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Oracle Enterprise Session Border
Controller and Avaya Aura System
Manager 7.1 for Enterprise SIP Trunking
with NTT Communications

Technical Application Note

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COMMUNICATIONS



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Revision History

Version	Description of Changes	Date Revision Completed
1.1	Oracle SBC and Avaya Aura with NTT	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 Avaya Aura Platform

2. Document Overview

This Oracle technical application note outlines the configuration needed to set up the interworking between Oracle SBC and Avaya Aura 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 Avaya Aura and NTT SIP Trunk.

It should be noted that while this application note focuses on the optimal configurations for the Oracle SBC in a Avaya Aura 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 Avaya Aura for calling using Oracle Enterprise SBC and the NTT SIP Trunk. There will be steps that require navigating the Avaya Aura 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.

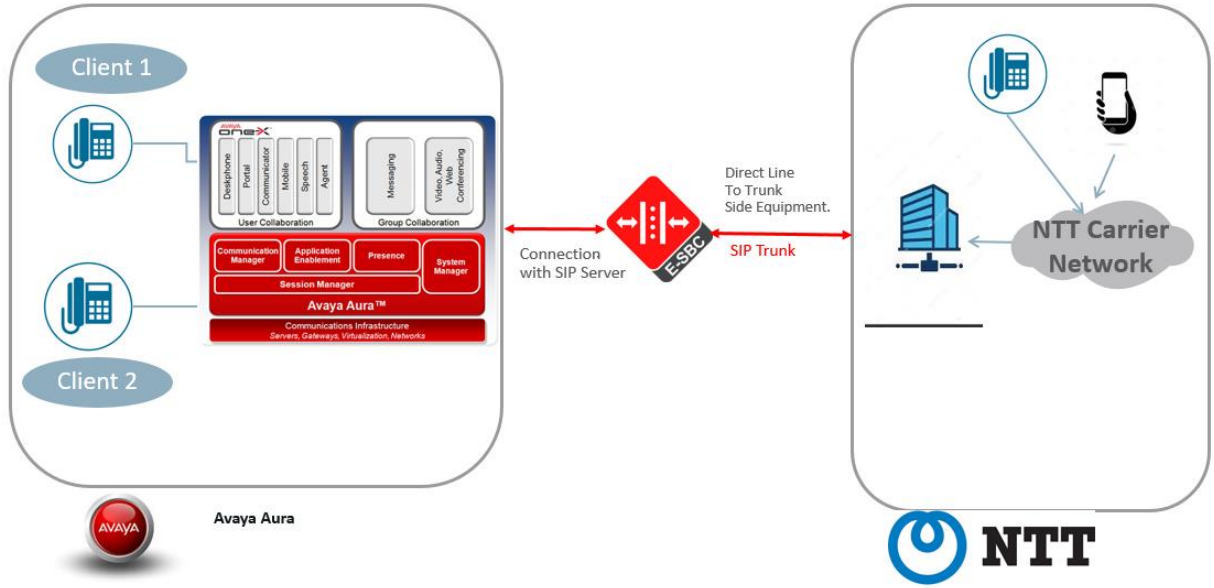
3.2. Requirements

- Avaya Aura Session Manager 7.
- 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	Avaya Aura Session Manager Version	Avaya Communication Manager	SBC Version	NTT Software Version
Revision 1	R7.1.3	R016x.03.0.141.0	8.4.0 p10	

3.3. Architecture



Client's 1 and 2 numbers are provided by the NTT and are registered with the Avaya Aura. Oracle SBC performs surrogate registration for Avaya towards NTT with client 1's number.

4. Configuring the SBC

This chapter provides step-by-step guidance on how to configure Oracle SBC for interworking with Avaya Aura 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

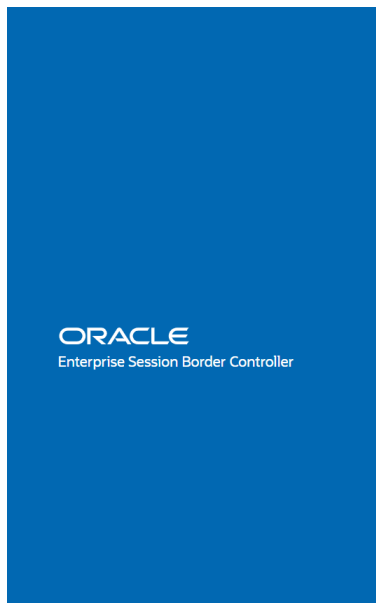
Enable the web-server-config to access the SBC using Web GUI. Save and activate the config

```
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

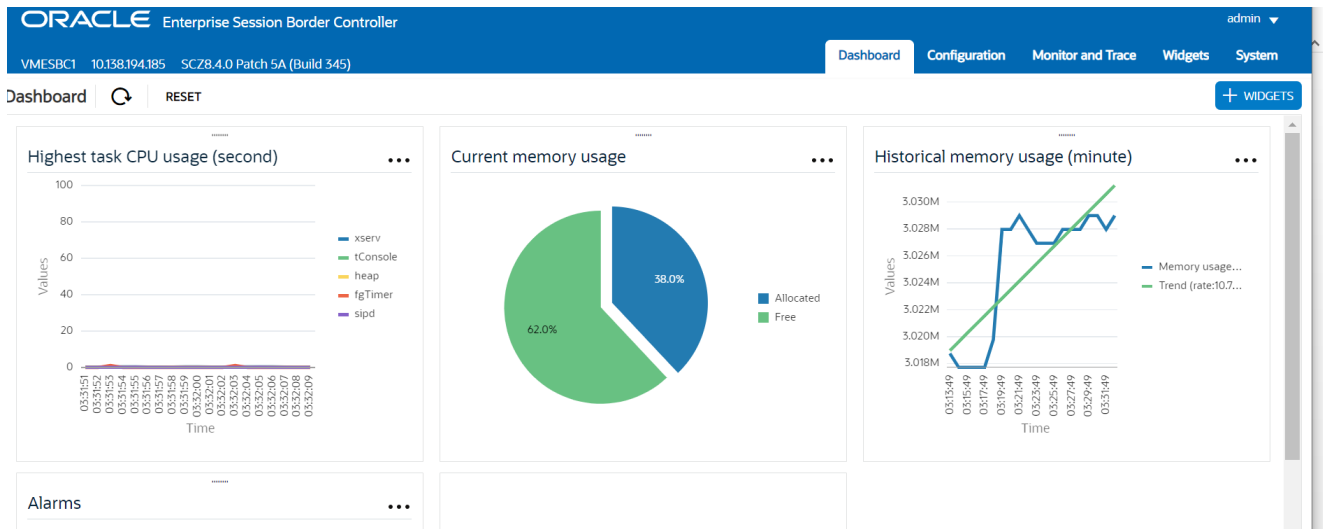
Required

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 list of Configuration Objects:

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

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 navigation 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' (empty), 'Location' (empty), 'Mib System Contact' (empty), 'Mib System Name' (empty), 'Mib System Location' (empty), and 'Acp TLS Profile' (a dropdown menu). At the top right, there are buttons for 'Discard', 'Verify', and 'Show Config'. At the top left, there is a 'View Configuration' button and a search icon.

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.

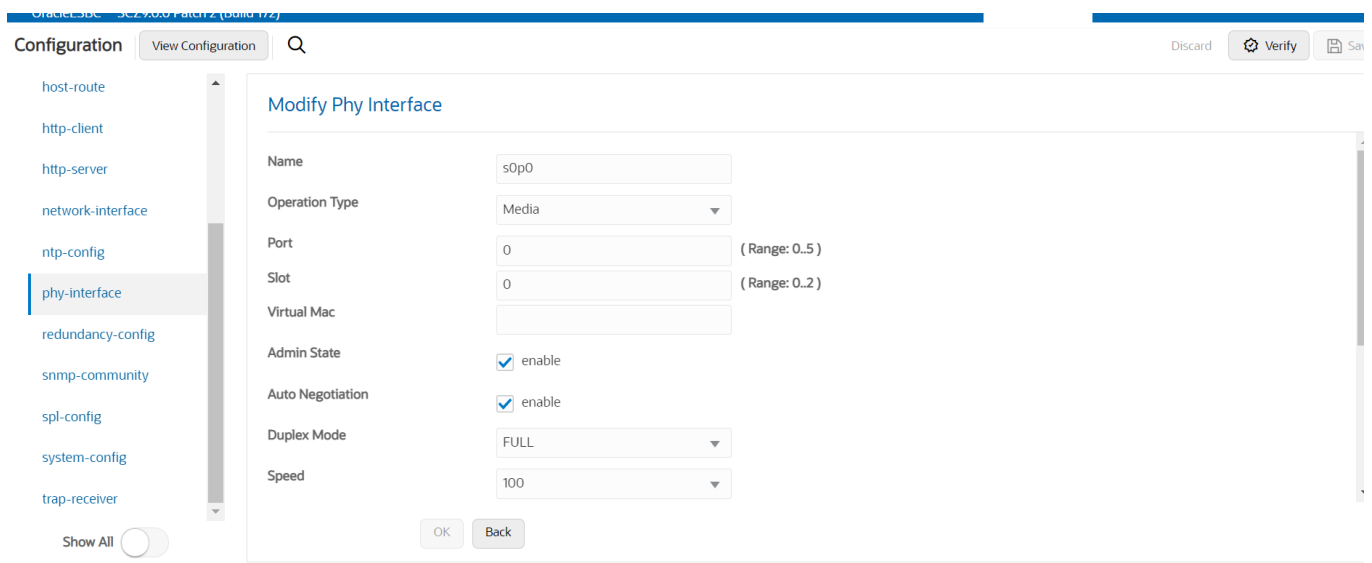
5.4. Configure Physical Interface values

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 Avaya) interface. NTT TRUNK side is configured on the slot 0 port 1.

Parameter Name	Avaya (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 Avaya and NTT TRUNK.



5.5. Configure Network Interface values

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

- Avaya
- NTT Trunk

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

Parameter Name	Avaya 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

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

- media-manager
- security
- session-router
- system
 - fraud-protection
 - host-route
 - http-client
 - http-server
 - network-interface
 - ntp-config
 - phy-interface

Modify Network Interface

Name:

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

Description:

Hostname:

IP Address:

Pri Utility Addr:

Sec Utility Addr:

...

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

- media-manager
- security
- session-router
- system
 - fraud-protection
 - host-route
 - http-client
 - http-server
 - network-interface
 - ntp-config

Modify Network Interface

DNS Domain:

DNS Timeout: (Range: 0..4294967295)

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

Signalling Mtu: (Range: 0,576..4096)

HIP IP List:

ICMP Address:

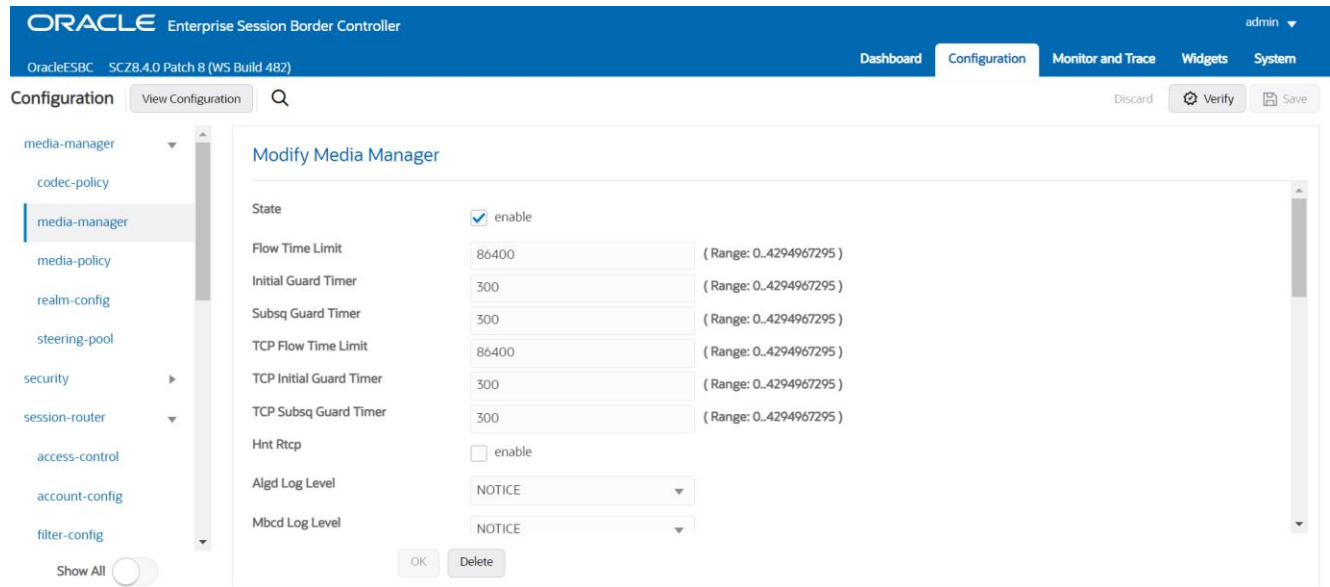
SSH Address:

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 displays the Oracle Enterprise Session Border Controller (ESBC) configuration interface. The top navigation bar includes the Oracle logo, 'Enterprise Session Border Controller', and the user 'admin'. Below this, the version 'OracleESBC SCZ8.4.0 Patch 8 (WS Build 482)' is shown. The main navigation menu includes 'Dashboard', 'Configuration', 'Monitor and Trace', 'Widgets', and 'System'. The 'Configuration' section is active, and the 'media-manager' configuration is selected in the left sidebar. The 'Modify Media Manager' form is displayed, showing the following settings:

Parameter	Value	Range
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	

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

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 Avaya 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 Avaya).

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 Avaya 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 Avaya 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 Avaya

The screenshot shows the Oracle Enterprise Session Border Controller configuration interface. The top navigation bar includes the Oracle logo, version information (OracleESBC SCZ8.4.0 Patch 8 (WS Build 482)), and user information (admin). The main navigation menu on the left lists various configuration sections, with 'realm-config' selected. The 'Modify Realm Config' page for the 'Avaya' realm is displayed, featuring the following fields and options:

- Identifier: Avaya
- Description: (empty text area)
- Addr Prefix: 0.0.0.0
- Network Interfaces: s1p0:0.4
- Media Realm List: (empty text area)
- Mm In Realm: enable
- Mm In Network: enable
- Mm Same Ip: enable

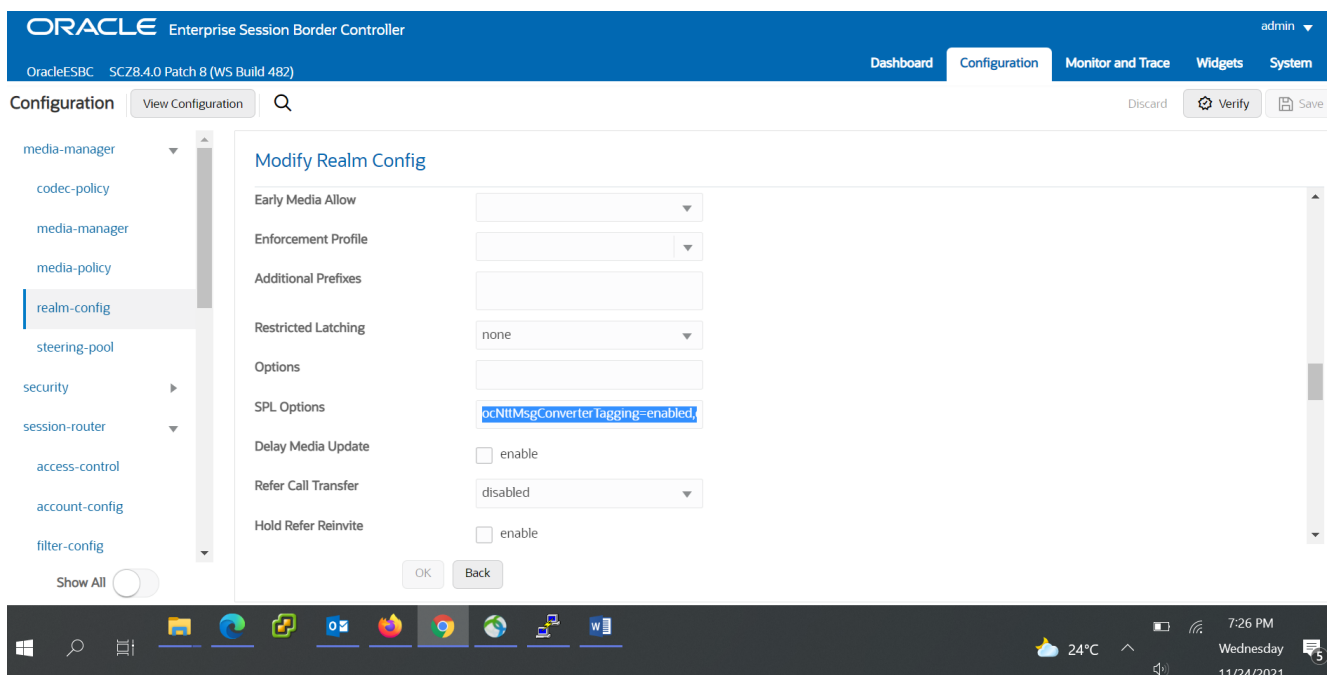
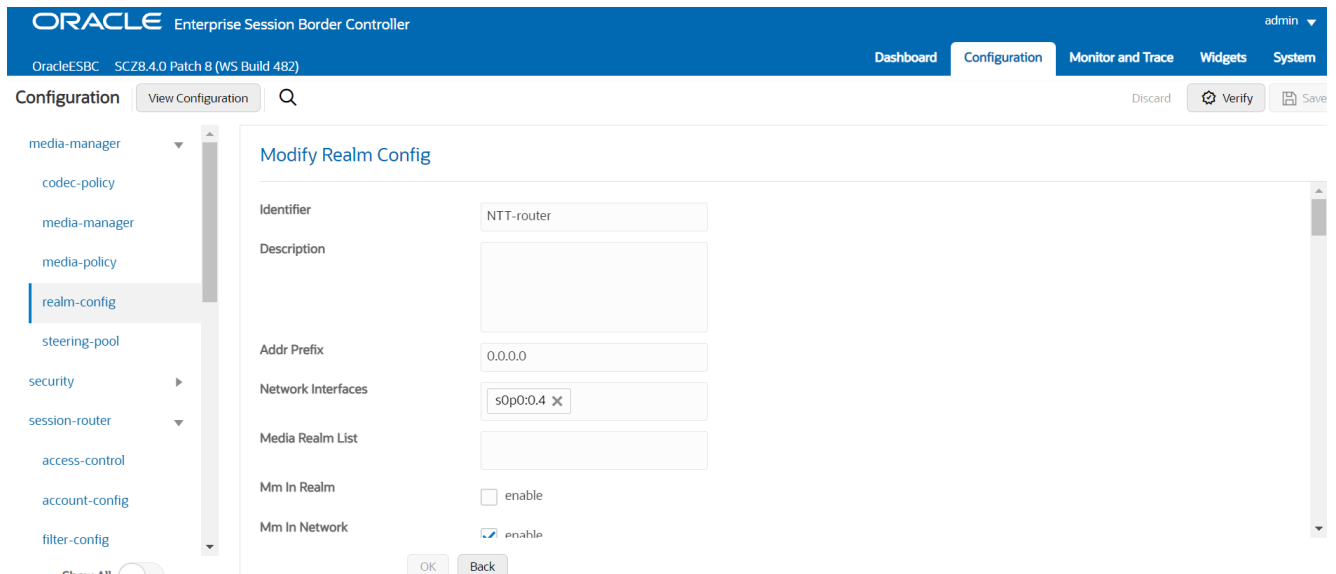
This screenshot shows the same 'Modify Realm Config' page for the 'Avaya' realm, but with additional configuration options visible. The top navigation bar and left menu are consistent with the previous screenshot. The configuration fields include:

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

At the bottom of the configuration area, there are 'OK' and 'Back' buttons. The system tray at the bottom of the window shows the time as 7:24 PM.

As explained in the last section, "ocNttMsgConverterTagging=opposite,dyn-contact-start" is configured towards Avaya 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 'Modify SIP Config' page in the Oracle Enterprise Session Border Controller. The top navigation bar includes 'VMESBC1 10.138.194.185 SCZ8.4.0 Patch 5A (Build 345)' and tabs for 'Dashboard', 'Configuration', 'Monitor and Trace', 'Widgets', and 'System'. The left sidebar lists various configuration sections, with 'sip-config' selected. The main content area contains the following configuration fields:

State	<input checked="" type="checkbox"/> enable
Dialog Transparency	<input checked="" type="checkbox"/> enable
Home Realm ID	Avaya
Egress Realm ID	
Nat Mode	None
Registrar Domain	*
Registrar Host	*
Registrar Port	5060 (Range: 0,1025..65535)
Init Timer	500 (Range: 0..4294967295)
Max Timer	4000 (Range: 0..4294967295)

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

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

enforcement Profile	
Red Max Trans	10000 (Range: 0..50000)
Options	force-unregistration <input type="checkbox"/> max-udp-length=0 <input type="checkbox"/>
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. Avaya
 - a. To Avaya-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.

Avaya 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-(Avaya-In-Manipulation)

This manipulation is configured as in-manipulation from Avaya.
There are 4 sip-manipulations configured.

- ModSupportedinINVITE –To delete the Supported 100 rel
- rejectOptions- To respond to 200 OK for OPTIONS Sip message from Avaya.
- Addrequireininv – To add Require 100 rel in Invite for PRACK interworking
- CheckFrom – To check whether the From number is within the NTT range.If not replace it with NTT number (Useful for external diversion cases as well)

```
sip-manipulation
  name                    Forsurragent
  description
  split-headers
  join-headers
  header-rule
    name                  forsupportedinINVITE
    header-name           From
    action                sip-manip
    comparison-type       case-sensitive
    msg-type              any
    methods
    match-value
    new-value
  header-rule
    name                  rejectOptions
    header-name           From
    action                reject
    comparison-type       case-sensitive
    msg-type              request
    methods               OPTIONS
    match-value
```

```

new-value 200:OK

header-rule
  name addrequireininv
  header-name Require
  action add
  comparison-type case-sensitive
  msg-type any
  methods INVITE
  match-value
  new-value 100rel

header-rule
  name CheckFrom
  header-name From
  action manipulate
  comparison-type case-sensitive
  msg-type request
  methods INVITE
  match-value
  new-value
  element-rule
    name CheckUser1
    parameter-name uri-user
    type store
    action any
    match-val-type pattern-rule
    comparison-type ^81343340[0-9]{3}$
    match-value
    new-value
  element-rule
    name CheckUser2
    parameter-name uri-user
    type store
    action any
    match-val-type pattern-rule
    comparison-type ^81343344[0-9]{3}$
    match-value
    new-value
  element-rule
    name chgUser
    parameter-name uri-user
    type replace
    action any
    match-val-type boolean
    comparison-type
match-value !
($CheckFrom.$CheckUser1 | $CheckFrom.$CheckUser2)
new-value 81343340201

sip-manipulation
  name ModSupportedinINVITE

  header-rule
    name delete100rel
    header-name Supported
    action delete

```

methods
match-value

INVITE, UPDATE
100rel

To Avaya(Avaya-Out-Manipulation)

This manipulation is configured as out-manipulation towards Avaya.

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                    ToAvaya
  description             Sip manipulation towards Avaya on
SIP interface
  split-headers
  join-headers
  header-rule
    name                  ForNAT_IP
    header-name           From
    action                 sip-manip
    comparison-type       case-sensitive
    msg-type              any
    methods
    match-value
    new-value             Topohiding
  header-rule
    name                  forRURI
    header-name           From
    action                 sip-manip
    comparison-type       case-sensitive
    msg-type              any
    methods
    match-value
    new-value             ModRURitoAvaya
  header-rule
    name                  RemoveTimertoAvaya1
    header-name           From
    action                 sip-manip
    comparison-type       case-sensitive
    msg-type              any
    methods
    match-value
    new-value             RemoveTimertoAvaya
  header-rule
    name                  changetel
    header-name           From
    action                 sip-manip
    comparison-type       case-sensitive
    msg-type              request
    methods
    match-value
    new-value             changeteluritoavaya
  header-rule
    name                  ToChangeConactTowardsAvaya
    header-name           From
    action                 sip-manip
    comparison-type       case-sensitive
```

```

msg-type any
methods
match-value
new-value ToAvayaChangecontact
header-rule
name ForupdatetoAvaya
header-name From
action sip-manip
comparison-type case-sensitive
msg-type any
methods
match-value
new-value ModSupportedtowardsAvaya

```

Topohiding:

Configured for hiding the topology,towards Avaya

```

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

```

ModRURItto Avaya

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 ModRURIttoAvaya
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
```

RemoveTimertoAvaya

This sip-manip is for removing the unnecessary headers towards Avaya. Since Avaya 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                RemoveTimertoAvaya
    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

```

Changeteluritoavaya

To convert the tel uri to sip uri in From,To,PCPID and PAI headers.

```
sip-manipulation
  name                changeteluritoavaya
  description         Change tel URI to SIP towardsAvaya
  split-headers
  join-headers
  header-rule
    name              formatTotal
    header-name       To
    action            manipulate
    comparison-type   pattern-rule
    msg-type          request
    methods           INVITE
    match-value       tel:*
    new-value
    element-rule
      name            getTelURIUser
      parameter-name
      type            uri-phone-number-
only
      action          store
      match-val-type any
      comparison-type case-insensitive
      match-value
      new-value
    element-rule
      name            rewriteTo
      parameter-name
      type            header-value
      action          replace
      match-val-type any
      comparison-type case-insensitive
      match-value
      new-value
"sip:"+$formatTotal.$getTelURIUser.$0+"@"+$REMOTE_IP+";user=phone"
  header-rule
    name              formatfromtel
    header-name       From
    action            manipulate
    comparison-type   pattern-rule
    msg-type          request
    methods           INVITE
    match-value       tel:*
    new-value
    element-rule
      name            getTelURIUser2
      parameter-name
      type            uri-phone-number-
only
      action          store
      match-val-type any
      comparison-type case-insensitive
      match-value
      new-value
```

```

element-rule
    name                gettag
    parameter-name      tag
    type                uri-param
    action              store
    match-val-type      any
    comparison-type     case-insensitive
    match-value
    new-value

element-rule
    name                rewritefrom
    parameter-name
    type                header-value
    action              replace
    match-val-type      any
    comparison-type     case-insensitive
    match-value
    new-value

"sip:"+$formatfromtel.$getTelURIUser2.$0+"@"+$LOCAL_IP+";user=phone"+";tag="+$form
atfromtel.$gettag.$0
    header-rule
        name                formatPCPIDtel
        header-name         P-Called-Party-ID
        action              manipulate
        comparison-type     pattern-rule
        msg-type            request
        methods             INVITE
        match-value         tel:*
        new-value
    element-rule
        name                getTelURIUser3
        parameter-name
        type                uri-phone-number-
        action              store
        match-val-type      any
        comparison-type     case-insensitive
        match-value
        new-value
only
    element-rule
        name                rewritePCPID
        parameter-name
        type                header-value
        action              replace
        match-val-type      any
        comparison-type     case-insensitive
        match-value
        new-value

"sip:"+$formatPCPIDtel.$getTelURIUser3.$0+"@"+$REMOTE_IP+";user=phone"
    header-rule
        name                formatPAItel
        header-name         P-Asserted-Identity
        action              manipulate
        comparison-type     pattern-rule
        msg-type            request
        methods             INVITE
        match-value         tel:*
        new-value

```

```

only
    element-rule
        name
            getTelURIUser4
        parameter-name
        type
            uri-phone-number-
        action
        store
        match-val-type
        any
        comparison-type
        case-insensitive
        match-value
        new-value
    element-rule
        name
            rewritePAI
        parameter-name
        type
            header-value
        action
        replace
        match-val-type
        any
        comparison-type
        case-insensitive
        match-value
        new-value
"sip: "+$formatPAI tel.$getTelURIUser4.$0+"@"+$REMOTE_IP+";user=phone"

```

ToAvayaChangecontact

For changing contact towards Avaya so that it displays the dialed number instead of random contact

```

sip-manipulation
    name
        ToAvayaChangecontact
    description
        Change the "Conatct" header
    towards Avaya
    split-headers
    join-headers
    header-rule
        name
            modforcontact
        header-name
            Contact
        action
            manipulate
        comparison-type
            pattern-rule
        msg-type
            any
        methods
            INVITE,UPDATE
        match-value
        new-value
    element-rule
        name
            modContactuser
        parameter-name
        type
            uri-user
        action
            replace
        match-val-type
            any
        comparison-type
            pattern-rule
        match-value
            !($TO_USER.$0 ==
$CONTACT_USER.$0)
        new-value
            $TO_USER.$0

```

ModSupportedtowardsAvaya

For adding UPDATE in the supported towards Avaya.

```
sip-manipulation
  name                               ModSupportedtowardsAvaya
  description
  split-headers
  join-headers
  header-rule
    name                               CheckSupported
    header-name                         Supported
    action                               manipulate
    comparison-type                     pattern-rule
    msg-type                             any
    methods                              INVITE
    match-value
    new-value
    element-rule
      name                               Storevalue
      parameter-name
      type                               header-value
      action                             store
      match-val-type                     any
      comparison-type                   pattern-rule
      match-value
      new-value
    element-rule
      name                               isupdate
      parameter-name
      type                               header-value
      action                             replace
      match-val-type                     any
      comparison-type                   pattern-rule
      match-value
      new-value
$CheckSupported.$Storevalue.$0+,+UPDATE
```

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
  header-rule
    name
    header-name
    action
    methods
    match-value
  header-rule
    name
    header-name
    action
    comparison-type
    msg-type
    methods
    match-value
    new-value
  header-rule
    name
    header-name
    action
    comparison-type
    msg-type
    methods
    match-value
    new-value
  header-rule
    name
    header-name
    action
    comparison-type
    msg-type
    methods
    element-rule
      name
      type
      action
      comparison-type
      new-value
  header-rule
    name
    header-name
    action
    header-value
    sip-manip
    pattern-rule
    changeforPCPID
  name
  header-name
  action
```

ModSupportedfromntt

delete100rel
Supported
delete
INVITE
100rel

changeFromperPAI
From
sip-manip
case-sensitive
any
INVITE
checkPAI

rejectPRACK
Request-URI
reject
case-sensitive
request
PRACK
200: OK

checkPCPID2
P-Called-Party-ID
manipulate
pattern-rule
out-of-dialog
INVITE
modToer
header-value
sip-manip
pattern-rule
changeforPCPID

tc1282
To
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 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      INVITE
        action       manipulate
        sdp-session-rule
            name     check2
            action   manipulate

```

```

sdp-line-rule
    name
    type
    action
    comparison-type
rule
    match-value
    new-value
Acceptable Protocol"
From
o
reject
pattern-
^([0-
"403:Not

```

Manipulation for changing PAI

This manipulation changes the PAI value to the To value

```

sip-manipulation
    name
    description
    split-headers
    join-headers
    header-rule
        name
        header-name
        action
        comparison-type
        msg-type
        methods
        match-value
        new-value
        element-rule
            name
            parameter-name
            type
            action
            match-val-type
            comparison-type
            match-value
            new-value
    changeforPAI
    modforPAI
    From
    manipulate
    pattern-rule
    out-of-dialog
    INVITE
    modFromer
    uri-user
    replace
    any
    pattern-rule
    !($FROM_USER.$0 ==
    $PAI_USER.$0)
    $PAI_USER.$0

```

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
    tc1283
    check
    request
    INVITE

```



```

action
sdp-media-rule
    name
    media-type
    action
    sdp-line-rule
        name
        type
        action
        comparison-type
rule
match-value
^(audio) ( [0-9]{4,5}) ( UDP 0)$
new-value
Acceptable Media"
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
    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
^(audio) ( [0-9]{4,5}) ( RTP/AVP 9 15 18 4)$
new-value
"403:Codecs Not Allowed"
tc1284
check
request
INVITE
manipulate
test
audio
manipulate
change
m
reject
pattern-

```

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	Changecontact
header-rule	
name	forprivacy
header-name	From
action	sip-manip
new-value	NATting
header-rule	
name	forPAIandRPI
header-name	From
action	sip-manip
new-value	PAIandRPI
header-rule	
name	forUAinfo
header-name	From
action	sip-manip
new-value	AddSBCinfo
header-rule	
name	Toremovecallinfo
header-name	From
action	sip-manip
new-value	removecallinfo
header-rule	
name	forregsupport
header-name	From
action	sip-manip
new-value	AddSupportedinReg
header-rule	
name	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	stripblines
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
header-rule	
name	Toremovemsgid
header-name	From
action	sip-manip
comparison-type	case-sensitive
msg-type	any
methods	
match-value	
new-value	removeP-AV-Message-Id
header-rule	
name	ToremoveUser_to_User
header-name	From
action	sip-manip
comparison-type	case-sensitive
msg-type	any

```

        methods
        match-value
        new-value
header-rule
        name
        header-name
        action
        comparison-type
        msg-type
        methods
        match-value
        new-value
header-rule
        name
        header-name
        action
        comparison-type
        msg-type
        methods
        match-value
        new-value

header-rule
        name
        header-name
        action
        comparison-type
        msg-type
        methods
        match-value
        new-value

header-rule
        name
        header-name
        action
        comparison-type
        msg-type
        methods
        match-value
        new-value

header-rule
        name
        header-name
        action
        comparison-type
        msg-type
        methods
        match-value
        new-value

header-rule
        name
        header-name
        action
        comparison-type
        msg-type
        methods
        match-value
        new-value

```

removeUser-to-User

ToremoveHistory_Info
From
sip-manip
case-sensitive
any

removeHistory-Info

ToremoveAlert_Info
From
sip-manip
case-sensitive
any

removeAlert-Info

fordateavayaidplocation
From
sip-manip
case-sensitive
any

RemDateavayaidplocation

modsdpsline
From
sip-manip
case-sensitive
any

modsessionline

forproxyauth
From
sip-manip
case-sensitive
any

DelProxyAuthinACKBYE

fortime
From
sip-manip
case-sensitive
any

```

        match-value
        new-value
header-rule
        name
        header-name
        action
        comparison-type
        msg-type
        methods
        match-value
        new-value
header-rule
        name
        header-name
        action
        comparison-type
        msg-type
        methods
        match-value
        new-value
header-rule
        name
        header-name
        action
        comparison-type
        msg-type
        methods
        match-value
        new-value
header-rule
        name
        header-name
        action
        comparison-type
        msg-type
        methods
        match-value
        new-value
header-rule
        name
        header-name
        action
        comparison-type
        msg-type
        methods
        match-value
        new-value
header-rule
        name
        header-name
        action
        comparison-type
        msg-type
        methods
        match-value
        new-value
header-rule
        name
        header-name
        action
        comparison-type
        msg-type
        methods
        match-value
        new-value

```

```

replacemtimewithptime
delUAin180
From
sip-manip
case-sensitive
reply
Mod180
adduserphoneinRURIINVITE
From
sip-manip
case-sensitive
any
addtheuserphoneinRURIINVITE
ToremoveDiversion
From
sip-manip
case-sensitive
any
removeDiversion
RemoveSDPand18x
From
sip-manip
case-sensitive
any
delSDPfrom18x
Toaddreq100relin180
From
sip-manip
case-sensitive
INVITE
AddReq100relto18x

```

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
  header-rule
    name
    header-name
    action
    element-rule
      name
      type
      action
      new-value
  header-rule
    name
    header-name
    action
    element-rule
      name
      type
      action
      new-value
    element-rule
      name
      type
      action
      new-value

```

NATting

```

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

```

ModToport

```

CheckToport
To
manipulate
Storeport
uri-port
store
7060
CheckdoubleportsinTo
To
manipulate
boolean
!$CheckToport.$Storeport
ChangeToval
uri-port
add
7060

```

PAIandRPI

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

```
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 Avaya 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                             Moduseragentforall2
    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	^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 ForREGISTER
  header-rule
    name Delroute

```



```

        header-name      Route
        action           delete
        msg-type         request
        methods          REGISTER
header-rule
    name                Delauthparams
    header-name         Authorization
    action              manipulate
    msg-type            request
    methods             REGISTER
    element-rule
        name            storevalue
        type             header-value
        action          store
        comparison-type pattern-rule
        match-value     (.+)(, auth-
params=sha1-credential)
    element-rule
        name            delparam
        type             header-value
        action          replace
        comparison-type pattern-rule
        new-value
$Delauthparams.$storevalue.$1
header-rule
    name                addContentlength
    header-name         Content-Length
    action              add
    msg-type            request
    methods             REGISTER
    new-value           0
header-rule
    name                delexpires
    header-name         Expires
    action              delete
    msg-type            request
    methods             REGISTER
header-rule
    name                adduserphoneinFrom
    header-name         From
    action              manipulate
    msg-type            request
    methods             INVITE,REGISTER
    element-rule
        name            adduserphone
        parameter-name  user
        type             uri-param
        action          add
        new-value       phone
header-rule
    name                adduserphoneinTo
    header-name         To
    action              manipulate
    msg-type            request
    methods             INVITE,REGISTER
    element-rule
        name            adduserphonto

```

```

        parameter-name      user
        type                uri-param
        action              add
        new-value           phone

header-rule
  name                    adduserphoneinRURIINVITE
  header-name            Request-URI
  action                 manipulate
  msg-type               request
  methods                INVITE
  element-rule
    name                  adduserequalphone
    parameter-name       user
    type                  uri-param
    action               add
    new-value            phone

header-rule
  name                    Forinvitedelauthparams
  header-name            Proxy-Authorization
  action                 manipulate
  msg-type               request
  methods                INVITE
  element-rule
    name                  storethevalue
    type                  header-value
    action               store
    comparison-type      pattern-rule
    match-value          (.+)(, auth-

params=sha1-credential)
  element-rule
    name                  delparam
    type                  header-value
    action               replace
    comparison-type      pattern-rule
    new-value            $Forinvitedelauthparams.$storethevalue.$1

header-rule
  name                    addopaqueinReg
  header-name            Authorization
  action                 manipulate
  comparison-type        pattern-rule
  msg-type               request
  methods                REGISTER
  element-rule
    name                  storeentireheader
    type                  header-value
    action               store
    comparison-type      pattern-rule
    match-value          (.+)(,

algorithm=MD5)
  element-rule
    name                  addopaqueparam
    parameter-name       opaque
    type                  header-value
    action               replace
    comparison-type      pattern-rule

```

```

                                new-value
$addopaqueinReg.$storeentireheader.$1+$addopaqueinReg.$storeentireheader.$2+,+opaque="\\"
header-rule
    name                addopaqueinINVITE
    header-name         Proxy-authorization
    action              manipulate
    msg-type            request
    methods             INVITE
    element-rule
        name            Checkheader
        type            header-value
        action          store
        comparison-type pattern-rule
        match-value     (.+) (,
algorithm=MD5)
    element-rule
        name            addopaqueinheader
        type            header-value
        action          replace
        comparison-type pattern-rule
        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                ModMaxforwards
    description         Look for Max-Forwards header,
change it to 70 and if not present, add it
    header-rule
        name            CheckMaxforwards
        header-name     Max-Forwards
        action          manipulate
        methods         ACK, BYE, INVITE, PRACK, UPDATE
    element-rule
        name            storevalue
        type            header-value
        action          store
        comparison-type pattern-rule
    element-rule
        name            add70
        type            header-value
        action          find-replace-all
        comparison-type pattern-rule
        new-value       70
    header-rule
        name            Addmaxforwardsifnotpresent
        header-name     Max-Forwards
        action          add
        comparison-type boolean
        msg-type        reply
        methods         ACK, BYE, INVITE, PRACK, UPDATE

```

```

value          match-
                !$CheckMaxforwards.$storevalue
                element-rule
                    name          addvalue
                    type          header-value
                    action        add
                    new-value     70

```

deltransportUDP

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

```

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

```

Modcontactuserinresponses

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

```

sip-manipulation
    name          Modcontactuserinresponses
    header-rule
        name          Replacesupported200
        header-name   Supported
        action        manipulate
        msg-type      reply
        methods       INVITE,UPDATE
        new-value     timer
    header-rule
        name          Modusergaent
        header-name   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                             keeptimeronly
      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
    type
    action
    comparison-type
    match-value
element-rule
    name
    type
    action
    comparison-type
    new-value
180+;+refresher=uac
    header-rule
        name
        header-name
        action
        comparison-type
        msg-type
        methods
        element-rule
            name
            type
            action
            comparison-type
            match-value
        element-rule
            name
            type
            action
            comparison-type
            new-value
storesevalue
header-value
store
pattern-rule
(.*).
addrefresheruac
header-value
replace
pattern-rule
adduacforSE2
Min-SE
manipulate
pattern-rule
request
INVITE
storesevalue
header-value
store
pattern-rule
(.*).
addrefresheruac
header-value
replace
pattern-rule
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
anonymouscall
    changeRURI
    Request-URI
    manipulate
    request
    INVITE
    storeuser
    uri-user
    store
    pattern-rule
    ^\+184(.*$)
    striptheplus
    uri-user
    replace

```

```

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

```

striplines
blinfix
Content-Type
manipulate
removeb1
application/sdp
mime
find-replace-all
pattern-rule
b=TIAS:64000\r\n
removeb2
application/sdp
mime
find-replace-all
pattern-rule
b=AS:64\r\n
removemaxptime
application/sdp
mime
find-replace-all
pattern-rule
a=maxptime:20\r\n
removemaxptime2
application/sdp
mime
find-replace-all
pattern-rule
EpiSIPphone-epi-
session
removemaxptime4
application/sdp
mime
replace
pattern-rule
Session Name=*
Session
removemaxptime5
application/sdp
mime
replace
o=-
o= Avaya
ssrc
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       Avaya

```

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
                type
                action
                match-value
header-rule
    name
    header-name
    action
    msg-type
    methods
    element-rule
        name
        parameter-name
        type
        action
        match-value
header-rule
    name
    header-name
    action
    msg-type
    methods
    element-rule
        name
        parameter-name
        type
        action
        match-value
                To
                uri-param-name
                replace
                user
                From_port
                From
                manipulate
                request
                INVITE, REGISTER, UPDATE
                From_port
                From
                uri-port
                replace
                4080
                To_port
                To
                manipulate
                request
                REGISTER
                From_port
                From
                uri-port
                replace
                7060

```

Privacy

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

```

sip-manipulation
    name
    header-rule
        name
        header-name
        action
        msg-type
        methods
                Privacy
                deletePriv
                Privacy
                delete
                request
ACK, BYE, CANCEL, INVITE, PRACK, UPDATE

```

Toremovemsgid

To remove P-AV-Message-Id sent by Avaya in the messages towards NTT

```

sip-manipulation
    name
    description
    split-headers
    join-headers
    header-rule
        name
        header-name
                removeP-AV-Message-Id
                Remove P-AV-Message-Id
                Stripmessageid
                P-AV-Message-Id

```

action	delete
comparison-type	case-sensitive
msg-type	any
methods	INVITE, UPDATE
match-value	
new-value	

removeUser-to-User

To remove User-to-User sent by Avaya in the messages towards NTT

sip-manipulation	
name	removeUser-to-User
description	Remove User-to-User
split-headers	
join-headers	
header-rule	
name	Stripmessageid
header-name	User-to-User
action	delete
comparison-type	case-sensitive
msg-type	any
methods	INVITE, UPDATE
match-value	
new-value	

removeHistory-Info

To remove History-Info sent by Avaya in the messages towards NTT

sip-manipulation	
name	removeHistory-Info
description	Remove History-Info header
split-headers	
join-headers	
header-rule	
name	Stripmessageid
header-name	History-Info
action	delete
comparison-type	case-sensitive
msg-type	any
methods	INVITE, UPDATE
match-value	
new-value	

removeAlert-Info

To remove Alert-Info sent by Avaya in the messages towards NTT

sip-manipulation	
name	removeAlert-Info

```

description                               Remove Alert-Info header
split-headers
join-headers
header-rule
    name                                    Stripmessageid
    header-name                             Alert-Info
    action                                   delete
    comparison-type                         case-sensitive
    msg-type                                 any
    methods                                  INVITE, UPDATE
    match-value
    new-value

```

RemDateavayaidplocation

To remove Date, Av-Global-Session-ID,P-Location,Authorization,P-Charging-Vector,Max-Breadth,Endpoint-View,Accept-language

```

sip-manipulation
    name                                    RemDateavayaidplocation
    description
    split-headers
    join-headers
    header-rule
        name                                delDate
        header-name                         Date
        action                               delete
        comparison-type                     case-sensitive
        msg-type                             any
        methods                              ACK, BYE, INVITE, PRACK, UPDATE
        match-value
        new-value
    header-rule
        name                                delAvayaSessionID
        header-name                         Av-Global-Session-ID
        action                               delete
        comparison-type                     case-sensitive
        msg-type                             any
        methods                              ACK, BYE, INVITE, PRACK, UPDATE
        match-value
        new-value
    header-rule
        name                                delplocation
        header-name                         P-Location
        action                               delete
        comparison-type                     case-sensitive
        msg-type                             any
        methods                              ACK, BYE, INVITE, PRACK, UPDATE
        match-value
        new-value
    header-rule
        name                                delAuthorization
        header-name                         Authorization

```

action comparison-type msg-type methods ACK, BYE, INVITE, PRACK, UPDATE match-value new-value header-rule name header-name action comparison-type msg-type methods ACK, BYE, INVITE, PRACK, UPDATE match-value new-value header-rule name header-name action comparison-type msg-type methods match-value new-value header-rule name header-name action comparison-type msg-type methods match-value new-value header-rule name header-name action comparison-type msg-type methods match-value new-value	delete case-sensitive any delPChargingVector P-Charging-Vector delete case-sensitive any delEndpointView Endpoint-View delete case-sensitive any delmaxbreadth Max-Breadth delete case-sensitive any delacceptlan Accept-Language delete case-sensitive any
--	---

DelProxyAuthinACKBYE

To delete Proxy-auth sent by Avaya towards NTT.

sip-manipulation name description split-headers join-headers header-rule name	DelProxyAuthinACKBYE Delete ProxyAuth in ACK, BYE delproxauth
---	---

header-name	Proxy-Authorization
action	delete
comparison-type	case-sensitive
msg-type	request
methods	ACK, BYE, UPDATE
match-value	
new-value	

Replacemtimewithptime

To replace maxptime with ptime towards NTT

sip-manipulation		
name	replacemtimewithptime	
description		
split-headers		
join-headers		
mime-sdp-rule		
name	addptime	
msg-type	request	
methods		
action	manipulate	
comparison-type	case-sensitive	
match-value		
new-value		
sdp-media-rule		
name	addSDPptime	
media-type	audio	
action	manipulate	
comparison-type	case-sensitive	
match-value		
new-value		
sdp-line-rule		
name	addptimelr	
type	a	
action	find-	
replace-all		
sensitive	comparison-type	case-
maxptime:60	match-value	
	new-value	ptime:20

Mod180

To delete User-agent in the 180 response towards NTT

sip-manipulation	
name	Mod180
description	Modify180 message
split-headers	

```

join-headers
header-rule
    name                check180
    header-name         @status-line
    action              manipulate
    comparison-type     pattern-rule
    msg-type            any
    methods
    match-value
    new-value
    element-rule
        name            is180
        parameter-name
        type            status-code
        action          store
        match-val-type any
        comparison-type pattern-rule
        match-value     180
        new-value
header-rule
    name                delUA
    header-name         User-Agent
    action              delete
    comparison-type     boolean
    msg-type            any
    methods
    match-value         $check180.$is180
    new-value

```

removeDiversion

To remove diversion header towards NTT in case of external diversion by Avaya user.

```

sip-manipulation
    name                removeDiversion
    description         Remove Diversion header
    split-headers
    join-headers
    header-rule
        name            Stripmessageid
        header-name     Diversion
        action          delete
        comparison-type case-sensitive
        msg-type        any
        methods         INVITE
        match-value
        new-value

```


delSDPfrom18x

To delete SDP from 18x messages towards NTT

```

sip-manipulation
  name                    delSDPfrom18x
  description             Delete SDP from all 18x messages
  towards NTT
  split-headers
  join-headers
  header-rule
    name                  chk18x
    header-name           @status-line
    action                store
    comparison-type       case-sensitive
    msg-type              reply
    methods               INVITE
    match-value
    new-value
    element-rule
      name                bool18x
      parameter-name
      type                status-code
      action              store
      match-val-type     any
      comparison-type     case-sensitive
      match-value        183|180
      new-value
  mime-sdp-rule
    name                  delSDP
    msg-type              reply
    methods               INVITE
    action                delete
    comparison-type       boolean
    match-value           $chk18x.$bool18x
    new-value
  header-rule
    name                  is183
    header-name           @status-line
    action                store
    comparison-type       pattern-rule
    msg-type              reply
    methods               INVITE
    match-value
    new-value
    element-rule
      name                is183
      parameter-name
      type                status-code
      action              store
      match-val-type     any
      comparison-type     pattern-rule
      match-value        183
      new-value
```

AddReq100relto18x

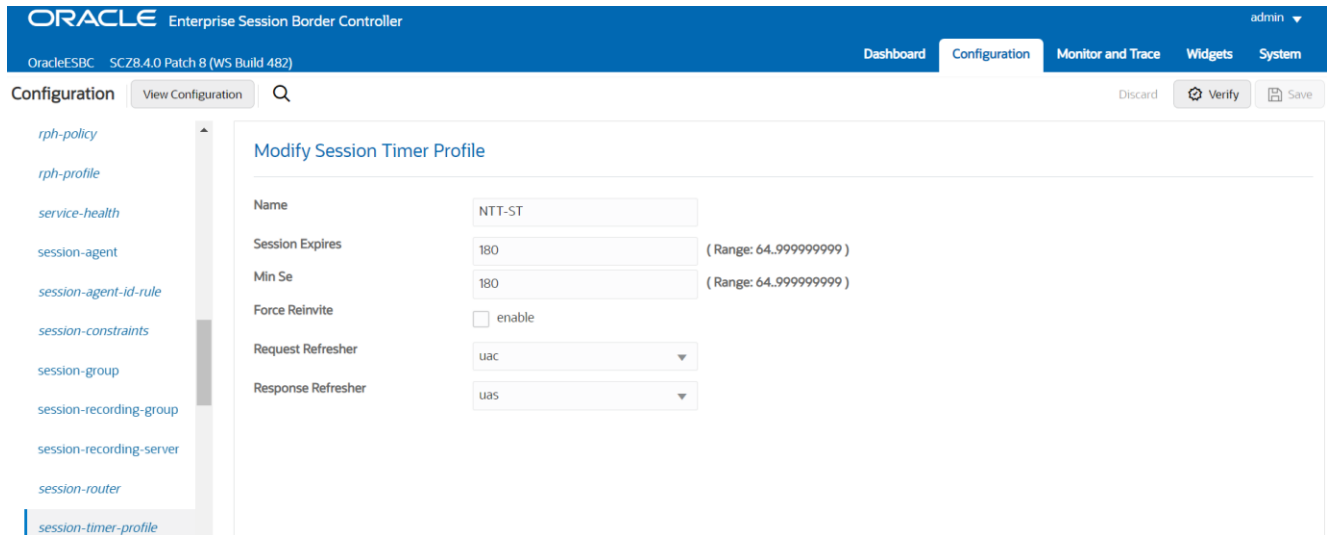
To add Require:100 Rel header if the response towards NTT is 18x

```
sip-manipulation
  name          AddReq100relto18x
  description   Add Req 100 rel to 18x messages
towards NTT
  split-headers
  join-headers
  header-rule
    name          chk18x
    header-name   @status-line
    action        store
    comparison-type case-sensitive
    msg-type      reply
    methods       INVITE
    match-value
    new-value
    element-rule
      name          bool18x
      parameter-name
      type          status-code
      action        store
      match-val-type any
      comparison-type case-sensitive
      match-value   180
      new-value
    header-rule
      name          addrequire100relin180
      header-name   Require
      action        add
      comparison-type boolean
      msg-type      reply
      methods       INVITE
      match-value   $chk18x.$bool18x
      new-value     100rel
    header-rule
      name          addRseqto180
      header-name   RSeq
      action        add
      comparison-type boolean
      msg-type      reply
      methods       INVITE
      match-value   $chk18x.$bool18x
      new-value     1
```

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 interface. The top navigation bar includes 'ORACLE Enterprise Session Border Controller', 'admin', 'Dashboard', 'Configuration', 'Monitor and Trace', 'Widgets', and 'System'. The 'Configuration' tab is active. On the left, a sidebar lists various configuration categories, with 'session-timer-profile' selected. The main content area is titled 'Modify Session Timer Profile' and contains the following fields:

Name	NTT-ST
Session Expires	180 (Range: 64..999999999)
Min Se	180 (Range: 64..999999999)
Force Reinvite	<input type="checkbox"/> 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 Avaya 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 towards NTT)
- Register-Contact-User (Phone number)
- Auth-User
- Auth-Passwd

Modify Surrogate Agent

Register Host: ipvoice.jp

Register User: +815121

Description:

Realm ID: Avaya

State: enable

Customer Host:

Customer Next Hop: ipvoice.jp

Register Contact Host: 10.0.7.113

Modify Surrogate Agent

Customer Next Hop: ipvoice.jp

Register Contact Host: 10.0.7.113

Register Contact User: +815121

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 'ORACLE Enterprise Session Border Controller', 'admin', and tabs for '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 Avaya interface is configured 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 'ORACLE Enterprise Session Border Controller', 'admin', and tabs for '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: Avaya
- Description: (empty text area)

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

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

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

- Make sure the following configuration is there in sip-interface before moving to the next configuration
- 100rel-interworking is set for early media support from SBC.
 - The sip-manipulations for in and out manipulations

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

ORACLE Enterprise Session Border Controller admin

VMESBC1 10.138.194.185 SCZ8.4.0 Patch 5A (Build 345) Dashboard Configuration Monitor and Trace Widgets System

Configuration View Configuration Discard Verify Save

- sip-feature
- sip-feature-caps
- sip-interface
- sip-manipulation
- sip-monitoring
- sip-nat
- sip-profile
- sip-q850-map
- sip-recursion-policy
- surrogate-agent
- survivability

Modify SIP Interface Show Configuration

Registration Interval	<input type="text" value="3600"/>	(Range: 0..4294967295)
Route To Registrar	<input type="checkbox"/> enable	
Secured Network	<input type="checkbox"/> enable	
Uri Fqdn Domain	<input type="text"/>	
Options	<input type="text" value="100rel-interworking"/>	
SPL Options	<input type="text"/>	
Trust Mode	<input type="text" value="all"/>	
Max Nat Interval	<input type="text" value="3600"/>	(Range: 0..4294967295)
Stop Recurse	<input type="text" value="401,407"/>	
Port Map Start	<input type="text" value="0"/>	(Range: 0;1025..65535)
Port Map End	<input type="text" value="0"/>	(Range: 0;1025..65535)

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. Control-Surr-Reg is configured as SPL-options for enabling the SurrogateContact.0.6.spl
2. The sip-manipulations for in and out manipulations.
3. Session-Timer Profile

ORACLE Enterprise Session Border Controller

VMESBC1 10.138.194.185 SCZ8.4.0 Patch 5A (Build 345) Dashboard Configuration Monitor and Trace Widgets System admin

Configuration View Configuration Q Discard Verify Save

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

Modify SIP Interface

Route To Registrar enable

Secured Network enable

Uri Fqdn Domain

Options

SPL Options Control-Surr-Reg

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)

OK Back

Show Configuration

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 main content area is titled 'Modify SIP Interface' and 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 (highlighted with 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 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 main content area is titled 'Modify SIP Interface' and contains several configuration fields:

- Msrp Delay Egress Bye: enable
- Send 380 Response: [empty]
- Pcscf Restoration: [empty]
- Session Timer Profile: NTT-ST
- Session Recording Server: [empty] (highlighted with 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 forAvayawith the following parameters.
Go to session-router->Session-Agent.

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

- 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 shows a tree view with 'session-agent' selected. The main content area is titled 'Modify Session Agent' and contains the following configuration fields:

Hostname	172.18.0.124
IP Address	172.18.0.124
Port	4080 (Range: 0,1025..65535)
State	<input checked="" type="checkbox"/> enable
App Protocol	SIP
App Type	
Transport Method	UDP
Realm ID	Genesys
Egress Realm ID	

This screenshot shows the same 'Modify Session Agent' configuration page but with advanced settings visible. The configuration fields are as follows:

burst rate window	0 (Range: 0..999999999)
Sustain Rate Window	0 (Range: 0..999999999)
Proxy Mode	
Redirect Action	
Loose Routing	<input checked="" type="checkbox"/> enable
Response Map	
Ping Method	OPTIONS
Ping Interval	30 (Range: 0..4294967295)
Ping Send Mode	keep-alive
Ping All Addresses	<input type="checkbox"/> enable

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

User name and password to be configured in the auth-attributes of session-agent are provided by NTT.

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 version is 'OracleESBC SC28.4.0 Patch 8 (WS Build 482)'. The left sidebar lists configuration categories: media-manager, security, session-router, access-control, account-config, filter-config, ldap-config, local-policy, local-routing-config, media-profile, and session-agent. The main content area is titled 'Modify Session agent / auth attributes' and contains the following fields:

- Auth Realm: ipvoice.jp
- Username: user
- Password:
- In Dialog Methods: INVITE x

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 configuration interface. The top navigation bar includes 'ORACLE Enterprise Session Border Controller', 'admin', 'Dashboard', 'Configuration', 'Monitor and Trace', 'Widgets', and 'System'. The version is 'OracleESBC SC28.4.0 Patch 8 (WS Build 482)'. The left sidebar lists configuration categories: media-manager, security, session-router, access-control, account-config, filter-config, ldap-config, local-policy, local-routing-config, media-profile, and session-agent. 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]
- Transport Method: UDP
- Realm ID: NTT-router
- Egress Realm ID: [Empty]

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

- FromAvayato NTT
- From NTT to Avaya

Below is the snapshot for NTT to Avaya.

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. On the left, a sidebar lists various configuration categories, with 'local-policy' selected. 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 withAvayanumber)

The screenshot shows the Oracle Enterprise Session Border Controller configuration interface for 'Modify Local policy / policy attribute'. The top navigation bar is the same as in the previous screenshot. The 'Configuration' tab is active. On the left, the sidebar shows 'local-policy' selected. The main content area contains the following fields:

- Next Hop: 172.18.0.124
- Realm: Genesys
- Action: replace-uri
- Terminate Recursion: enable
- Cost: 0 (Range: 0.999999999)
- State: enable
- App Protocol: SIP
- Lookup: single
- Next Key: (empty text area)

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

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

5.16. Configure Codec Policy

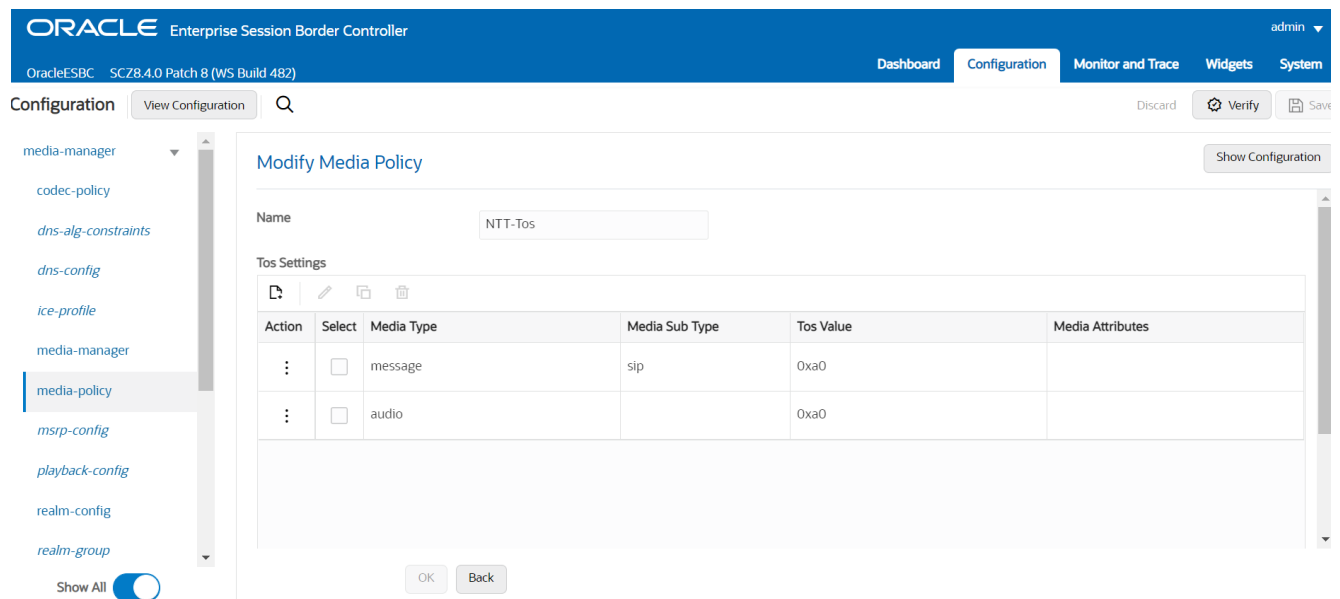
The Oracle Session Border Controller (SBC) uses codec policies to describe how to manipulate SDP messages as they cross the SBC. The SBC bases its decision to transcode a call on codec policy configuration and the SDP. Each codec policy specifies a set of rules to be used for determining what codecs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



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' tab is active. The left sidebar shows a tree view with 'media-manager' selected. The main content area is titled 'Modify Media Policy' and shows a form for configuring a media policy named 'NTT-Tos'. The 'Tos Settings' section contains a table with the following data:

Action	Select	Media Type	Media Sub Type	Tos Value	Media Attributes
:	<input type="checkbox"/>	message	sip	0xa0	
:	<input type="checkbox"/>	audio		0xa0	

At the bottom of the form are 'OK' and 'Back' buttons. The 'Show Configuration' button is visible in the top right corner of the form area.

Apply this media-policy to the NTT 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', 'admin', 'Dashboard', 'Configuration', 'Monitor and Trace', 'Widgets', and 'System'. The version information is 'OracleESBC SCZ8.4.0 Patch 8 (WS Build 482)'. The main content area is titled 'Modify Realm Config' and contains the following settings:

- 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: [Dropdown]
- DNS Realm: [Dropdown]
- Media Policy: NTT-Tos [Dropdown]
- RTCP Mux: enable

Buttons for 'OK' and 'Back' are at the bottom. A blue arrow points to the 'Media Policy' dropdown.

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 for 'Modify Steering Pool'. The top navigation bar is the same as the previous screenshot. The main content area is titled 'Modify Steering Pool' and contains the following settings:

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

Buttons for 'Discard', 'Verify', and 'Save' are at the top right.

5.19. Number Translation

NTT requires the telephone numbers in the From and To headers to be in E164 format. Since Avaya 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 'ORACLE Enterprise Session Border Controller', 'admin', 'Dashboard', 'Configuration', 'Monitor and Trace', 'Widgets', and 'System'. The left sidebar lists various configuration categories, with 'translation-rules' selected. 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	
Delete Index	0 (Range: 0..999999999)

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

Now add the above rule to session-translation.

The screenshot shows the Oracle Enterprise Session Border Controller configuration interface for 'Modify Session Translation'. The top navigation bar is the same as in the previous screenshot. The left sidebar shows 'session-translation' selected. The main content area is titled 'Modify Session Translation' and contains the following fields:

Id	add81forJP
Rules Calling	addforJP X
Rules Called	addforJP X
Rules Asserted Id	
Rules Redirect	
Rules Isup Cdpn	

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

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

6. Existing SBC configuration

If the SBC being used with Avaya 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 'ORACLE Enterprise Session Border Controller', user 'admin', and tabs for 'Dashboard', 'Configuration', 'Monitor and Trace', 'Widgets', and 'System'. The 'Configuration' tab is active, showing a search bar and 'View Configuration' button. A left sidebar lists configuration categories: media-manager, security, session-router, access-control (selected), account-config, account-group, allowed-elements-profile, class-profile, enforcement-profile, enum-config, filter-config, and h323. The main content area is titled 'Modify Access Control' and contains the following fields:

Realm ID	Pexip
Description	
Source Address	176.1.1.1
Destination Address	0.0.0.0
Application Protocol	SIP
Transport Protocol	ALL
Access	permit
Average Rate Limit	0 (Range: 0..4294967295)
Trust Level	

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



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 interface. At the top, there is a navigation bar with 'Dashboard', 'Configuration', 'Monitor and Trace', 'Widgets', and 'System'. Below this is 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 list of configuration parameters:

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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