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Oracle Enterprise Session Border
Controller and Genesys Pure Engage for
Enterprise SIP Trunking with NTT
Communications

Technical Application Note

ORACLE

COMMUNICATIONS



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Revision History

Version	Description of Changes	Date Revision Completed
1.1	Oracle SBC and Genesys SIP Server with NTT	20-04-2022
1.3	Updated internal review comments	27-04-2022
1.4	Removed sha-512 from auth-params Removed extra sip-manip	18-07-2022

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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 Genesys SIP Server Platform

2. Document Overview

This Oracle technical application note outlines the configuration needed to set up the interworking between Oracle SBC and Genesys SIP Server along with NTT Communications SIP Trunking. The solution contained within this document has been tested using Oracle Communication 840p10. Our scope of this document is only limited to testing Oracle SBC with Genesys SIP Server and NTT SIP Trunk.

It should be noted that while this application note focuses on the optimal configurations for the Oracle SBC in a Genesys SIP Server and NTT Communications. 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.

Please note that the IP address, FQDN and config name and its details given in this document is used as reference purpose only. The same details cannot be used in customer config and the end users can use the configuration details according to their network requirements.

3. Introduction

3.1. Audience

This is a technical document intended for telecommunications engineers with the purpose of configuring Genesys SIP Server for calling using Oracle Enterprise SBC and the NTT SIP Trunk. There will be steps that require navigating the Genesys Server and Oracle SBC GUI interface. Having an understanding of 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.

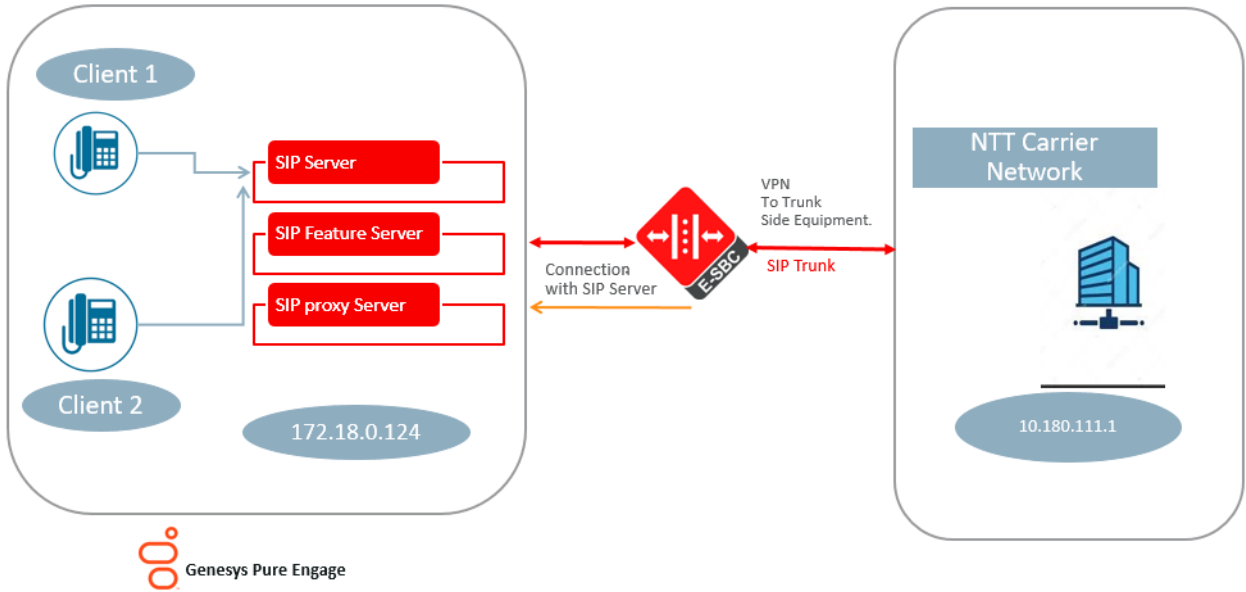
3.2. Requirements

- Genesys SIP Server R8.1
- NTT SIP Trunk
- Oracle Enterprise Session Border Controller (hereafter Oracle SBC) running 8.4.0 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	Genesys Version	SBC Version	NTT Software Version
Revision 1	R8.1	8.4.0 p10	

3.3. Architecture



Client's 1 and 2 numbers are provided by the NTT and are registered with the Genesys SIP Server. Oracle SBC also performs surrogate registration for Genesys towards NTT with client1's number.

4. Configuring the SBC

This chapter provides step-by-step guidance on how to configure Oracle SBC for interworking with Genesys SIP Server Platform

4.1. Validated Oracle SBC version

Oracle conducted tests with Oracle SBC 8.4 software – this software with the configuration listed below can run on any of the following products:

- AP 1100
- AP 3900
- AP 4600
- AP 6350
- AP 6300
- VME
- AP 3950(Release 9.0 onwards)
- AP 4900(Release 9.0 onwards)

5. New SBC configuration

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

5.1.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.

Note: This doesn't apply to VME and cloud deployments.

Start the terminal emulation application using the following settings:

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

```
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 tIPTd...
Starting tSecured...
Starting tAuthd...
Starting tCertd...
Starting tIked...
Starting tTscfd...
Starting tAppWeb...
Starting tauditd...
Starting tauditpusher...
Starting tSnmpd...
Starting tIFMIBd...
Start platform alarm...
Starting display manager...
Initializing /opt/ Cleaner
Starting tLogCleaner task
Bringing up shell...
password secure mode is enabled
Admin Security is disabled
Starting SSH...
SSH Cli init: allocated memory for 5 connections
```

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

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”.

Note: The password is different for cloud and VME deployments. Please check the required documentation

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.

Note: There is no management IP configured by default.

```
NN4600-100# conf t
NN4600-100(configure)# bootparam

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

Boot File      : /boot/nnSCZ830mlp7.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    : vxftp
Flags          :
Target Name    : NN4600-100
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.

NN4600-100(configure)#
NN4600-100(configure)#
NN4600-100(configure)# █
```

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

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

```
NN4600-100# setup product

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

Last Modified 2019-06-28 14:05:33
-----

 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

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

```
state enabled
inactivity-timeout 5
http-state enabled
http-port 80
https-state disabled
https-port 443
http-interface-list REST,GUI
tls-profile
last-modified-by admin@console
last-modified-date 2020-04-03 00:21:22
```

5.2. 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>.



Sign in to E-SBC

Enter your details below

Username

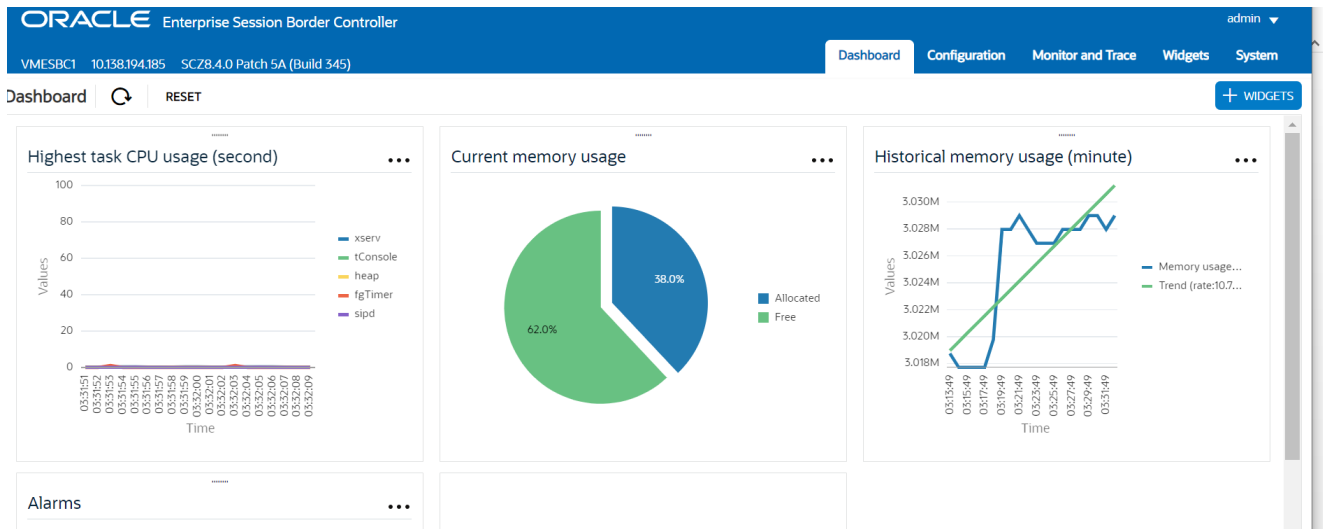
Required

Password

Required

SIGN IN

For login use username user and password of user to login as user mode. For username admin and password of super user to login as super user mode.



Go to

Configuration as shown below, to configure the SBC

The Configuration page shows a sidebar with categories: media-manager, security, session-router, and system. The main content area is titled 'Configuration Objects' and contains a table with the following data:

Name	Description
access-control	Configure a static or dynamic access control list
account-config	Configure Quality of Service accounting
authentication-profile	Configure authentication profile
certificate-record	Create, generate, and import a certificate
class-policy	Configure classification profile policies
codec-policy	Create and apply a codec policy to a realm and an agent
filter-config	Create a custom filter for SIP monitor and trace
fraud-protection	Configure fraud protection
host-route	Insert entries into the routing table
http-client	Configure an HTTP client
http-server	Configure an HTTP server
ldap-config	Configure an LDAP server, filter, and policy

At the bottom left, there is a 'Show All' button and a 'Displaying 1 - 12 of 40' indicator.

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

https://docs.oracle.com/en/industries/communications/enterprise-session-border-controller/8.4.0/webgui/esbc_scz840_webgui.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.

5.3. Configure system-config

Go to system->system-config

The screenshot shows the 'Modify System Config' page in a web interface. On the left, a sidebar lists various configuration categories, with 'system-config' highlighted. The main content area is titled 'Modify System Config' and contains several input fields: 'Hostname' (with 'genesys.com' entered), 'Description', 'Location', 'Mib System Contact', 'Mib System Name', 'Mib System Location', and 'Acp TLS Profile'. At the top right, there are buttons for 'Discard', 'Verify', and 'Show Config'. A search bar is also present at the top left of the main area.

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/8.4.0/releasenotes/esbc_scz840_releasenotes.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.

5.4. Configure Physical Interface values

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

You will first configure the slot 0, port 0 interface designated with the name S0P0. This will be the port plugged into your (connection to the Genesys) interface. NTT TRUNK side is configured on the slot 0 port 1.

Parameter Name	Genesys (S0P0)	NTT TRUNK (S1P0)
Slot	0	0
Port	0	1
Operation Mode	Media	Media

Below is the screenshot for creating a phy-interface on S0P0. Create a similar interface for Sip Trunk as well from the Web GUI. The table above specifies the values for both Genesys and NTT TRUNK.

The screenshot shows the 'Modify Phy Interface' configuration page. The left sidebar lists various configuration categories, with 'phy-interface' selected. The main content area contains the following fields:

- Name: s0p0
- Operation Type: Media
- Port: 0 (Range: 0-5)
- Slot: 0 (Range: 0-2)
- Virtual Mac: (empty)
- Admin State: enable
- Auto Negotiation: enable
- Duplex Mode: FULL
- Speed: 100

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

5.5. Configure Network Interface values

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

- Genesys
- NTT Trunk

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

Parameter Name	Genesys Network Interface	NTT Trunk
Name	S1P0	S0P0
IP address	172.18.0.139	10.0.7.113
Netmask	255.255.0.0	255.255.255.248
Gateway	172.18.0.1	10.0.7.114
DNS-IP Primary	8.8.8.8	8.8.8.8

The screenshot shows the Oracle Enterprise Session Border Controller configuration page. The top navigation bar includes 'ORACLE Enterprise Session Border Controller', 'admin', and tabs for 'Dashboard', 'Configuration', 'Monitor and Trace', 'Widgets', and 'System'. The 'Configuration' tab is active. Below the navigation bar, there are buttons for 'View Configuration', 'Discard', 'Verify', and 'Save'. A left sidebar lists various configuration categories, with 'network-interface' selected. The main content area is titled 'Modify Network Interface' and contains a form with the following fields:

- Name:** s0p0 (dropdown menu)
- Sub Port Id:** 0 (text input, with a range of 0..4095)
- Description:** to Cisco 2811 router (text area)
- Hostname:** (text input)
- IP Address:** 10.0.7.113 (text input)
- Pri Utility Addr:** (text input)
- Sec Utility Addr:** (text input)

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 left sidebar lists configuration categories: media-manager, security, session-router, system, fraud-protection, host-route, http-client, http-server, network-interface (selected), and ntp-config. The main content area is titled 'Modify Network Interface' and contains the following settings:

DNS Domain		
DNS Timeout	11	(Range: 0..4294967295)
DNS Max Ttl	86400	(Range: 30..2073600)
Signalling Mtu	0	(Range: 0,576..4096)
HIP IP List	10.0.7.113	
ICMP Address	10.0.7.113	
SSH Address	172.16.1.21	
Tunnel Config		

Similarly configure network interfaces for S0P0 (NTT Trunk) as well

5.6.Enable media manager

Media-manager handles the media stack required for SIP sessions on the SBC. Enable the media manager by checking the state as enabled.

The screenshot shows the Oracle Enterprise Session Border Controller configuration interface for the 'Modify Media Manager' section. The top navigation bar is the same as the previous screenshot. The left sidebar has 'media-manager' selected. The main content area is titled 'Modify Media Manager' and contains the following settings:

State	<input checked="" type="checkbox"/> enable	
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	

At the bottom of the settings area, there are 'OK' and 'Delete' buttons. A 'Show All' toggle is also visible at the bottom left of the sidebar.

5.7.SPLs required for NTT

As part of the integration of the ESBC with NTT trunk, three SPLs, SurrogateRegister.0.3.spl, NttMsgConverter.0.3.spl , SurrogateContact.0.6.spl were developed to include 5 features required to comply with the signaling requirements. All these spl's are available in the SBC by default.

1. As a part of the surrogate registration, SBC is required to send a unique/random user-info portion in every REGISTER request that is sent to the NTT SIP trunk as well as outgoing INVITE messages for calls.
2. The ESBC is required to apply validity check to an incoming INVITE from the SIP trunk before sending out 100 TRYING and subsequent 1xx, 2xx messages to progress the call. It is expected that the incoming INVITE Request-URI user portion will contain the same randomized value that the E-SBC sent in the most recent REGISTER message to the trunk
3. NTT regulation requires that the tag size of From/To headers in the SIP messages be under 32 bytes. The tags sent by GENESYS in the originating SIP messages are large in size, approximately 51 bytes.
4. NTT specification also requires that the Rseq, Cseq, Session ID (in SDP) be under the value of 999900 and the SDP o line username character length be a maximum of 10 bytes. The E-SBC receives messages from Enterprise PBX – Cisco Unified Communications Manager with a large RSeq value in 18x messages which it forwards as is. Also, the SDP o line username is 19 bytes in length (generated by GENESYS).
5. E-SBC is expected check RURI user portion of incoming CANCEL request for the AoR and compare it with the AoR specified in the Request-URI of the initial INVITE received.. If the value is different, E-SBC should respond with a 481 Call/Transaction Does Not Exist.
6. NTT also requires that the Host IP in the Call-ID is same as the IP of the Egress-interface communicating with NTT-Trunk

The SPL SurrogateRegister.0.3.spl was developed to implement the features 1 and 2. This SPL is enabled by configuring the spl-option

- dyn-contact-start on the realm facing Genesys and
- dyn-contact-method=randomseed on the realm facing the NTT trunk.

The SPL NttMsgConverter.0.3.spl - was developed to implement the features 3, 4 and 5. This is enabled by configuring the spl-option

- ocNttMsgConverterTagging=opposite on the realm facing Genesys and
- ocNttMsgConverterTagging=enabled on the realm facing the NTT trunk.

The SurrogateContact.0.6.spl was developed to implement the feature 6
This is enabled by configuring the spl-option

- Control-Surr-Reg in the spl-options on sip-interface facing NTT Trunk

5.8. 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.

In the below case, Realm name is given as Genesys

The screenshot shows the Oracle Enterprise Session Border Controller (ESBC) configuration interface. The top navigation bar includes 'Dashboard', 'Configuration', 'Monitor and Trace', 'Widgets', and 'System'. The 'Configuration' tab is active. The left sidebar shows a tree view with 'realm-config' selected under 'media-manager'. The main content area is titled 'Modify Realm Config' and contains the following fields:

- Identifier: Genesys
- Description: (empty text area)
- Addr Prefix: 0.0.0.0
- Network Interfaces: sip0:0.4 X
- Media Realm List: (empty text area)
- Mm In Realm: enable
- Mm In Network: enable

Buttons for 'OK' and 'Back' are visible at the bottom of the form. The Windows taskbar at the bottom shows the time as 7:24 PM on Wednesday.

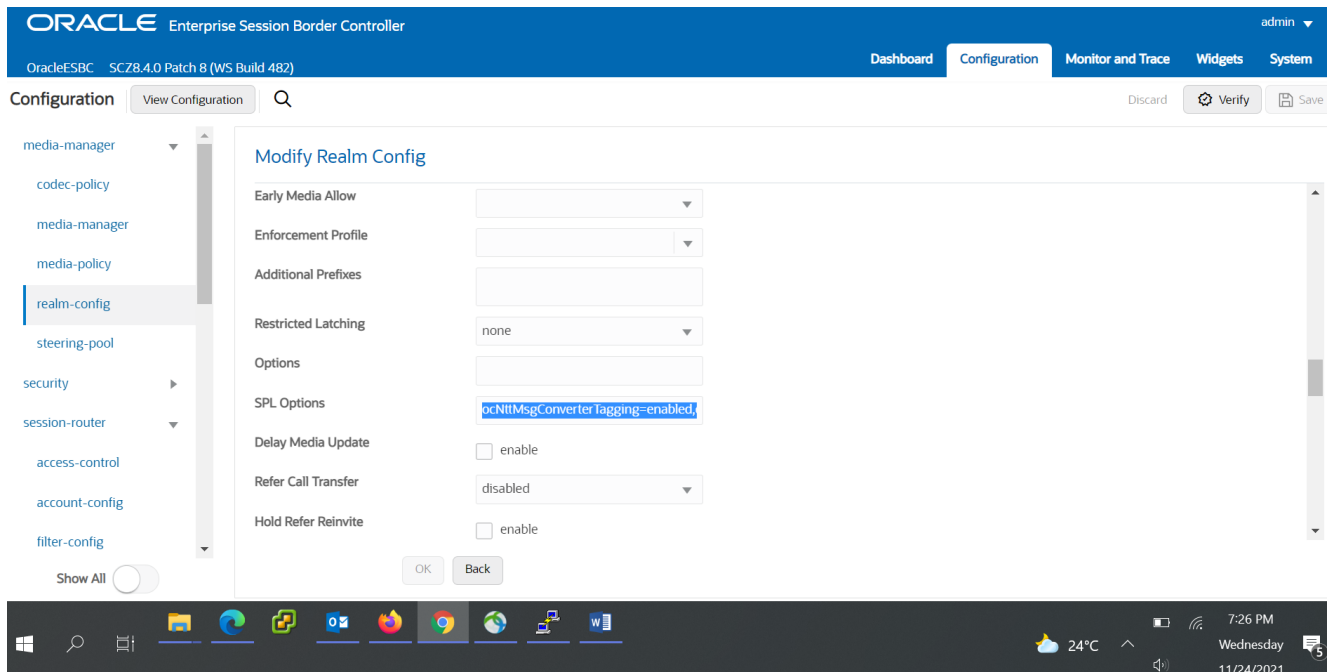
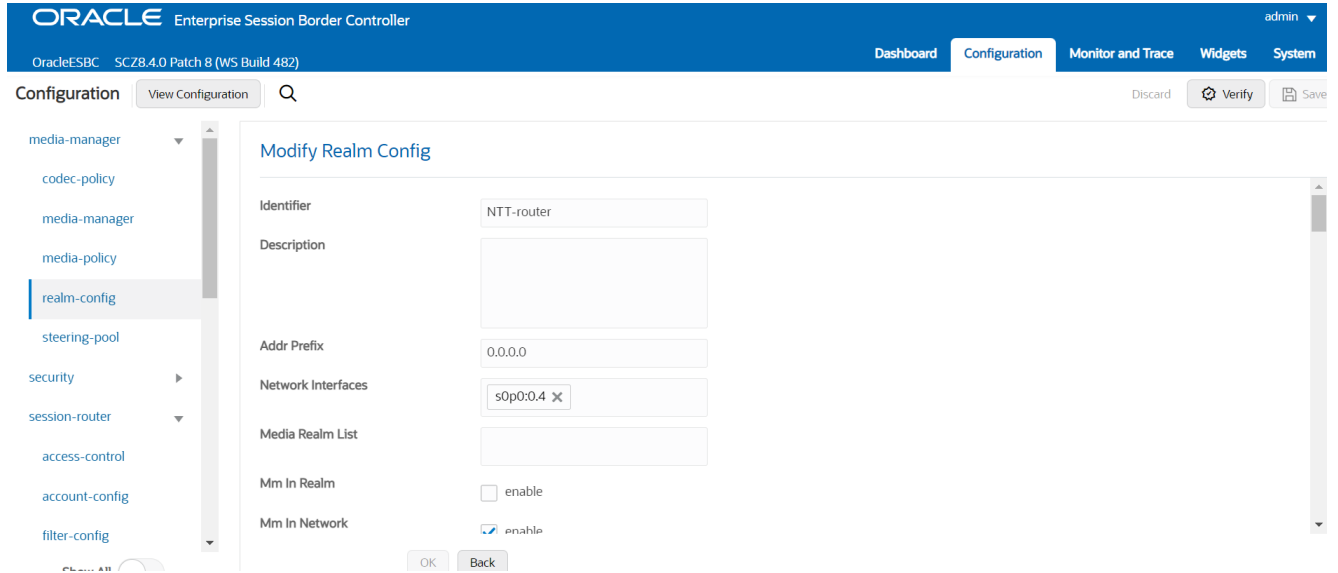
This screenshot shows the same 'Modify Realm Config' page but with more advanced options visible. The 'Early Media Allow' dropdown is set to 'none'. Other options include:

- Enforcement Profile: (empty dropdown)
- Additional Prefixes: (empty text area)
- Restricted Latching: none
- Options: (empty text area)
- SPL Options: ocNttMsgConverterTagging=opposite
- Delay Media Update: enable
- Refer Call Transfer: disabled
- Hold Refer Reinvoke: enable

The 'OK' and 'Back' buttons are also present at the bottom of the form. The Windows taskbar at the bottom shows the time as 7:24 PM.

As explained in the last section, "ocNttMsgConverterTagging=opposite,dyn-contact-start" is configured towards Genesys realm.

Similarly for NTT trunk, a realm is created, realm is named as NTT-Router for realm facing NTT Trunk.



As mentioned in last section ,the spl-options "ocNttMsgConverterTagging=enabled,dyn-contact-method=randomseed" are configured in the NTT realm

5.9.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 max-udp-length =0.
- inmanip-before-validate

The screenshot shows the Oracle Enterprise Session Border Controller configuration interface. The top navigation bar includes 'ORACLE Enterprise Session Border Controller', 'OracleESBC SCZ8.4.0 Patch 8 (WS Build 482)', and tabs for 'Dashboard', 'Configuration', 'Monitor and Trace', 'Widgets', and 'System'. The left sidebar lists various configuration categories, with 'sip-config' selected. The main content area is titled 'Modify SIP Config' and contains the following fields:

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

Buttons for 'OK' and 'Delete' are visible at the bottom of the configuration area.

The screenshot shows the Oracle Enterprise Session Border Controller configuration interface, specifically the 'Options' section of the 'Modify SIP Config' page. The top navigation bar and left sidebar are consistent with the previous screenshot. The main content area is titled 'Modify SIP Config' and contains the following fields:

Enforcement Profile	
Red Max Trans	10000 (Range: 0..50000)
Options	force-unregistration ✕ max-udp-length=0 ✕
SPL Options	
SIP Message Len	4096 (Range: 0..65535)
Enum Sag Match	<input type="checkbox"/> enable
Extra Method Stats	<input type="checkbox"/> enable
Extra Enum Stats	<input type="checkbox"/> enable

5.10. Configure SIP Manipulation

There are 4 sip-manips that are applied in the sip-interfaces.

1. Genesys
 - a. ToGenesys-Applied as Out Manipulationid
 - b. Forsurragent-Applied as In Manipulationid
2. NTT
 - a. Changecontact-Applied as Out Manipulationid
 - b. ModSupportedfromntt-Applied as In Manipulationid

Below is a detailed explanation of every rule in the sip-manip.

Genesys SIP-Manipulations

Note: In this app note ,we have used the CLI snippets of each sip manipulation as it is easier to cover all the manipulations. You can also use the WEBGUI to configure the sip-manipulations mentioned here

Forsurragent-(Genesys-In-Manipulation)

This manipulation is configured as in-manipulation from Genesys. This is for replacing the from user number to that of the registered number with NTT and to delete the 100 rel from the Supported header in INVITE and UPDATE.(for 100 rel-interworking by the SBC)

```
sip-manipulation
  name                               Forsurragent
  header-rule
    name                             forsupportedinINVITE
    header-name                       From
    action                            sip-manip
    new-value                          ModSupportedinINVITE
  header-rule
    name                             ChangeFrom
    header-name                       From
    action                            manipulate
    msg-type                          request
    methods                           INVITE
  element-rule
    name                               NTT_from_user
    parameter-name                   From
    type                              uri-user
    action                            replace
    new-value                         81334252021
```

```
sip-manipulation
  name                               ModSupportedinINVITE
  header-rule
```

```

name delete100rel
header-name Supported
action delete
methods INVITE, UPDATE
match-value *100rel*

```

ToGenesys(Genesys-Out-Manipulation)

This manipulation is configured as out-manipulation towards Genesys.

There are three manipulations under this master sip-manipulation. Each sip-manipulation is configured separately and then mapped to sip-manip inside the master sip-manipulation as shown below

```

sip-manipulation
  name ToGenesys
  header-rule
    name ForNAT_IP
    header-name From
    action sip-manip
    new-value Topohiding
  header-rule
    name forRURI
    header-name From
    action sip-manip
    new-value ModRURIToGenesys

  header-rule
    name RemoveTimertoGenesys1
    header-name From
    action sip-manip
    new-value RemoveTimertoGenesys

```

Topohiding:

Configured for hiding the topology,towards Genesys

```

sip-manipulation
  name Topohiding
  header-rule
    name From
    header-name From
    action manipulate
  element-rule
    name From_header
    type uri-host
    action replace
    new-value $LOCAL_IP

  header-rule
    name st
    header-name To
    action manipulate
  element-rule
    name To
    type uri-host
    action replace
    new-value $REMOTE_IP

```

ModRURItogenesys

This sip-manip is for replacing the random contact in the uri-user of the RURI with that of the To header

```
sip-manipulation
  name                               ModRURItogenesys
  header-rule
    name                             CheckToheader
    header-name                       To
    action                            manipulate
    msg-type                          request
    methods                            INVITE
    element-rule
      name                             storeTouriuser
      type                             uri-user
      action                            store
      comparison-type                  pattern-rule
  header-rule
    name                             request
    header-name                       Request-URI
    action                            manipulate
    msg-type                          request
    methods                            INVITE
    element-rule
      name                             storeTouriuser
      parameter-name                  Request-URI
      type                             uri-user
      action                            replace
      comparison-type                  pattern-rule
      new-value
$CheckToheader.$storeTouriuser.$0
```

RemoveTimertoGenesys

This sip-manip is for removing the unnecessary headers towards Genesys. Since Genesys doesn't support update for session –refresh , we are deleting

- Session-Expires and Min-SE from INVITE and UPDATE headers.
- Update method from Supported in Invite

Also adding back the 100rel ,we deleted from the Supported header in Invite deleted in the previous sip-manip

```
sip-manipulation
  name                               RemoveTimertoGenesys
  header-rule
    name                             RemoveSessionExp
    header-name                       Session-Expires
    action                            delete
    methods                            INVITE, UPDATE
  header-rule
    name                             RemoveSupportedUpdate
    header-name                       Supported
    action                            delete
    msg-type                          request
    methods                            UPDATE
  header-rule
```

```

        name RemoveMinSEfromRequest
        header-name Min-SE
        action delete
        msg-type request
        methods INVITE,UPDATE
header-rule
        name ModifySupportedInvite
        header-name Supported
        action manipulate
        comparison-type pattern-rule
        msg-type request
        methods Invite
        match-value (100rel) (.*)
        new-value $1

```

NTT SIP-Manipulations

ModSupportedfromntt –(NTT-In-Manipulation):

The following manipulation is configured as in-manipulation from NTT. There are manipulations under this master sip-manipulation. Each sip-manipulation is configured separately and then mapped to sip-manip inside the master sip-manipulation as shown below

```

sip-manipulation
  name ModSupportedfromntt
  header-rule
    name delete100rel
    header-name Supported
    action delete
    methods INVITE
    match-value 100rel
  header-rule
    name add100rel
    header-name Require
    action add
    msg-type request
    methods INVITE
    new-value 100rel

header-rule
  name checkPCPID2
  header-name P-Called-Party-ID
  action manipulate
  comparison-type pattern-rule
  msg-type out-of-dialog
  methods INVITE
  element-rule
    name modToer
    type header-value
    action sip-manip
    comparison-type pattern-rule
    new-value changeforPCPID

header-rule
  name tc1282

```



```

        header-name      To
        action           sip-manip
        msg-type         request
        methods          INVITE
        new-value        checkip6
header-rule
    name                tc1283
    header-name         To
    action              sip-manip
    msg-type            request
    methods             INVITE
    new-value           tc1283
header-rule
    name                tc1284
    header-name         To
    action              sip-manip
    msg-type            request
    methods             INVITE
    new-value           tc1284

```

Manipulation for 100 rel

This sip manipulation is for allowing SBC handle the 100rel-interworking. One of the requirements for SBC to handle SBC is that incoming Invite should have Require:100 rel

Manipulation for PCPID Comparison:

This manipulation changes the To user id if it doesn't match with the PCPID.

```

sip-manipulation
    name                changeforPCPID
    header-rule
        name            modforPCPID
        header-name     To
        action          manipulate
        comparison-type pattern-rule
        msg-type        out-of-dialog
        methods         INVITE
        element-rule
            name        modToer
            type        uri-user
            action      replace
            comparison-type pattern-rule
            match-value  !($TO_USER.$0 ==
$PCPID_USER.$0)
            new-value   $PCPID_USER.$0

```

Manipulation for checking IP6 and rejecting in SDP

This manipulation is for checking whether the SDP has IPv6 and rejecting it with 406 Not Acceptable.

```

sip-manipulation
    name                checkip6
    mime-sdp-rule
        name            check
        msg-type        request

```

```

methods
action
sdp-session-rule
    name
    action
    sdp-line-rule
        name
        type
        action
        comparison-type
rule
9){ 10}) ([0-9]{10}) ([0- 9]{10}) (IN IP6 .*)$
Acceptable Protocol"
match-value
new-value
INVITE
manipulate
check2
manipulate
From
o
reject
pattern-
^([0-
"403:Not

```

Manipulation for checking different protocol value in m line

This manipulation is for checking whether the SDP m line has UDP and to reject it with 403 Not Acceptable Media .

```

sip-manipulation
    name
    mime-sdp-rule
        name
        msg-type
        methods
        action
        sdp-media-rule
            name
            media-type
            action
            sdp-line-rule
                name
                type
                action
                comparison-type
rule
^(audio)( [0-9]{4,5})( UDP 0)$
Acceptable Media"
name
tc1283
check
request
INVITE
manipulate
test
audio
manipulate
change
m
reject
pattern-
"403:Not

```

Manipulation for checking incompatible codecs

The below manipulation checks for incompatible codecs and rejects it with 403:codecs Not Allowed.

```

sip-manipulation
    name
    name
tc1284

```

```

mime-sdp-rule
  name
  msg-type
  methods
  action
  sdp-media-rule
    name
    media-type
    action
    sdp-line-rule
      name
      type
      action
      comparison-type
rule
  match-value
  new-value
^(audio) ( [0-9]{4,5}) ( RTP/AVP 9 15 18 4)$
"403:Codecs Not Allowed"

```

Changecontact- (NTT-Out-Manipulation):

This manipulation is configured as out-manipulation towards NTT. There are manipulations under this master sip-manipulation. Each sip-manipulation is configured separately and then mapped to sip-manip inside the master sip-manipulation as shown below

```

sip-manipulation
  name
  header-rule
    name
    header-name
    action
    new-value
  header-rule
    name
    header-name
    action
    new-value
  header-rule
    name
    header-name
    action
    new-value
  header-rule
    name
    header-name
    action
    new-value
  header-rule
    name

```

```

Changecontact
  forprivacy
  From
  sip-manip
  NATting
  forPAIandRPI
  From
  sip-manip
  PAIandRPI
  forUAinfo
  From
  sip-manip
  AddSBCinfo
  forregsupport
  From
  sip-manip
  AddSupportedinReg
  outboundinvite

```

header-name	From
action	sip-manip
new-value	ModSupportedoutboundINVITE
header-rule	
name	regrule
header-name	From
action	sip-manip
new-value	ForREGISTER
header-rule	
name	formaxforwards
header-name	From
action	sip-manip
new-value	ModMaxforwards
header-rule	
name	fortransportudp
header-name	From
action	sip-manip
new-value	deltransportUDP
header-rule	
name	forplusinresponse
header-name	From
action	sip-manip
new-value	Modcontactuserinresponses
header-rule	
name	formodallowheader
header-name	From
action	sip-manip
new-value	ModAllowheader
header-rule	
name	forreasonheader
header-name	From
action	sip-manip
new-value	DelReasonheader
header-rule	
name	forupdatemessage
header-name	From
action	sip-manip
new-value	ModUPDATEmessage
header-rule	
name	DeleteexpiresinINVITE
header-name	From
action	sip-manip
new-value	DelExpiresinINVITE
header-rule	
name	forSEtoNTT
header-name	From
action	sip-manip
new-value	forsessionexpirestoNTT
header-rule	
name	foranonymouscall
header-name	From
action	sip-manip
new-value	anonymouscall
header-rule	
name	remblines

```

        header-name      From
        action           sip-manip
        new-value        striplines
header-rule
    name                forfromport
    header-name        From
    action             sip-manip
    new-value          inviteffromport
header-rule
    name                forprivacy1
    header-name        From
    action             sip-manip
    new-value          Privacy

```

NATting

This sip manipulation is configured for topology hiding.

NTT requires that the host part in the From and To headers in INVITE should be "ipvoice.jp"

```

sip-manipulation
    name                NATting
    header-rule
        name            From
        header-name     From
        action          manipulate
        element-rule
            name        From_header
            type        uri-host
            action      replace
            new-value   ipvoice.jp
    header-rule
        name            To
        header-name     To
        action          manipulate
        element-rule
            name        To
            type        uri-host
            action      replace
            new-value   ipvoice.jp
        element-rule
            name        Toport
            type        uri-port
            action      sip-manip
            new-value   ModToport

```

The below manipulation is a part of NATing sip-manipulation.

NTT requires the port be 7060 in the To header of Invite. This manipulation adds the port to the To header if it does not exist.

```

sip-manipulation
    name                ModToport
    header-rule
        name            CheckToport
        header-name     To
        action          manipulate
        element-rule

```

```

name Storeport
type uri-port
action store
match-value 7060

header-rule
name CheckdoubleportsinTo
header-name To
action manipulate
comparison-type boolean
match-value !$CheckToport.$Storeport
element-rule
name ChangeToval
type uri-port
action add
new-value 7060

```

PAIandRPI

To delete the Remote-Party-ID and P-Asserted-Identity headers sent by Genesys.

```

sip-manipulation
name PAIandRPI
header-rule
name delRPI
header-name Remote-Party-ID
action delete
methods INVITE, UPDATE

header-rule
name delPAI
header-name P-Asserted-Identity
action delete
methods BYE, INVITE, UPDATE

```

AddSBCinfo

To replace the Genesys related information in the User-Agent header with the SBC image version. The pattern to be matched can be changed according to the customer's requirements.

```

sip-manipulation
name AddSBCinfo
header-rule
name Addproductinfo
header-name User-Agent
action add
msg-type request
methods REGISTER
new-value OracleE\-SBC/SCZ840p10

header-rule
name Moduseragentforall
header-name User-Agent
action manipulate
comparison-type pattern-rule
msg-type request
methods ACK, BYE, INVITE, PRACK, UPDATE
element-rule
name Modvalue

```

```

type header-value
action replace
comparison-type pattern-rule
match-value ^Epi (.*)
new-value OracleE\-
```

SBC/SCZ840p10

```

header-rule
  name Moduseragentforcall2
  header-name User-Agent
  action manipulate
  comparison-type pattern-rule
  msg-type request
  methods
  element-rule
    name Modvalue
    type header-value
    action replace
    comparison-type pattern-rule
    match-value ^SIP (.*)
    new-value OracleE\-
```

SBC/SCZ840p10

AddSupportedinReg

NTT requires that the Path header be added to every Register message. Below sip-manipulation is configured to add Path header

```

sip-manipulation
  name AddSupportedinReg
  header-rule
    name Addtheheader
    header-name Supported
    action add
    msg-type request
    methods REGISTER
  new-value path
```

ModSupportedoutboundINVITE

To replace the value of Supported header in INVITE with 100rel,timer towards NTT.

```

sip-manipulation
  name ModSupportedoutboundINVITE
  header-rule
    name CheckSupported
    header-name Supported
    action manipulate
    comparison-type pattern-rule
    msg-type request
    methods INVITE
  element-rule
    name Storevalue
```

type	header-value
action	store
comparison-type	pattern-rule
element-rule	
name	add100rel
type	header-value
action	find-replace-all
comparison-type	pattern-rule
new-value	100rel,timer

ForREGISTER

To add the required authentication details in the REGISTERs sent to NTT trunk.
Also the sip-manipulation adds user=phone in From,To and Request-URI of Register

```

sip-manipulation
  name
  header-rule
    name
    header-name
    action
    msg-type
    methods
  header-rule
    name
    header-name
    action
    msg-type
    methods
    element-rule
      name
      type
      action
      comparison-type
      match-value
params=sha1-credential)
  element-rule
    name
    type
    action
    comparison-type
    new-value
$Delauthparams.$storevalue.$1
  header-rule
    name
    header-name
    action
    msg-type
    methods
    new-value
  header-rule
    name
    header-name
    action
    msg-type
    methods
  header-rule
    name
    header-name

```

	ForREGISTER	
	Delroute	
	Route	
	delete	
	request	
	REGISTER	
	Delauthparams	
	Authorization	
	manipulate	
	request	
	REGISTER	
	storevalue	
	header-value	
	store	
	pattern-rule	
	(.+) (, auth-	
	delparam	
	header-value	
	replace	
	pattern-rule	
	addContentlength	
	Content-Length	
	add	
	request	
	REGISTER	
	0	
	delexpires	
	Expires	
	delete	
	request	
	REGISTER	
	adduserphoneinFrom	
	From	


```

        action
        msg-type
        methods
        element-rule
            name
            parameter-name
            type
            action
            new-value
    header-rule
        name
        header-name
        action
        msg-type
        methods
        element-rule
            name
            parameter-name
            type
            action
            new-value
    header-rule
        name
        header-name
        action
        msg-type
        methods
        element-rule
            name
            parameter-name
            type
            action
            new-value
    header-rule
        name
        header-name
        action
        msg-type
        methods
        element-rule
            name
            type
            action
            comparison-type
            match-value
params=sha1-credential)
    element-rule
        name
        type
        action
        comparison-type
        new-value
$Forinvitedelauthparams.$storethevalue.$1
    header-rule
        name
        header-name
        action

```

```

manipulate
request
INVITE,REGISTER
    adduserphone
    user
    uri-param
    add
    phone
adduserphoneinTo
To
manipulate
request
INVITE,REGISTER
    adduserphonto
    user
    uri-param
    add
    phone
adduserphoneinRURIINVITE
Request-URI
manipulate
request
INVITE
    adduserequalphone
    user
    uri-param
    add
    phone
Forinvitedelauthparams
Proxy-Authorization
manipulate
request
INVITE
    storethevalue
    header-value
    store
    pattern-rule
    (.+)(, auth-
delparam
header-value
replace
pattern-rule
addopaqueinReg
Authorization
manipulate

```

```

        comparison-type
        msg-type
        methods
        element-rule
            name
            type
            action
            comparison-type
            match-value
    algorithm=MD5)
        element-rule
            name
            parameter-name
            type
            action
            comparison-type
            new-value
    $addopaqueinReg.$storeentireheader.$1+$addopaqueinReg.$storeentireheader.$2+,+opaque="\\"
        header-rule
            name
            header-name
            action
            msg-type
            methods
            element-rule
                name
                type
                action
                comparison-type
                match-value
    algorithm=MD5)
        element-rule
            name
            type
            action
            comparison-type
            new-value
    $addopaqueinINVITE.$Checkheader.$1+$addopaqueinINVITE.$Checkheader.$2+,+opaque="\\"

```

ModMaxforwards

To modify the Max-Forwards header value to 70 and adds the header if it is not present.

```

sip-manipulation
    name
    description
    change it to 70 and if not present, add it
    header-rule
        name
        header-name
        action
        methods
    ACK,BYE,INVITE,PRACK,UPDATE
    element-rule
        name
        type

```

```

ModMaxforwards
Look for Max-Forwards header,

CheckMaxforwards
Max-Forwards
manipulate

storevalue
header-value

```

```

        action
        comparison-type
    element-rule
        name
        type
        action
        comparison-type
        new-value
header-rule
    name
    header-name
    action
    comparison-type
    msg-type
    methods
ACK, BYE, INVITE, PRACK, UPDATE
    match-
value
    element-rule
        name
        type
        action
        new-value
        store
        pattern-rule
        add70
        header-value
        find-replace-all
        pattern-rule
        70
        Addmaxforwardsifnotpresent
        Max-Forwards
        add
        boolean
        reply
        !$CheckMaxforwards.$storevalue
        addvalue
        header-value
        add
        70

```

deltransportUDP

To remove the 'transport' uri-parameter from the Contact header.

```

sip-manipulation
    name
    header-rule
        name
        header-name
        action
        methods
        element-rule
            name
            parameter-name
            type
            action
        deltransportUDP
        Remtransportudp
        Contact
        manipulate
        INVITE, UPDATE
        delparam
        transport
        uri-param
        delete-element

```

Modcontactuserinresponses

This sip-manipulation is for modifying the required parameters in the responses towards NTT .

```

sip-manipulation
    name
    header-rule
        name
        header-name
        action
        msg-type
        methods
        new-value
    header-rule
        name
        header-name
        Modcontactuserinresponses
        Replacesupported200
        Supported
        manipulate
        reply
        INVITE, UPDATE
        timer
        Modusergaent
        User-Agent

```

```

        action                delete
        msg-type              reply
        methods                INVITE, UPDATE
header-rule
    name                      Modmaxf
    header-name                Max-Forwards
    action                    delete
    msg-type                  reply
    methods                    INVITE, UPDATE
header-rule
    name                      is180
    header-name                @status-line
    action                    store
    comparison-type            pattern-rule
    methods                    INVITE, UPDATE
    element-rule
        name                  Addinrerply
        type                  status-code
        action                store
        comparison-type        pattern-rule
        match-value            180
header-rule
    name                      Supported
    header-name                Supported
    action                    delete
    comparison-type            boolean
    msg-type                  reply
    methods                    INVITE, UPDATE
    match-value                $is180.$Addinrerply

```

ModAllowheader

Modifies the Allow header value in INVITE and UPDATE to include the methods, INVITE,BYE,CANCEL,ACK,PRACK,UPDATE and adds the Allow header if it is not present.

```

sip-manipulation
    name                      ModAllowheader
    header-rule
        name                  CheckAllowheader
        header-name            Allow
        action                manipulate
        methods                INVITE, UPDATE
        element-rule
            name                Storeheadervalue
            type                header-value
            action                store
            comparison-type        pattern-rule
            match-value            .*
        element-rule
            name                Modallow
            type                header-value
            action                replace
            new-value
INVITE, BYE, CANCEL, ACK, PRACK, UPDATE
    header-rule
        name                  Checkallowandifnotaddit
        header-name            Allow
        action                add

```

```

        comparison-type          boolean
        msg-type                 request
        methods                  INVITE, UPDATE
        match-
value                            !$CheckAllowheader.$Storeheadervalue
        element-rule
            name                  addheadervalue
            type                  header-value
            action                add
            new-value
INVITE, BYE, CANCEL, ACK, PRACK, UPDATE
        header-rule
            name                  deleteAllow
            header-name          Allow
            action                delete
        methods                  ACK

```

DelReasonheader

To delete the Reason header in BYE.

```

sip-manipulation
    name                            DelReasonheader
    header-rule
        name                        delreason
        header-name                 Reason
        action                      delete
        msg-type                    request
        methods                     BYE

```

ModUPDATEmessage

To modify the Supported header in UPDATES to include only timer

```

sip-manipulation
    name                            ModUPDATEmessage
    header-rule
        name                        ModSupportedheader
        header-name                 Supported
        action                      manipulate
        comparison-type             pattern-rule
        msg-type                    request
        methods                     UPDATE
        element-rule
            name                    keptimeronly
            type                    header-value
            action                  replace
            comparison-type         pattern-rule
            new-value               timer

```

DelExpiresinINVITE

To delete the Expires header from the INVITE

```

sip-manipulation
    name                            DelExpiresinINVITE

```

```

header-rule
  name                               delexpires
  header-name                         Expires
  action                               delete
  msg-type                             request
  methods                              INVITE

```

forsessionexpirestoNTT

To modify the value in the Session-Expires header to 180

```

sip-manipulation
  name                               forsessionexpirestoNTT
  header-rule
    name                               adduacforSE
    header-name                         Session-Expires
    action                               manipulate
    comparison-type                     pattern-rule
    msg-type                             request
    methods                              INVITE
    element-rule
      name                               storesevalue
      type                               header-value
      action                               store
      comparison-type                   pattern-rule
      match-value                       (.*)
    element-rule
      name                               addrefresheruac
      type                               header-value
      action                               replace
      comparison-type                   pattern-rule
      new-value
180+;+refresher=uac
  header-rule
    name                               adduacforSE2
    header-name                         Min-SE
    action                               manipulate
    comparison-type                     pattern-rule
    msg-type                             request
    methods                              INVITE
    element-rule
      name                               storesevalue
      type                               header-value
      action                               store
      comparison-type                   pattern-rule
      match-value                       (.*)
    element-rule
      name                               addrefresheruac
      type                               header-value
      action                               replace
      comparison-type                   pattern-rule
      new-value                         180

```

anonymouscall

NTT requires anonymous call be in a particular format. This sip-manipulation is used to change request-uri and To headers in INVITE of anonymous calls. Modify the pattern value according to the numbers provided by NTT.

```

sip-manipulation
  name
  header-rule
    name
    header-name
    action
    msg-type
    methods
    element-rule
      name
      type
      action
      comparison-type
      match-value
    element-rule
      name
      type
      action
      comparison-type
      match-value
  $changeRURI.$storeuser
  header-rule
    name
    header-name
    action
    comparison-type
    msg-type
    methods
    match-value
    element-rule
      name
      parameter-name
      type
      action
      new-value
  header-rule
    name
    header-name
    action
    comparison-type
    msg-type
    methods
    element-rule
      name
      type
      action
      comparison-type
      match-value
    element-rule
      name
  Striptheplusfromuriuser
    type
    action
    comparison-type
  anonymouscall
    changeRURI
    Request-URI
    manipulate
    request
    INVITE
    storeuser
    uri-user
    store
    pattern-rule
    ^\+184(.*$)
    striptheplus
    uri-user
    replace
    boolean
    $ORIGINAL-^"+
  addphonecontext
    Request-URI
    manipulate
    boolean
    request
    INVITE
    $changeRURI.$storeuser.$0
  addtheparam
    phone-context
    uri-user-param
    add
    \+81
  ModToheader
    To
    manipulate
    pattern-rule
    request
    INVITE
    storetheuser
    uri-user
    store
    pattern-rule
    ^\+184(.*$)
    uri-user
    replace
    boolean

```

```

                                match-value
$ModToheader.$storetheuser
                                new-value                                $ORIGINAL-^"+
header-rule
    name                        addphonecontextinTo
    header-name                 To
    action                      manipulate
    comparison-type             boolean
    msg-type                    request
    methods                     INVITE
    match-value
$ModToheader.$storetheuser.$0
    element-rule
        name                    addpc
        parameter-name          phone-context
        type                    uri-user-param
        action                  add
        new-value               \+81

```

striplines

To remove the unwanted lines from the SDP as per NTT requirements.

```

sip-manipulation
    name                        striplines
    header-rule
        name                    blinefix
        header-name             Content-Type
        action                  manipulate
    element-rule
        name                    removeb1
        parameter-name          application/sdp
        type                    mime
        action                  find-replace-all
        comparison-type         pattern-rule
        match-value             b=TIAS:64000\r\n
    element-rule
        name                    removeb2
        parameter-name          application/sdp
        type                    mime
        action                  find-replace-all
        comparison-type         pattern-rule
        match-value             b=AS:64\r\n
    element-rule
        name                    removemaxptime
        parameter-name          application/sdp
        type                    mime
        action                  find-replace-all
        comparison-type         pattern-rule
        match-value             a=maxptime:20\r\n
    element-rule
        name                    removemaxptime2
        parameter-name          application/sdp
        type                    mime
        action                  find-replace-all
        comparison-type         pattern-rule
        match-value             EpiSIPphone-epi-

```

8.5.000.64


```

        new-value          session
    element-rule
        name               removemaxptime4
        parameter-name     application/sdp
        type               mime
        action             replace
        comparison-type    pattern-rule
        match-value        Session Name=*
        new-value          Session
Name=session
    element-rule
        name               removemaxptime5
        parameter-name     application/sdp
        type               mime
        action             replace
        match-value        o=-
        new-value          o=Genesys
    element-rule
        name               ssrc
        parameter-name     application/sdp
        type               mime
        action             replace
        comparison-type    pattern-rule
        match-value        a =ssrc(.*)\n\r
mime-sdp-rule
    name                   sdp
    msg-type               request
    methods                INVITE
    action                 manipulate
    sdp-media-rule
        name               user
        media-type         audio
        action             manipulate
        sdp-line-rule
            name           audio2
            type           a
            action         delete
            comparison-type pattern-
rule
            match-value   ^ssrc.*
    sdp-session-rule
        name               oline
        action             manipulate
        sdp-line-rule
            name           replaceo
            type           o
            action         replace
            match-value    -
            new-value      Geneys

```

inviteffromport

This sip-manipulation is configured to change user-param and port in REGISTER. The new value should be left blank for Register To and From port as NTT does not support From and To ports in Register message.

```

sip-manipulation
    name                inviteffromport

```

```

header-rule
  name                               From
  header-name                         From
  action                               manipulate
  msg-type                             request
  methods                             REGISTER
  element-rule
    name                               From_port
    parameter-name                     From
    type                               uri-param-name
    action                             replace
    match-value                        user

header-rule
  name                               To
  header-name                         To
  action                               manipulate
  msg-type                             request
  methods                             REGISTER
  element-rule
    name                               From_port
    parameter-name                     To
    type                               uri-param-name
    action                             replace
    match-value                        user

header-rule
  name                               From_port
  header-name                         From
  action                               manipulate
  msg-type                             request
  methods                             INVITE, REGISTER, UPDATE
  element-rule
    name                               From_port
    parameter-name                     From
    type                               uri-port
    action                             replace
    match-value                        4080

header-rule
  name                               To_port
  header-name                         To
  action                               manipulate
  msg-type                             request
  methods                             REGISTER
  element-rule
    name                               From_port
    parameter-name                     From
    type                               uri-port
    action                             replace
    match-value                        7060

```

Privacy

This sip-manipulation deletes the Privacy header from the requests :ACK, BYE, CANCEL, INVITE, PRACK, UPDATE

```

sip-manipulation
  name                               Privacy
  header-rule
    name                               deletePriv

```

header-name	Privacy
action	delete
msg-type	request
methods	

ACK, BYE, CANCEL, INVITE, PRACK, UPDATE

5.11. Configure Session-Timer Profile

The Oracle® Enterprise Session Border Controller provides a SIP session timer feature that, when enabled, forwards the re-INVITE or UPDATE requests from a User Agent Client (UAC) to a User Agent Server (UAS) in order to determine whether or not a session is still active. This refresh feature works for both UAs and proxies.

To support UPDATE for session-refresh towards NTT, we configure session-time profile .

The screenshot shows the Oracle Enterprise Session Border Controller configuration page. The top navigation bar includes 'Dashboard', 'Configuration', 'Monitor and Trace', 'Widgets', and 'System'. The 'Configuration' tab is active, and the 'session-timer-profile' configuration is selected in the left sidebar. The main content area displays the 'Modify Session Timer Profile' form with the following fields:

- Name: NTT-ST
- Session Expires: 180 (Range: 64.999999999)
- Min Se: 180 (Range: 64.999999999)
- Force Reinvite: enable
- Request Refresher: uac
- Response Refresher: uas

Apply the timer –profile on the sip-interface towards NTT.

5.12. Configure Surrogate-agent

NTT requires the customer PBX to register in order to originate calls support authentication. Since Genesys cannot perform the registration, Oracle ESBC performs surrogate registrations on behalf of the PBX

Configure the following for surrogate registration to be successful

- Register Host
- Register User
- Realm-ID
- Customer-NextHop (Session Agent of NTT)
- Register-Contact-Host (IP of the Egress Interface toads NTT)
- Register-Contact-User (Phone number)
- Auth-User

- Auth-Passwd

ORACLE Enterprise Session Border Controller admin

OracleESBC SCZ8.4.0 Patch 8 (WS Build 482) Dashboard Configuration Monitor and Trace Widgets System

Configuration View Configuration Q Discard Verify Save

sip-interface
 sip-manipulation
 sip-monitoring
 sip-nat
 sip-profile
 sip-q850-map
 sip-recursion-policy
surrogate-agent
 survivability
 translation-rules

Modify Surrogate Agent

Register Host: ipvoice.jp

Register User: +81354

Description:

Realm ID: Genesys

State: enable

Customer Host:

Customer Next Hop: ipvoice.jp

ORACLE Enterprise Session Border Controller admin

OracleESBC SCZ8.4.0 Patch 8 (WS Build 482) Dashboard Configuration Monitor and Trace Widgets System

Configuration View Configuration Q Discard Verify Save

sip-interface
 sip-manipulation
 sip-monitoring
 sip-nat
 sip-profile
 sip-q850-map
 sip-recursion-policy
surrogate-agent
 survivability
 translation-rules

Modify Surrogate Agent

ipvoice.jp

Register Contact Host: 10.0.7.113

Register Contact User: +81354

Password:

Register Expires: 3600 (Range: 0..99999999)

Replace Contact: enable

Options:

Route To Registrar: enable

Aor Count: 1 (Range: 0..99999999)

The screenshot shows the Oracle Enterprise Session Border Controller configuration interface. The top navigation bar includes 'Dashboard', 'Configuration', 'Monitor and Trace', 'Widgets', and 'System'. The left sidebar lists various configuration categories, with 'surrogate-agent' selected. The main content area is titled 'Modify Surrogate Agent' and contains the following configuration fields:

- Route To Registrar: enable
- Aor Count: 1 (Range: 0..99999999)
- Auth User: user
- Max Register Attempts: 3 (Range: 0..10)
- Register Retry Time: 1800 (Range: 30..3600)
- Count Start: 1 (Range: 0..99999999)
- Register Mode: automatic
- Triggered Inactivity Interval: 30 (Range: 5..300)
- Triggered Oos Response: 503

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

5.13. Configure SIP Interfaces.

Navigate to sip-interface under session-router and configure the sip-interface as shown below
Genesys interface is confured with UDP port and allow-anonymous as “agents-only”

Make sure that the master sip-manipulations are applied at both the in and out manipulation-id.

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

- State: enable
- Realm ID: Genesys
- Description: (empty text area)

Below the configuration fields is a table for 'SIP Ports' with the following data:

Action	Select	Address	Port	Transport Protocol	Allow Anonymous	Multi Home Addr
:	<input type="checkbox"/>	172.18.0.139	5060	UDP	agents-only	

Buttons for 'Show Configuration', 'Verify', and 'Save' are located at the top right of the configuration area.

ORACLE Enterprise Session Border Controller admin

OracleESBC SCZ8.4.0 Patch 8 (WS Build 482) Dashboard Configuration Monitor and Trace Widgets System

Configuration View Configuration Q Discard Verify Save

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 Show Configuration

Nat Interval	30	(Range: 0..4294967295)
TCP Nat Interval	90	(Range: 0..4294967295)
Registration Caching	<input checked="" type="checkbox"/> enable	
Min Reg Expire	300	(Range: 0..999999999)
Registration Interval	3600	(Range: 0..4294967295)
Route To Registrar	<input type="checkbox"/> enable	
Secured Network	<input type="checkbox"/> enable	
Uri Fqdn Domain		
Options		

ORACLE Enterprise Session Border Controller admin

OracleESBC SCZ8.4.0 Patch 8 (WS Build 482) Dashboard Configuration Monitor and Trace Widgets System

Configuration View Configuration Q Discard Verify Save

local-policy
local-routing-config
media-profile
session-agent
session-group
session-recording-group
session-recording-server
session-translation
sip-config
sip-feature

Modify SIP Interface Show Configuration

SPL Options		
Trust Mode	all	
Max Nat Interval	3600	(Range: 0..4294967295)
Stop Recurse	401,407	
Port Map Start	0	(Range: 0,1025..65535)
Port Map End	0	(Range: 0,1025..65535)
In Manipulationid	Forsurragent	
Out Manipulationid	ToGenesys	

NTT Sip-interface-Config

Configure a sip-interface for NTT with transport set as UDP and allow-anonymous set as “registered only”

ORACLE Enterprise Session Border Controller

OracleESBC SCZ8.4.0 Patch 8 (WS Build 482) Dashboard Configuration Monitor and Trace Widgets System admin

Configuration View Configuration Q Discard Verify Save

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

State enable

Realm ID NTT-router

Description

SIP Ports

Action	Select	Address	Port	Transport Protocol	Allow Anonymous	Multi Home Addr
:	<input type="checkbox"/>	10.0.7.113	5060	UDP	registered	

Show Configuration

Make sure the following configuration is there in sip-interface before moving to the next configuration

1. 100rel-interworking is set for early media support from SBC.
2. Control-Surr-Reg is configured as SPL-options for enabling the SurrogateContact.0.6.spl
3. The sip-manipulations for in and out manipulations.
4. Session-Timer Profile

ORACLE Enterprise Session Border Controller

OracleESBC SCZ8.4.0 Patch 8 (WS Build 482) Dashboard Configuration Monitor and Trace Widgets System admin

Configuration View Configuration Q Discard Verify Save

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

Registration Interval 3600 (Range: 0..4294967295)

Route To Registrar enable

Secured Network enable

Uri Fqdn Domain

Options 100rel-interworking X

SPL Options Control-Surr-Reg

Trust Mode all

Max Nat Interval 3600 (Range: 0..4294967295)

Stop Recurse 401,407

The screenshot shows the 'Modify SIP Interface' configuration page in the Oracle Enterprise Session Border Controller. The left sidebar lists various configuration categories, with 'sip-interface' selected. The main content area contains several configuration fields:

- Port Map Start: 0 (Range: 0,1025..65535)
- Port Map End: 0 (Range: 0,1025..65535)
- In Manipulationid: ModSupportedfromntt
- Out Manipulationid: Changecontact (indicated by a blue arrow)
- SIP Atcf Feature: enable
- Rfc2833 Payload: 101 (Range: 96..127)
- Rfc2833 Mode: transparent
- Response Map: [empty]
- Local Response Map: [empty]

The screenshot shows the 'Modify SIP Interface' configuration page in the Oracle Enterprise Session Border Controller. The left sidebar lists various configuration categories, with 'sip-interface' selected. The main content area contains several configuration fields:

- Msrp Delay Egress Bye: enable
- Send 380 Response: [empty]
- Pcsf Restoration: [empty]
- Session Timer Profile: NTT-ST
- Session Recording Server: [empty] (indicated by a blue arrow)
- Session Recording Required: enable
- Service Tag: [empty]
- Reg Cache Route: enable
- Diversion Info Mapping Mode: none

Once sip-interface is configured – the SBC is ready to accept traffic on the allocated IP address. Now configure where the SBC sends the outbound traffic.

5.14. 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..

Configure the session-agent for Genesys with the following parameters.
Go to session-router->Session-Agent.

- hostname as hostname of Genesys SIP Server
- IP address as Genesys SIP server IP address
- port (Genesys SIP server port)
- realm-id – needs to match the realm created for Genesys
- transport set to “UDP”
- In addition to the above configuration, Auth Attributes are configured to challenge the requests coming from Genesys

- Username and Password are those provided by NTT trunk.

The screenshot shows the Oracle Enterprise Session Border Controller configuration interface. The top navigation bar includes 'ORACLE Enterprise Session Border Controller', 'admin', and tabs for 'Dashboard', 'Configuration', 'Monitor and Trace', 'Widgets', and 'System'. The version is 'OracleESBC SCZ8.4.0 Patch 8 (WS Build 482)'. The left sidebar lists configuration categories: media-manager, security, session-router (expanded), access-control, account-config, filter-config, ldap-config, local-policy, local-routing-config, media-profile, and session-agent (selected). The main area is titled 'Modify Session Agent' and contains the following fields:

- Hostname: 172.18.0.124
- IP Address: 172.18.0.124
- Port: 4080 (Range: 0,1025..65535)
- State: enable
- App Protocol: SIP
- App Type: (empty dropdown)
- Transport Method: UDP
- Realm ID: Genesys
- Egress Realm ID: (empty dropdown)

Buttons for 'Discard', 'Verify', 'Save', and 'Show Configuration' are visible at the top right of the configuration area.

This screenshot shows the same 'Modify Session Agent' configuration page but with advanced settings visible. The 'Show All' toggle at the bottom left is turned on. The configuration fields include:

- Burst Rate Window: 0 (Range: 0..999999999)
- Sustain Rate Window: 0 (Range: 0..999999999)
- Proxy Mode: (empty dropdown)
- Redirect Action: (empty dropdown)
- Loose Routing: enable
- Response Map: (empty dropdown)
- Ping Method: OPTIONS
- Ping Interval: 30 (Range: 0..4294967295)
- Ping Send Mode: keep-alive
- Ping All Addresses: enable

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

Similarly, Configure the session-agent for NTT TRUNK Go to session-router->Session-Agent.

- Host name set to ipvoice.jp
- IP address to ip-address of NTT Trunk.
- port 7060
- realm-id – needs to match the realm created for NTT TRUNK.
- transport set to “UDP”

The screenshot shows the Oracle Enterprise Session Border Controller (ESBC) configuration interface. The top navigation bar includes 'Dashboard', 'Configuration', 'Monitor and Trace', 'Widgets', and 'System'. The 'Configuration' tab is active. On the left, a sidebar lists various configuration categories, with 'session-agent' selected. The main content area is titled 'Modify Session Agent' and contains the following fields:

- Hostname: ipvoice.jp
- IP Address: 10.180.111.1
- Port: 7060 (Range: 0,1025..65535)
- State: enable
- App Protocol: SIP
- App Type: (empty dropdown)
- Transport Method: UDP
- Realm ID: NTT-router
- Egress Realm ID: (empty dropdown)

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

5.15. 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.

Configure two local-policies

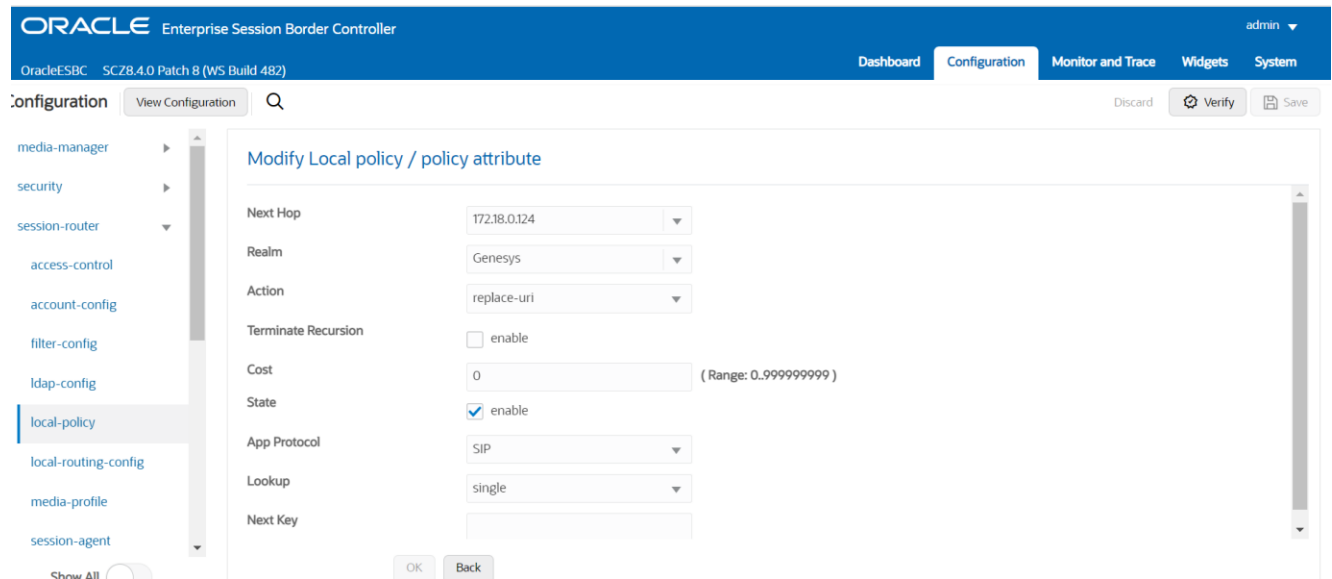
- From Genesys to NTT
- From NTT to Genesys

Below is the snapshot for NTT to Genesys.

The screenshot shows the Oracle Enterprise Session Border Controller (ESBC) configuration interface for 'Modify Local Policy'. The top navigation bar is the same as in the previous screenshot. The 'Configuration' tab is active, and the 'local-policy' category is selected in the sidebar. The main content area is titled 'Modify Local Policy' and contains the following fields:

- From Address: * x
- To Address: * x
- Source Realm: NTT-router x
- Description: (empty text area)
- State: enable
- Policy Priority: none

For this local-policy (only) set the action as replace-uri as shown .(to replace the contact-user received in INVITE from NTT with Genesys number)



Similarly configure local-policy from Genesys to NTT with action set as none.

5.16. Configure Codec Policy

The Oracle Session Border Controller (SBC) uses codec policies to describe how to manipulate SDP messages as they cross the SBC. The SBC bases its decision to transcode a call on codec policy configuration and the SDP. Each codec policy specifies a set of rules to be used for determining what codecs are retained, removed, and how they are ordered within SDP.

Note: this is an optional config – configure codec policy only if deemed required.

5.17. Configure Media Policy

NTT requires that the TOS value for SIP and RTP be set to 5. The following media-policy is configured and applied on the realmconfig towards NTT.

Go to Media-manager and configure media-policy as shown below.

ORACLE Enterprise Session Border Controller

OracleESBC SCZ8.4.0 Patch 8 (WS Build 482) Dashboard Configuration Monitor and Trace Widgets System admin

Configuration View Configuration Q Discard Verify Save

media-manager media-policy

Modify Media Policy

Name: NTT-Tos

Tos Settings

Action	Select	Media Type	Media Sub Type	Tos Value	Media Attributes
:	<input type="checkbox"/>	message	sip	Oxa0	
:	<input type="checkbox"/>	audio		Oxa0	

OK Back

Apply this media-policy to the NTT realm as shown below.

ORACLE Enterprise Session Border Controller

OracleESBC SCZ8.4.0 Patch 8 (WS Build 482) Dashboard Configuration Monitor and Trace Widgets System admin

Configuration View Configuration Q Discard Verify Save

media-manager media-policy

Modify Realm Config

enable

Mm In Network enable

Mm Same Ip enable

QoS Enable enable

Max Bandwidth 0 (Range: 0.999999999)

Max Priority Bandwidth 0 (Range: 0.999999999)

Parent Realm

DNS Realm

Media Policy NTT-Tos

RTCP Mux enable

OK Back

5.18. Configure steering-pool

Steering-pool config allows configuration to assign port range for media handling on the SBC. Configure steering pool for both the realms.

The screenshot shows the Oracle Enterprise Session Border Controller configuration interface. The top navigation bar includes 'Dashboard', 'Configuration', 'Monitor and Trace', 'Widgets', and 'System'. The 'Configuration' tab is active, and the 'steering-pool' configuration is selected in the left sidebar. The main content area is titled 'Modify Steering Pool' and contains the following fields:

- IP Address: 10.0.7113
- Start Port: 41000 (Range: 0,1..65535)
- End Port: 45000 (Range: 0,1..65535)
- Realm ID: NTT-router
- Network Interface: (empty dropdown)

5.19. Number Translation

NTT requires the telephone numbers in the From and To headers to be in E164 format. Since Genesys does not send the numbers in E164 format, we configure a translation rule to add + to the uri-users of the From and To headers of the INVITEs going to NTT and apply it on the realm towards NTT.

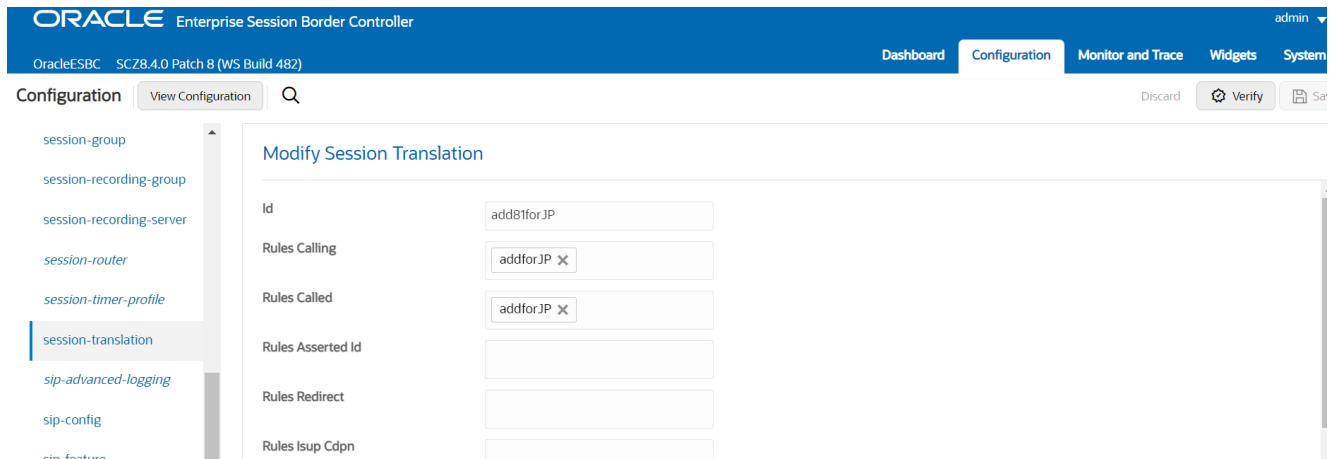
Go to session-router->translation-rules and add the following

The screenshot shows the Oracle Enterprise Session Border Controller configuration interface. The top navigation bar includes 'Dashboard', 'Configuration', 'Monitor and Trace', 'Widgets', and 'System'. The 'Configuration' tab is active, and the 'translation-rules' configuration is selected in the left sidebar. The main content area is titled 'Modify Translation Rules' and contains the following fields:

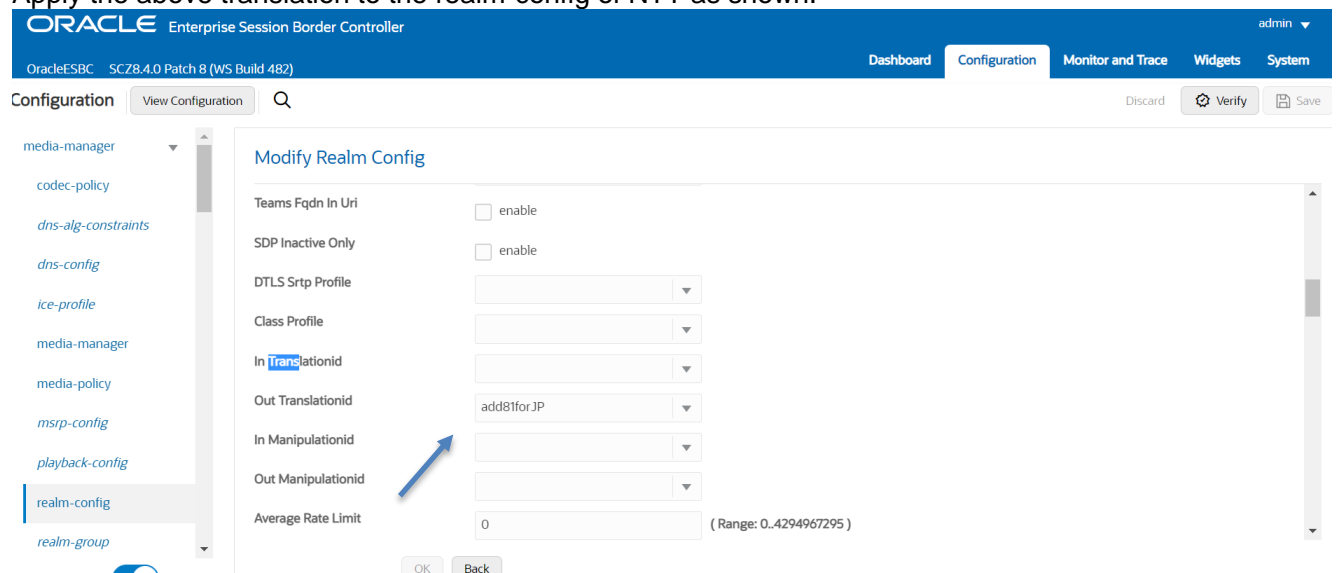
- Id: addforJP
- Type: add
- Add String: +
- Add Index: 0
- Delete String: (empty field)
- Delete Index: 0 (Range: 0..99999999)

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

Now add the above rule to session-translation.



Apply the above translation to the realm-config of NTT as shown.



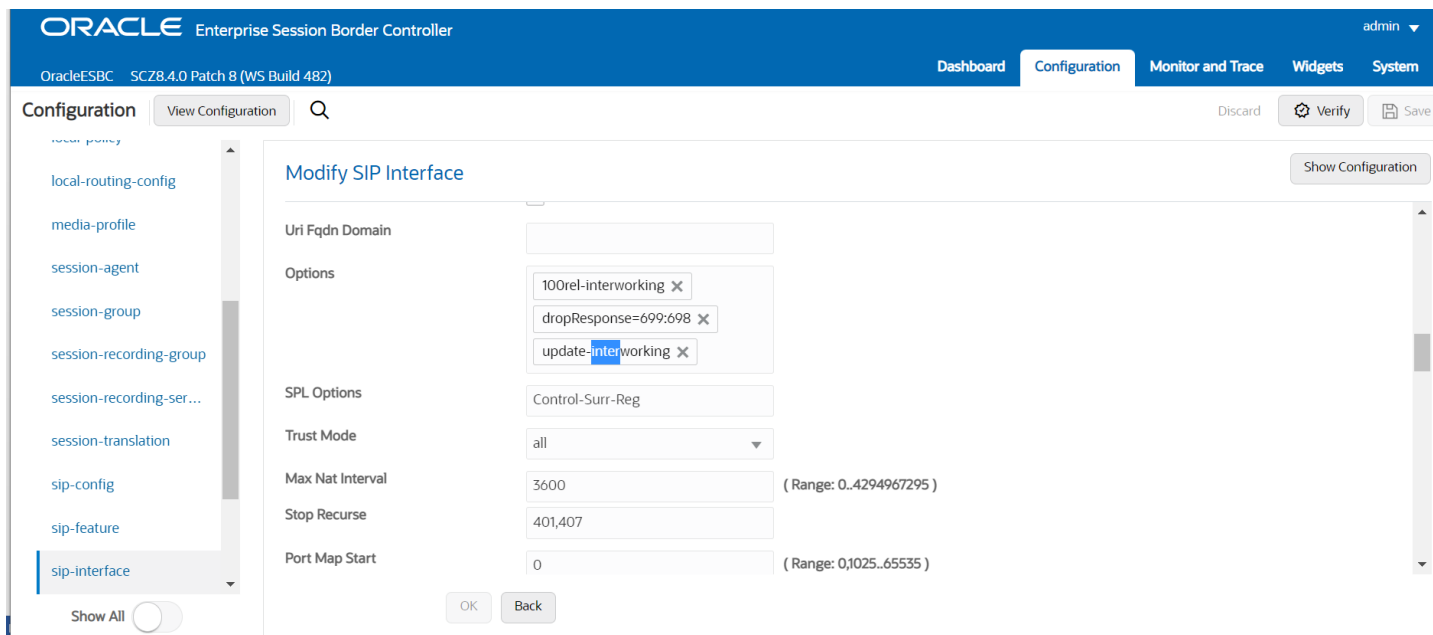
Similarly add translation rules for removing the + towards Genesys and apply it to the realm-config facing Genesys.

5.20. Update Interworking

Genesys doesn't support in-call modification for established dialogs using SIP UPDATE method. In the Genesys SIP server guide it is mentioned that "SIP Server supports UPDATE requests with SDP only for early dialogs and does not support UPDATE requests for established dialogs."

The SBC interworks between Genesys SIP server and NTT and converts the Update messages into Invite messages. This is configured by using the option "update-interworking" on the NTT sip interface .

Go to Sip-Interface-NTT-Router and configure as shown below



6. Existing SBC configuration

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

- [New realm-config](#)
- [New sip-interface](#)
- [New session-agent](#)
- [Sip Manipulation](#)
- [New steering-pools](#)
- [New Local-policy](#)
- [Codec-policy](#)

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

7. Security Configuration

DoS and DDoS settings can protect against malicious and non-malicious SIP flooding attacks from untrusted sources without adversely affecting service to trusted peers. Attacks can be prevented through

configuration of Access Control Lists, appropriately sized traffic queues, and trust level settings that will limit or blacklist endpoints that become abusive. Configuration of these parameters will differ based upon the configuration model used – peering, access or hybrid.

Note that a truly comprehensive and effective DDoS prevention design requires analysis of traffic patterns, SIP message contents and performance characteristics of all peer devices to provide message thresholds, CAC, and traffic policing settings. Please contact your Oracle Sales representative for information on professional services designed to implement customized DDoS settings.

Please refer to the following app notes for further assistance.

- [DDOS Prevention Configuration for SIP Access environments](#)
- [DDOS Prevention Configuration for SIP Peering environments](#)

7.1. Access-control Lists

Using a list of IP addresses and subnets that are allowable as packet sources, you can configure what traffic the Oracle® Enterprise Session Border Controller accepts and what it denies. All IP packets arriving on the management interface are subject; if it does not match your configuration for system ACL, then the Oracle® Enterprise Session Border Controller drops it.

Configure the IP-addresses listed in the address list provided by NTT. Make sure the trust level is set to high here

Go to Session-Router-Access-control. Configure the realm-id (NTT) and source-address (address given by NTT here)

Configure the trust level as High.

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 user information 'admin'. Below the navigation bar, the 'Configuration' tab is active, and the 'Modify Access Control' form is visible. The form contains the following fields:

- Realm ID: A dropdown menu with a blue highlight.
- Description: A text input field.
- Source Address: A text input field containing '172.16.0.0/21'.
- Destination Address: A text input field containing '0.0.0.0'.
- Application Protocol: A dropdown menu with 'SIP' selected.
- Transport Protocol: A dropdown menu with 'ALL' selected.
- Access: A dropdown menu with 'permit' selected.
- Average Rate Limit: A text input field containing '0', with a range indicator '(Range: 0..4294967295)'.
- Trust Level: A dropdown menu.

At the bottom of the form, there are 'OK' and 'Back' buttons. The left sidebar shows a navigation menu with 'access-control' highlighted. The top right corner of the interface includes 'Dashboard', 'Monitor and Trace', 'Widgets', and 'System' tabs, along with 'Discard', 'Verify', and 'Save' buttons.

Make sure the access control in the realm-configuration of NTT (NTT realm)is set to high as shown.

The screenshot shows the Oracle Configuration console interface. At the top, there is a navigation bar with tabs for 'Dashboard', 'Configuration', 'Monitor and Trace', 'Widgets', and 'System'. Below this, the 'Configuration' section is active, showing a search bar and a 'View Configuration' button. On the left, a sidebar lists various configuration categories: media-manager, codec-policy, media-manager, media-policy, realm-config (highlighted), steering-pool, security, session-router, and system. The main content area is titled 'Modify Realm Config' and contains a table of configuration parameters. The 'Access Control Trust Level' parameter is highlighted with a blue arrow and is set to 'high'. Other parameters include In Translationid, Out Translationid, In Manipulationid, Out Manipulationid, Average Rate Limit (0), Invalid Signal Threshold (0), Maximum Signal Threshold (0), Untrusted Signal Threshold (0), Nat Trust Threshold (0), Max Endpoints Per Nat (0), and Nat Invalid Message Threshold (0). Each parameter has a range specified in parentheses.

Parameter	Value	Range
In Translationid		
Out Translationid		
In Manipulationid		
Out Manipulationid		
Average Rate Limit	0	(Range: 0..4294967295)
Access Control Trust Level	high	
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)



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