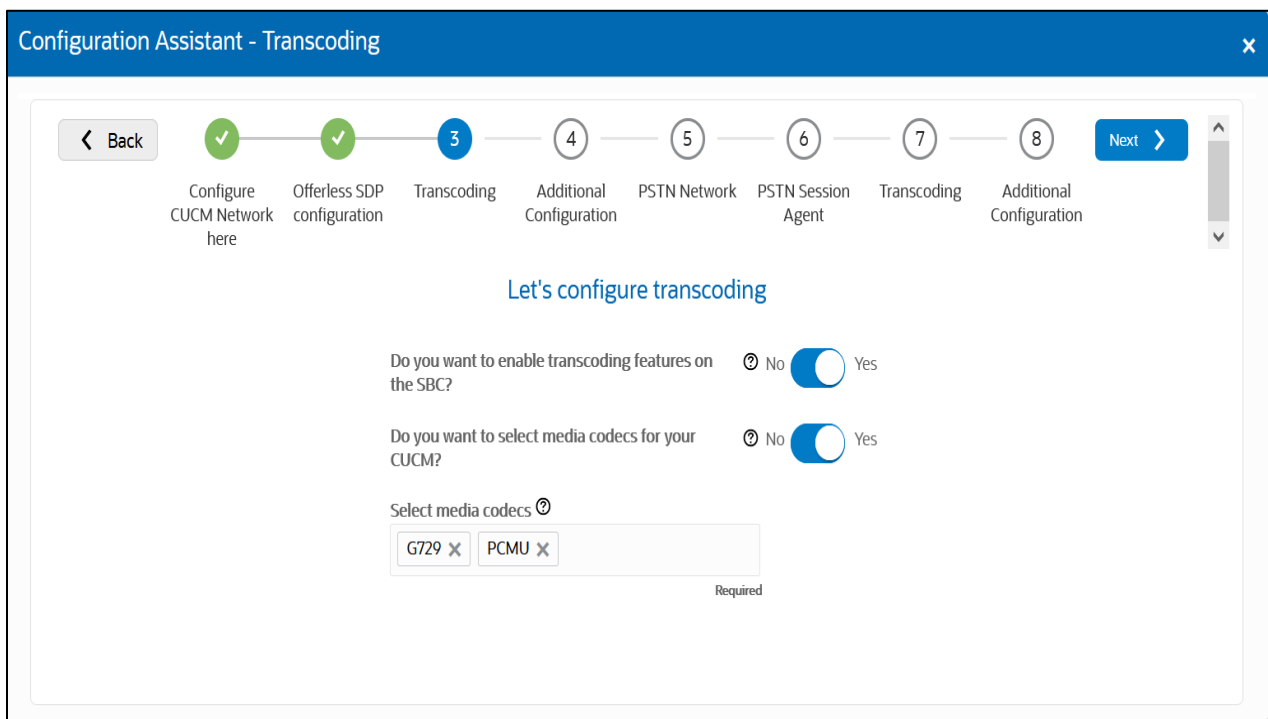
Page 2 of the template is where you will configure the information related to Cisco’s offer less SDP Invite configuration. You can enable or disable the configuration through the Yes/No Radio Button.

Note Click on the ? icon to know more about the configuration parameters and their usage.



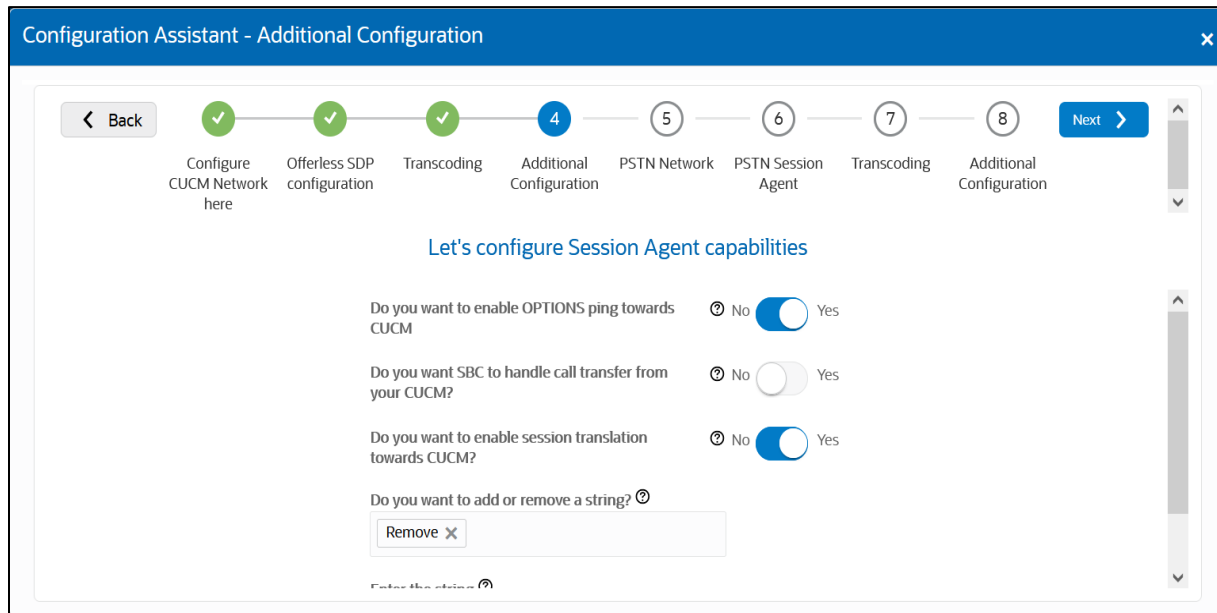
8.3.3. Page 3 - Cisco side Transcoding

Page 3 is where you will be able to configure transcoding between the SBC and Cisco Call Manager. Once transcoding features is set to “yes”, you will then have an option to select additional media codecs you want included in offers/answers towards Cisco Call Manger. If you select yes to either question regarding media codecs, you will be presented with a required drop down. You can select as many codecs from the list presented.



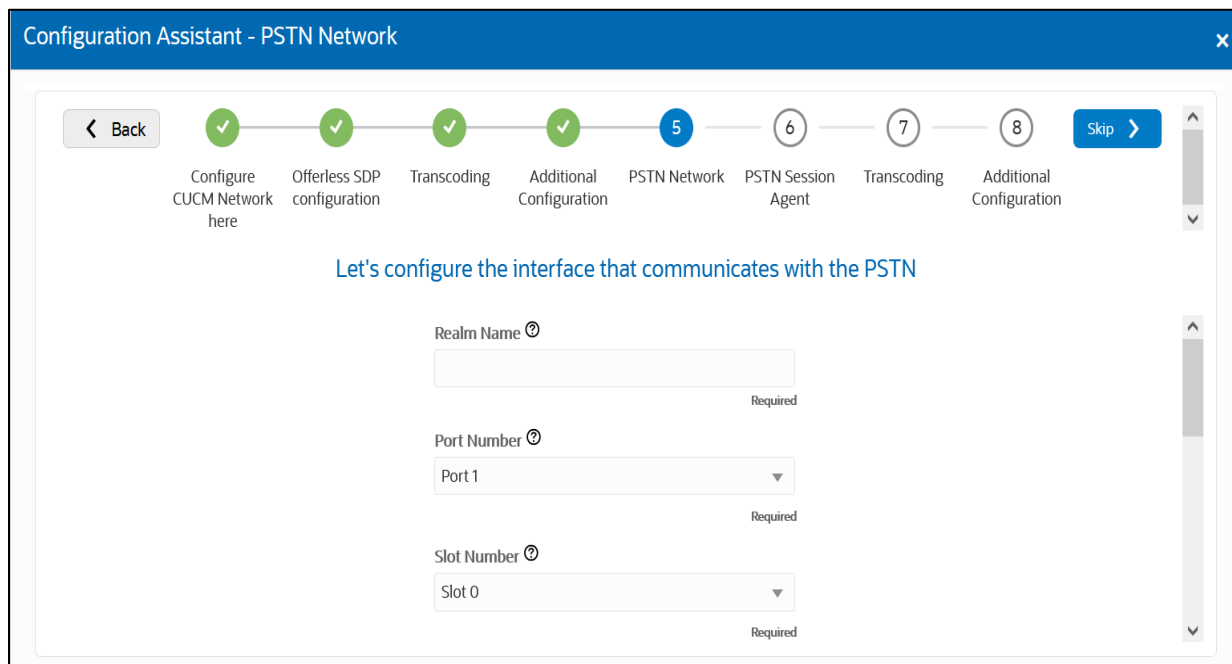
8.3.4. Page 4 - Cisco side Additional Configuration

Page 4 is where you will be able to configure Session Agent Capabilities towards CUCM side. This includes enabling OPTIONS, enabling session translation etc towards CUCM side as shown below. . You can enable or disable the configuration through the Yes/No Radio Button



8.3.5. Page 5 - Generic SIP Trunk Network

Page 5 of the template is where you will configure the network information to connect to Generic SIP trunk Network (PSTN side). Please fill the required fields and Press Next.



8.3.6. Page 6 – PSTN Session Agent

Page 6 of the template is where you will configure the PSTN Session Agent details where you will enter the next hop IP address and port for sip signaling to and from your Generic SIP trunk. Please fill the required fields and click Next.

Configuration Assistant - PSTN Session Agent

Back ✓ ✓ ✓ ✓ ✓ **6** 7 8 Next

Configure CUCM Network here Offerless SDP configuration Transcoding Additional Configuration PSTN Network PSTN Session Agent Transcoding Additional Configuration

Let's configure the Session Agent for PSTN

PSTN Session Agent hostname Required

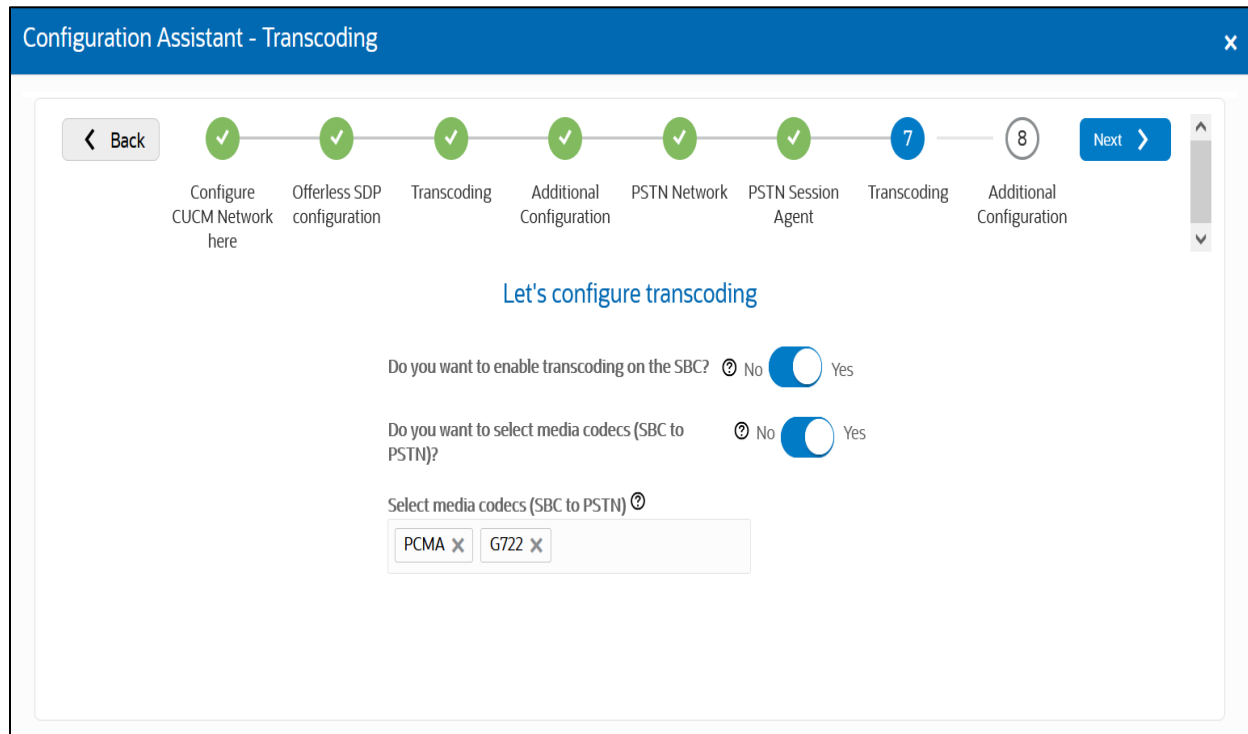
PSTN Session Agent IP Address

PSTN Session Agent Port Required

Does your carrier provider have a record No Yes

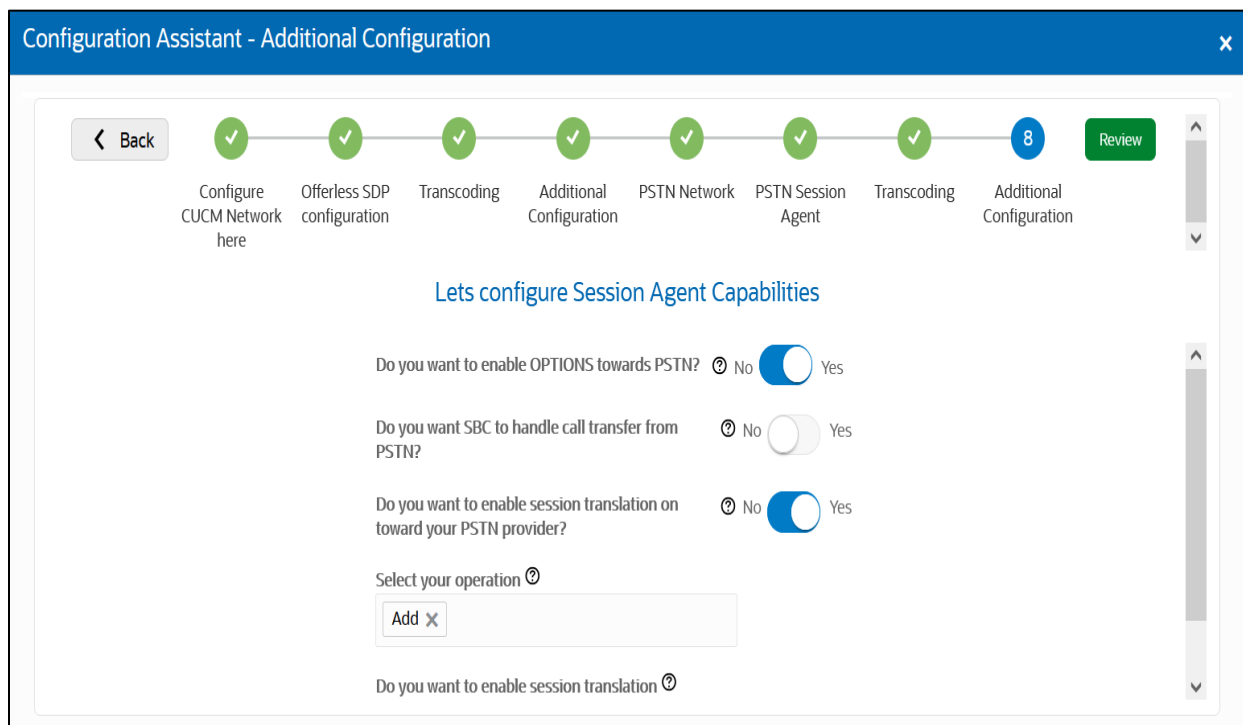
8.3.7. Page 7 – PSTN side Transcoding

Page 7 is where you will be able to configure transcoding between the SBC and Generic SIP Trunk. Once transcoding features is set to “yes”, you will then have an option to select additional media codecs you want included in offers/answers towards PSTN side. If you select yes to either question regarding media codecs, you will be presented with a required drop down. You can select as many codecs from the list presented.



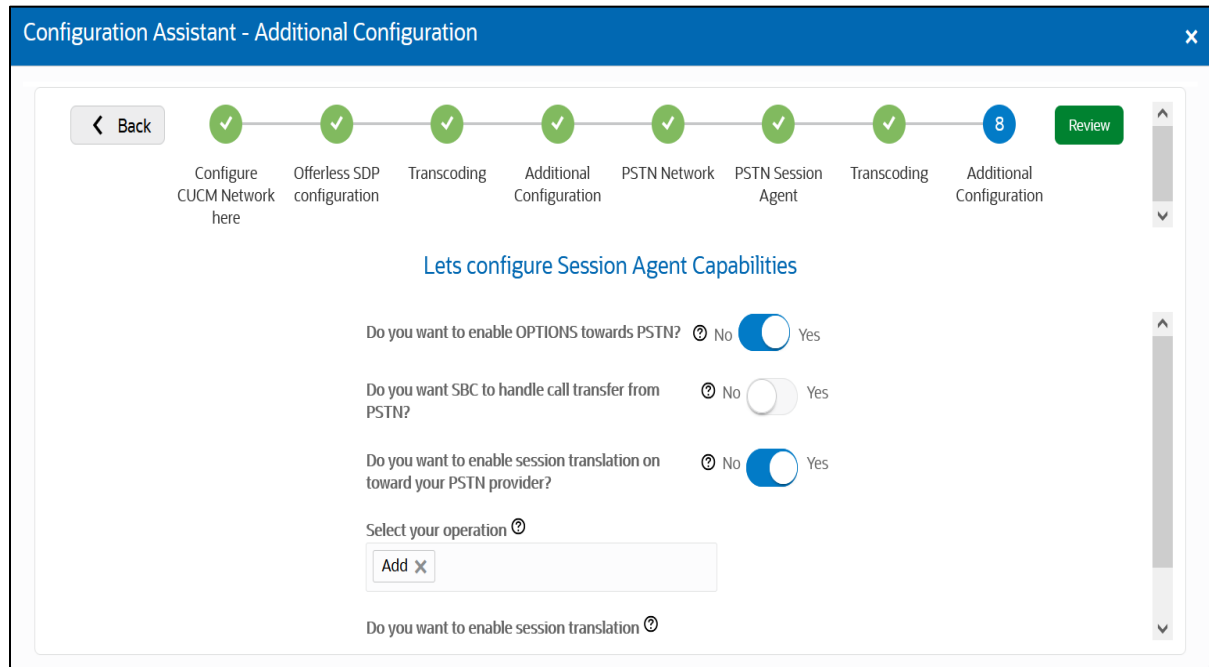
8.3.8. Page 8 – PSTN side Additional Configuration

Page 8 is where you will be able to configure Session Agent Capabilities towards PSTN side. This includes enabling OPTIONS, enabling session translation etc towards PSTN side as shown below. You can enable or disable the configuration through the Yes/No Radio Button

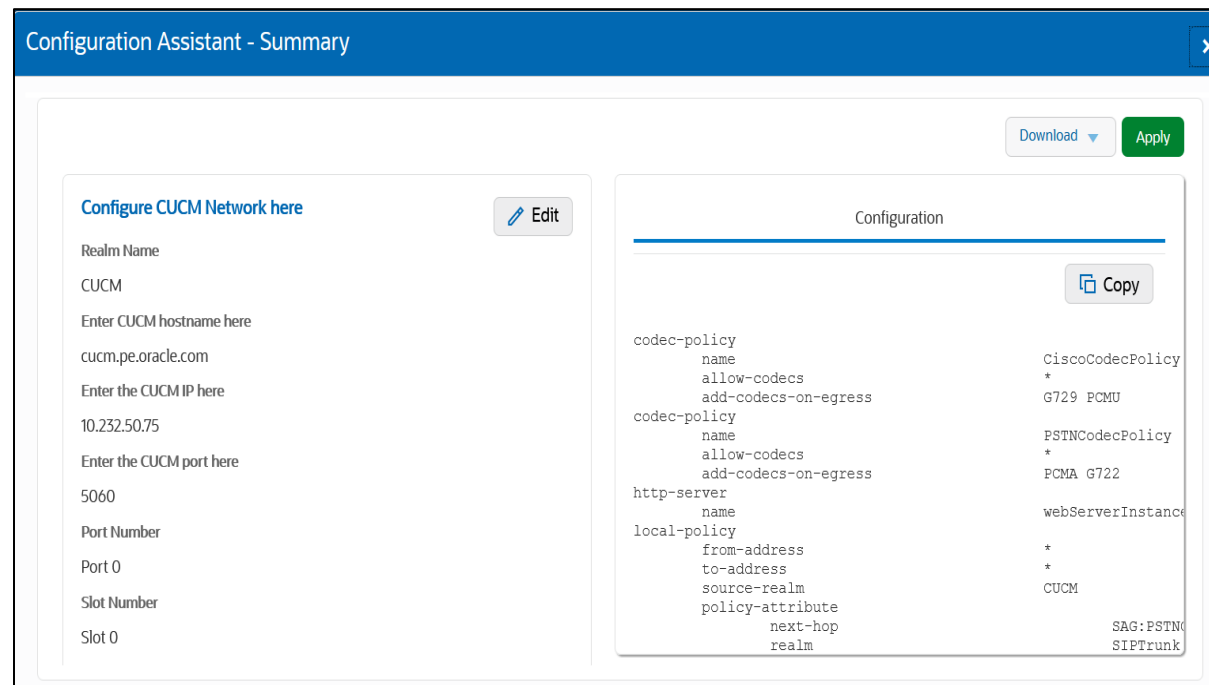


8.4. Review

At the end of the template, you will notice in the top right, a “Review” tab. If all 8 pages presented across the top are showing green, indicating there are no errors with the information entered, click on the “Review” tab.



The screen looks like below after clicking the Review Tab.

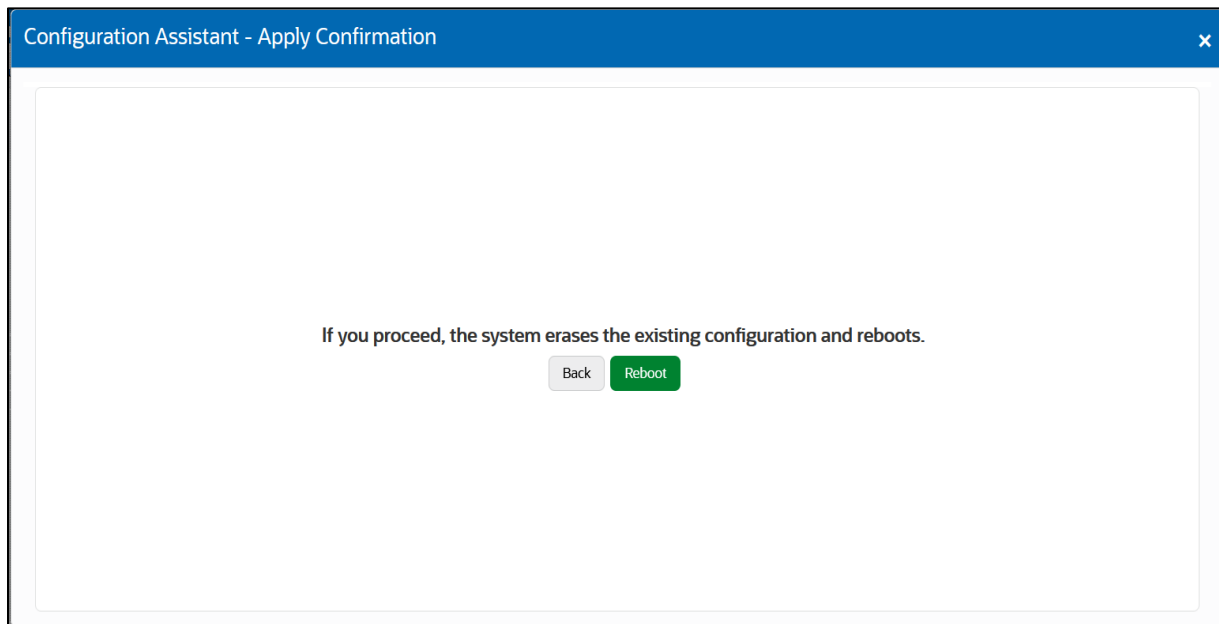


On the left side of the review contains the entries for each page. Each page has an “*Edit*” tab that can be used to make changes to the information entered on that specific page without having to go through the entire template again.

On the right side of the review page, under the “*Configuration*” tab is the ACLI output from the SBC. This is the complete configuration of the SBC based on the information entered throughout the template.

8.5. Download and/or Apply

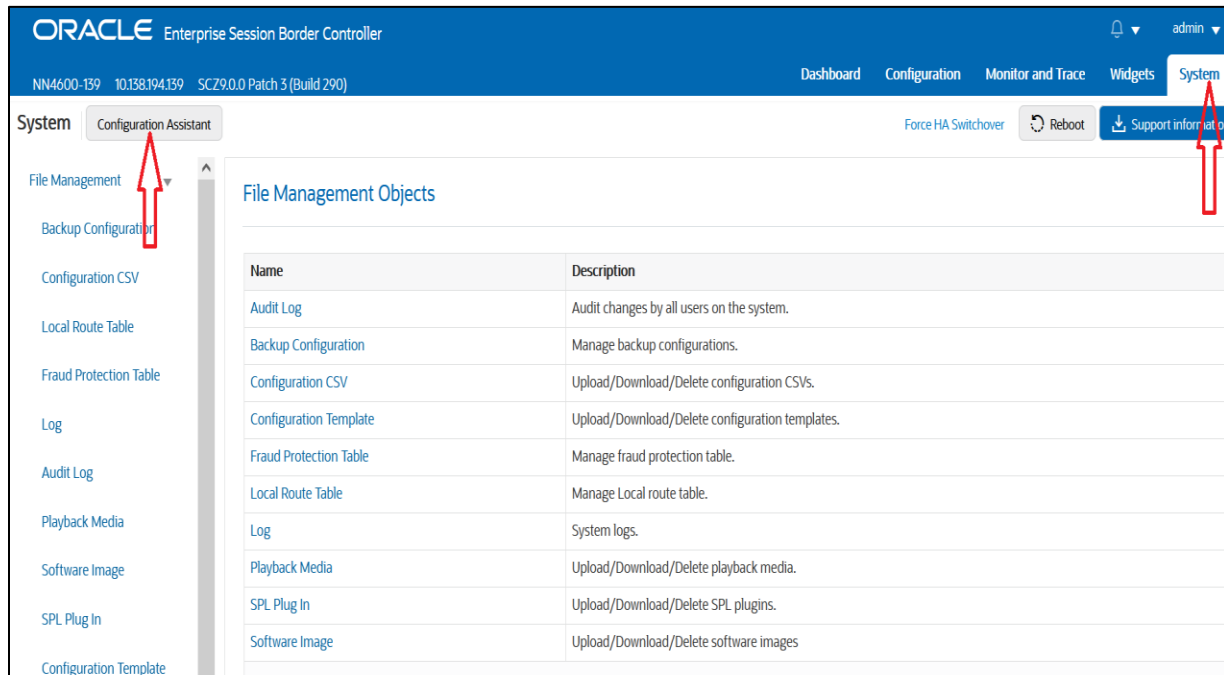
Now that the entries provided throughout the template have been reviewed, the template provides you with the ability to “Download” the config by clicking the “*Download*” tab on the top right. Next, click the “*Apply*” button on the top right, and you will see the following pop-up box appear.



Now you can click “*Reboot*” to confirm you want to apply the configuration to the SBC. The SBC will reboot. When it comes back up, the SBC will have a basic configuration in place for Cisco Call Manager with Generic SIP trunking.

8.6. Configuration Assistant Access

Upon initial login, if the Configuration Assistant Template does not immediately appear on the screen, you can access by clicking on the “**SYSTEM**” tab, top right of your screen. After that, click on the “**Configuration Assistant**” tab, top left. This allows end users to access the Configuration Assistance at any time through the SBC GUI.



9. Existing SBC configuration

If the SBC being used is an existing SBC with functional configuration, following configuration elements are required:

- [New realm-config](#)
- [New sip-interface](#)
- [New session-agent](#)
- [New steering-pools](#)
- [New local-policy](#)
- [New Translation Rules](#)
- [Session Translation Rules](#)

Please follow the steps mentioned in the above chapters to configure these elements.

Appendix A


Following are the test cases that are executed between Cisco User with the Generic SIP Trunk (PSTN user). **Please note that Cisco User here refers both Cisco User inside Enterprise network as well as Cisco Remote worker.**

Serial Number	Test Cases Executed	Result
1	Cisco user disconnects an inbound connected call	Pass
2	Cisco user disconnects an outbound connected call	Pass
3	Generic SIP Trunk user disconnects an inbound connected call	Pass
4	Generic SIP Trunk User disconnects an outbound connected call	Pass
5	Cisco user places inbound call from Generic SIP Trunk user on hold and then resumes	Pass
6	Cisco user makes outbound call to Generic SIP Trunk user and put that call on hold and then resumes	Pass
7	Generic SIP Trunk user places inbound call from Cisco user on hold and then resumes	Pass
8	Generic SIP Trunk user makes outbound call to Cisco user and put that call on hold and then resumes	Pass
9	Cisco user places inbound call from Generic SIP Trunk user on hold for over 15/30 minutes and then resumes	Pass
10	Cisco user makes outbound call to Generic SIP Trunk user and places the call on hold for over 15/30 minutes and then resumes	Pass
11	Inbound Generic SIP Trunk call to Cisco blind transferred to second Cisco/ PSTN User	Pass
12	Outbound Generic SIP Trunk call from Cisco user blind transferred to second Cisco/ PSTN User	Pass
13	Inbound Generic SIP Trunk Call to Cisco consultatively transferred to Cisco/ PSTN User	Pass
14	Outbound Generic SIP Trunk call from Cisco user consultatively transferred to Cisco/ PSTN User	Pass
15	Cisco user makes outbound call to Generic SIP Trunk user and makes a conference call by adding another Cisco/ PSTN user.	Pass
16	Generic SIP Trunk user makes outbound call to Cisco user and Cisco user makes a conference call by adding another Cisco/ PSTN user.	Pass

17	Cisco user mutes inbound call from Generic SIP Trunk user and then unmutes	Pass
18	Cisco user mutes outbound call made to Generic SIP Trunk user and then unmutes	Pass
19	Generic SIP Trunk user mutes inbound call from Cisco user and then unmutes	Pass
20	Generic SIP Trunk user mutes outbound call made to Cisco user and then unmutes	Pass
21	Generic SIP Trunk User disconnects outbound call to Cisco user before it is answered	Pass
22	Cisco user disconnects outbound call to Generic SIP Trunk user before it is answered	Pass

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