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ATT IP Flexible Reach Service Including MIS/PNT/AVPN Transports with Avaya Session Manager 6.3.15 & Oracle Session Border Controller 6300

Technical Application Note

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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 (E-SBC) as well as service provider based session border controller. It assumes that the reader is familiar with basic operations of the Oracle Session Border Controller 3820/4500 and 6300 platforms.

Document Overview

This Oracle technical application note outlines the recommended configurations for the Oracle enterprise session border controller 6300 series for connecting AT&T's IP Flexible Reach service to Avaya Session Manager (SM) version 6.3.15 customers. The solution contained within this document has been certified on Oracle's Acme Packet OS ECZ 7.2p6

Avaya Aura Session Manager is at the core of Avaya's SIP based architecture. Oracle Enterprise Session Border Controllers (SBCs) play an important role in SIP trunking as they are used by many ITSPs and some enterprises as part of their SIP trunking infrastructure.

This application note has been prepared as a means of ensuring that ATT's IP Flexible Reach SIP trunking between Avaya Aura Session Manager 6.3.15 and Oracle E-SBC and SBCs are configured in the optimal manner.

It should be noted that while this application note focuses on the optimal configurations for the Oracle SBC in an enterprise Avaya SM 6.3.15 environment, the same SBC configuration model can also be used for other enterprise SIP trunking applications with a few tweaks to the configuration for required features. In addition, it should be noted that the SBC configuration provided in this guide focuses strictly on the Avaya Aura SM associated parameters. Many SBC applications may have additional configuration requirements that are specific to individual customer requirements. These configuration items are not covered in this guide. Please contact your Oracle representative with any questions pertaining to this topic.

Introduction

Audience

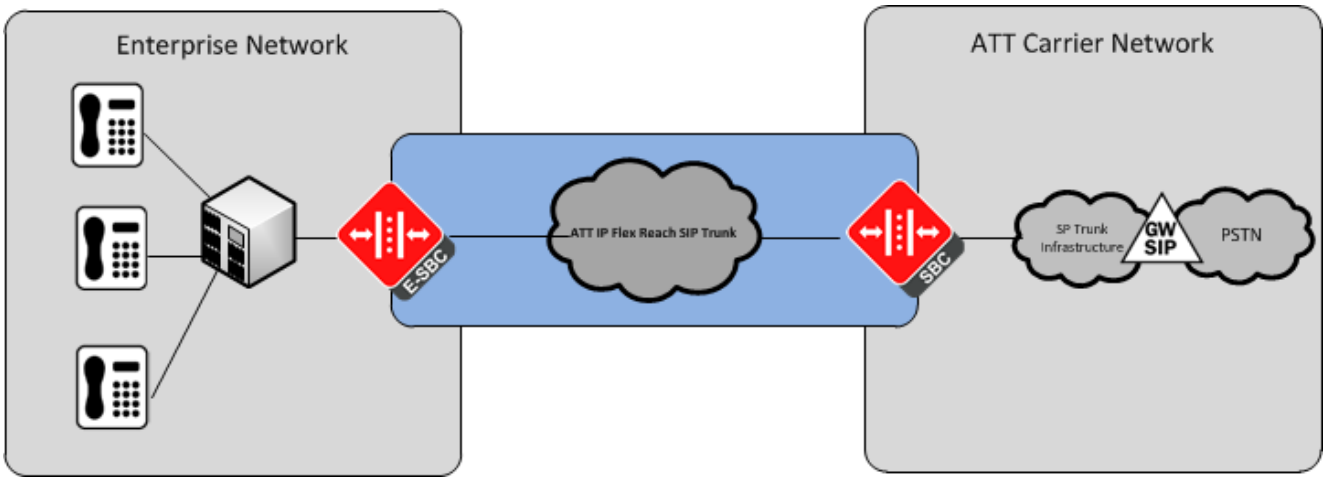
This is a technical document intended for telecommunications engineers with the purpose of configuring the Oracle Enterprise SBC and Avaya Aura SM 6.3.15. There will be steps that require navigating the Avaya SM and Communication manager server configuration as well as the Acme Packet Command Line Interface (ACLI). Understanding the basic concepts of TCP/UDP, IP/Routing, and SIP/RTP are also necessary to complete the configuration and for troubleshooting, if necessary.

Requirements

- Working configuration and functioning Avaya SM 6.3.15
- Avaya communication manager configuration
- Asterisk server configuration for Voicemail and Auto Attendant based enterprise functions
- Avaya One-X communicator soft phone and hard phones connected/registered to the Session manager server
- Oracle Session Border Controller (hereafter SBC) 6300 series running ECZ7.2.0p6. Note: the configuration running on the SBC is backward/forward compatible with any release in the 7.2.0 stream
- Oracle SBC in SIP Peering configuration having established SIP connectivity with Avaya SM on CPE side and ATT IP FR SIP trunk on PSTN side.

Architecture

The following reference architecture shows a logical view of the connectivity between Avaya SM and the SBC.

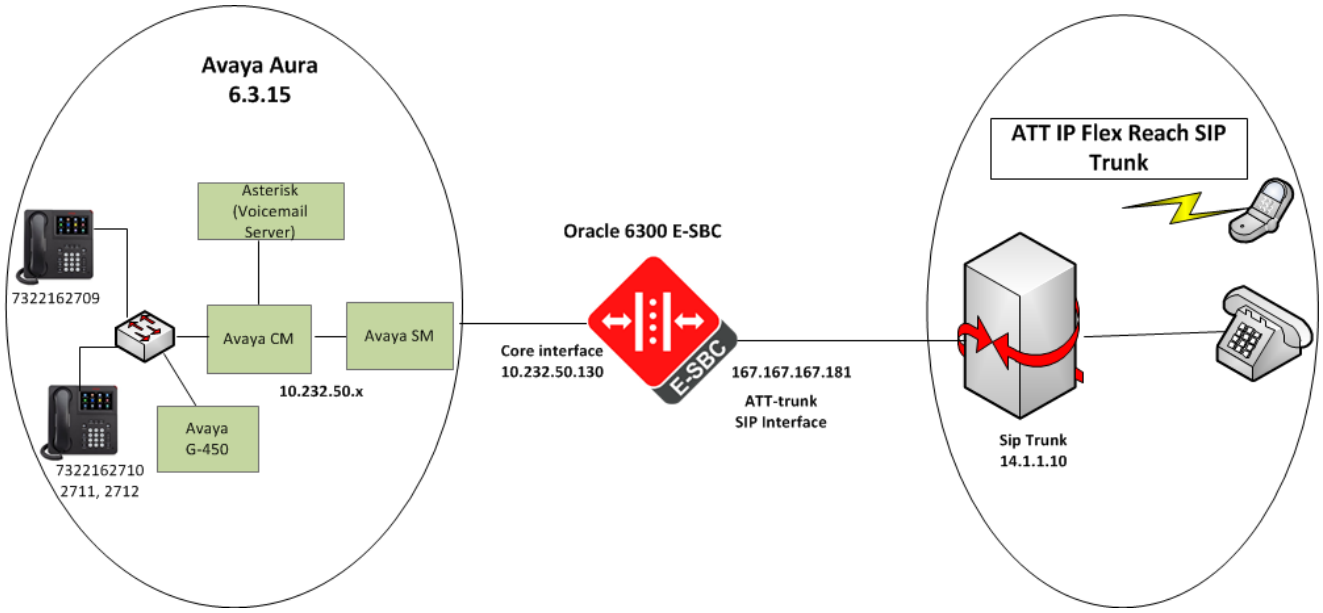


Area on left of the Oracle SBC brown box is the customer's on premise infrastructure, which includes the Avaya Aura SM, PBX/CM with the enterprise phones systems. Area on right of the SBC represents the service provider infrastructure which provides PSTN service via the SIP trunk. The SBC provides integration of these two environments over an IP network and provides security, service reachability, interoperability/normalization of SIP messages over the IP network. The Avaya SM and SBC are the edge components that form the boundary of the SIP trunk. The configuration, validation and troubleshooting of these two is the focus of this document and will be described in three phases:

- Phase 1 – Configuring the Oracle Enterprise SBC
- Phase 2 – Configuring the Avaya Aura Session Manager and adaptations
- Phase 3 - Configuring the Avaya Aura Communication Manager

Lab Configuration

The following diagram, similar to the Reference Architecture described earlier in this document, illustrates the lab environment created to facilitate certification testing.


Avaya Aura
6.3.15
Asterisk
(Voicemail
Server)
7322162709
Avaya CM
Avaya SM
10.232.50.x
Avaya
G-450
7322162710
2711, 2712
Oracle 6300 E-SBC
Core interface
10.232.50.130
E-SBC
167.167.167.181
ATT-trunk
SIP Interface
ATT IP Flex Reach SIP
Trunk
Sip Trunk
14.1.1.10

Phase 1 – Configuring the Oracle Enterprise SBC

In this section we describe the steps for configuring an Oracle Enterprise SBC, formally known as an Acme Packet Net-Net Session Director ("SBC"), for use with Avaya Aura Session Manager 6.3.15 in an ATT IP Flex Reach SIP Trunk service.

In Scope

The following guide configuring the Oracle E-SBC assumes that this is a newly deployed Avaya Aura session manager 6.3.15 topology in an enterprise dedicated to a single customer.

Note that Oracle offers several models of SBC. This document covers the setup for the 6300 platform series running Net-Net OS ECZ7.2.0p6 or newer. If instructions are needed for other Oracle SBC models, please contact your Oracle representative.

Out of Scope

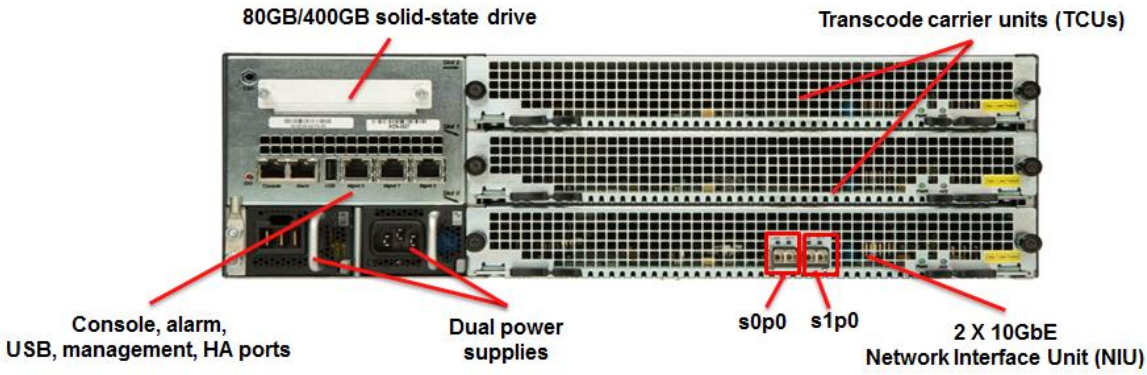
- Configuration of Network management including SNMP and RADIUS

What you will need

- Serial Console cross over cable with RJ-45 connector
- Terminal emulation application such as PuTTY or HyperTerm
- Passwords for the User and Superuser modes on the Oracle E-SBC
- IP address to be assigned to management interface (Wancom0) of the SBC - the Wancom0 management interface must be connected and configured to a management network separate from the service interfaces. Otherwise the SBC is subject to ARP overlap issues, loss of system access when the network is down, and compromising DDoS protection. Oracle does not support SBC configurations with management and media/service interfaces on the same subnet.
- IP address of the Avaya Aura SM SIP interface facing the SBC
- IP addresses to be used for the SBC core (Avaya facing) and SIP trunk/ATT network facing SIP interfaces
- IP address of the next hop gateway in the ATT IP Flex Reach network
- IP address of the enterprise DNS server

Configuring the E-SBC

Once the Oracle E-SBC is racked and the power cable connected, you are ready to set up physical network connectivity.



As seen in the above picture, the 6300 platform has a field replaceable 2 x 10 Gb/sec NIU that contains two 10 Gb/sec Ethernet fiber ports with enhanced Small form factor pluggable (SFP+) for short and long reach options. Plug the slot 0 port 0 (s0p0) 10G interface into your outside (ATT next-hop facing) network and the slot 1 port 0 (s0p1) interface into your inside (Avaya) network. Once connected, you are ready to power on and perform the following steps.

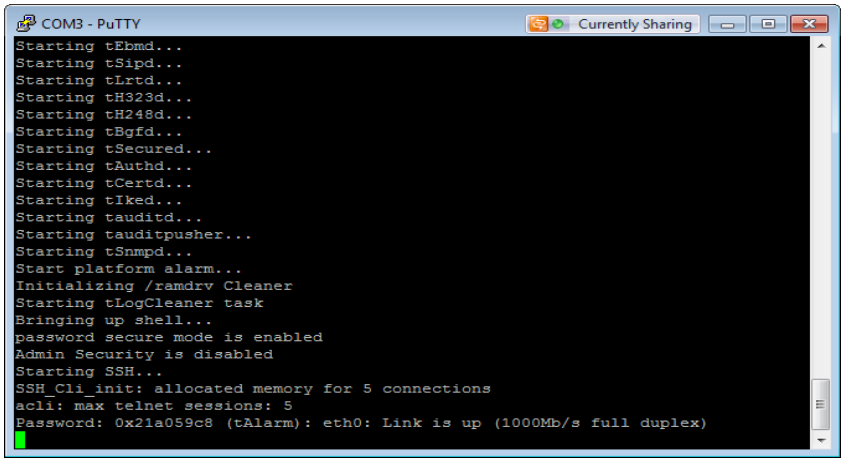
All commands are in bold, such as **`configure terminal`**; parameters in bold red such as Avaya-SBC-ATT are parameters which are specific to an individual deployment. **Note:** The ACLI is case sensitive.

Establish the serial connection and logging in the E-SBC

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

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

Power on the SBC and confirm that you see the following output from the bootup sequence.



Enter the following commands to login to the SBC and move to the configuration mode. Note that the default SBC password is "**acme**" and the default super user password is "**packet**".

```
Password: acme
Avaya-SBC-ATT> enable
Password: packet
Avaya-SBC-ATT# configure terminal
Avaya-SBC-ATT(configure)#
```

You are now in the global configuration mode.

Initial Configuration – Assigning the management Interface an IP address

To assign an IP address, one has to configure the bootparams on the SBC by going to

Avaya-SBC-ATT#configure terminal --- >bootparams

- Once you type "bootparam" you have to use "carriage return" key to navigate down
- A reboot is required if changes are made to the existing bootparams

```
Avaya-SBC-ATT#(configure)bootparam
'.' = clear field;  '-' = go to previous field;  q = quit
boot device             : eth0
processor number        : 0
host name               : acmesystem
file name               : /boot/ EZ720p6.64.bz --- >location where the
software is loaded on the SBC
inet on ethernet (e)    : 172.18.255.104:ffffff80 --- > This is the ip
address of the management interface of the SBC, type the IP address and
mask in hex
```

```
inet on backplane (b)    :
host inet (h)            :
gateway inet (g)         : 172.18.0.1 --- > gateway address here
user (u)                 : vxftp
ftp password (pw) (blank = use rsh)      : vxftp
flags (f)                :
target name (tn)         : Avaya-SBC-ATT
startup script (s)       :
other (o)                :
```

The following section walks you through configuring the Oracle Communications Enterprise SBC configuration required to work with Avaya Aura Session Manager v6.3.15 and ATT's IP Flex Reach SIP Trunk service. In the configuration, the transport protocol used between the SBC and Avaya SM server is TCP and the SIP trunk is configured for UDP. The test plan requires G.729 codec as first offered and calls on trunk unless where specified, therefore the configuration describing that is included as well.

It is outside the scope of this document to include all the interoperability working information as it will differ in every deployment.

High Availability

The wancom1 and wancom 2 port which is on the rear panel of the SBC is used for the purpose of High Availability in the 6300. Please refer to the Oracle Enterprise Session Border Controller ECZ7.2.0 ACLI Configuration guide for more detailed update on High availability configuration. (http://docs.oracle.com/cd/E61547_01/index.htm)

The following section entails notable configuration highlights that pertain to an enterprise environment that deploys an Oracle E-SBC and Avaya Aura v6.3.15 to work with ATT IP Flex Reach SIP trunk service. A full copy of the configuration that was used for this certification follows the section as well.

Configuration Highlights

The SBC configuration in general follows enterprise SIP trunk configuration, with a few additional elements specific to interworking with Avaya SM. These are outlined below. We have also configured some options and sip-manipulations which are specific to any Avaya deployment with the Oracle Enterprise SBC. They are explained below

Avaya Session Manager Session Group

We define a session agent group containing both the session managers in the SBC and enable recursion to ensure that the call would complete if either of the SMs is online.

```
session-group
        group-name                              Avaya-SM-SAG
        description                             Avaya SMs
        state                                   enabled
        app-protocol                            SIP
```

```
        strategy                                Hunt
        dest                                    10.232.50.102
                                                10.232.50.112
        trunk-group
        sag-recursion                           enabled
        stop-sag-recurse                        401,407
```

To give a glimpse of how the routing would work, here is an example of the local-policy (routing configuration) from the ATT trunk side to the Avaya SM.

```
local-policy
        from-address                            *
        to-address                              *
        source-realm                            ATT-Trunk
        description
        activate-time
        deactivate-time
        state                                   enabled
        policy-priority                         none
        policy-attribute
                next-hop                                SAG:Avaya-SM-SAG
                realm                                   Core
                action                                  replace-uri
                terminate-recursion                     disabled
                carrier
                start-time                              0000
                end-time                                2400
                days-of-week                            U-S
                cost                                    0
                state                                   enabled
                app-protocol                            SIP
                methods
                media-profiles
                lookup                                  single
                next-key
                eloc-str-lkup                           disabled
                eloc-str-match
```

SIP Manipulations

The Oracle E-SBC helps resolve certain SIP interoperability issues and preferences on ATT trunk side by invoking one of its most strongest and robust features SIP Header Manipulation Rules (HMR). Below is a summary of the SIP manipulations used and their use cases in this project.

SIP HMR	Description
ChangePAI	Fixes P-Asserted-Identity header towards ATT Trunk
NATting	Provides topology hiding
fordelavayaheaders	Strips Avaya proprietary headers towards ATT trunk
fordiv	Adds Diversion header for Call forwarding Unconditional scenario
ForREFER	Changes Refer-To header and RURI in Refer-To to have appropriate call transferee information in case of Call transfer test cases
ChangeforPAIandNAT	Consolidated one outbound HMR applied on ATT trunk facing SIP interface of SBC - PAI HMR, adds diversion header for CFU, provides topology hiding, deletes Avaya/enterprise proprietary headers and fixes REFERs
changedisplay	Modify From header and add Privacy header for Anonymous calls
ACME_NAT_TO_FROM_IP	Provides topology hiding, applied as outbound HMR on Avaya facing sip-interface of SBC

The header manipulation rules listed in the above table are further elaborated:

Setting the correct P-Asserted-Identity and ensuring topology hiding in place

This sip-manipulation is applied as out-manipulationid on the ATT trunk facing sip-interface in E-SBC. ATT IP Flex Reach SIP trunk service requires the CPE to set P-Asserted-Identity and Remote-party-ID headers correctly to reflect SBC IP.

```
sip-manipulation
        name                                    ChangePAI
        description
        split-headers
        join-headers
```

```
        header-rule
                name                                    Storecontacthost
                header-name                             Contact
                action                                  store
                comparison-type                         pattern-rule
                msg-type                                any
                methods                                 INVITE
                match-value
                new-value
                element-rule
                        name                                    storehost
                        parameter-name
                        type                                    uri-host
                        action                                  store
                        match-val-type                          any
                      comparison-type                         pattern-rule
                        match-value
                        new-value
        header-rule
                name                                    ModPAI
               header-name                             P-Asserted-Identity
                action                                  manipulate
                comparison-type                         boolean
                msg-type                                any
                methods                                 INVITE
                match-value
$Storecontacthost.$storehost.$0
                new-value
                element-rule
                        name                                    modhost
                        parameter-name
                        type                                    uri-host
                        action                                  replace
                        match-val-type                          any
                      comparison-type                         pattern-rule
                        match-value
                        new-value
$Storecontacthost.$storehost.$0
```

Topology Hiding

Since the SBC is a B2BUA and border element, one of the standard procedures in SIP trunk applications is to protect enterprise IP topology as well as for SIP trunk provider network as well. The below rule provides topology hiding by replacing host-portions in SIP URIs of From and To headers or outbound messages from the CPE.

```
sip-manipulation
        name                                    NATting
        description
        split-headers
        join-headers
        header-rule
                name                                    From
                header-name                             From
                action                                  manipulate
                comparison-type                         case-sensitive
                msg-type                                any
                methods
                match-value
                new-value
                element-rule
                        name
From_header
                        parameter-name
                        type                                    uri-host
                        action                                  replace
                        match-val-type                          any
                        comparison-type                         case-
sensitive
                        match-value
                        new-value                               $LOCAL_IP
        header-rule
                name                                    To
                header-name                             To
                action                                  manipulate
                comparison-type                         case-sensitive
                msg-type                                any
                methods
                match-value
                new-value
                element-rule
```

```
                        name                                    To
                        parameter-name
                        type                                    uri-host
                        action                                  replace
                        match-val-type                          any
                        comparison-type                         case-
sensitive
                        match-value
                        new-value                               $REMOTE_IP
```

Delete Avaya headers when sending messages to ATT network

Certain headers that are avaya related are not required to be sent to the ATT IPFR network, the E-SBC in this case uses sip manipulation rules to strip the headers

```
sip-manipulation
        name                                    RemoveAvayaheaders
        description                             remove avaya specific non-
important headers towards ATT
        split-headers
        join-headers
        header-rule
                name                                    delPAVMessageID
                header-name                             P-AV-Message-Id
                action                                  delete
                comparison-type                         case-sensitive
                msg-type                                any
                methods                                 INVITE
                match-value
                new-value
        header-rule
                name
delAVGlobalsessionid
                header-name                             AV-Global-Session-
ID
                action                                  delete
                comparison-type                         case-sensitive
                msg-type                                any
                methods                                 INVITE
                match-value
                new-value
        header-rule
```

```
                name                                    delPlocation
                header-name                             P-Location
                action                                  delete
                comparison-type                         case-sensitive
                msg-type                                any
                methods                                 INVITE
                match-value
                new-value
```

Add Diversion Header for CFU scenario

For a particular test case where inbound call to enterprise requires to call forwarded out unconditionally (Call Forwarding unconditional), the SBC adds a Diversion header to inform ATT IPFR network of call diversion and inserting Inbound DID/CPE information as shown below

```
sip-manipulation
        name                                    AddDiversion
        description
        split-headers
        join-headers
        header-rule
                name                                    checkfor800
                header-name                             To
                action                                  manipulate
                comparison-type                         case-sensitive
                msg-type                                request
                methods                                 INVITE
                match-value
                new-value
                element-rule
                        name
checcuriuser
                        parameter-name
                        type                                    uri-user
                        action                                  store
                        match-val-type                          any
                        comparison-type                         pattern-
rule
                        match-value
18772427372
                        new-value
        header-rule
```

```
                name                                    addDiv
                header-name                             Diversion
                action                                  add
                comparison-type                         boolean
                msg-type                                request
                methods                                 INVITE
                match-value
$checkfor800.$checuriuser
                new-value
<sip:7322162709@167.167.167.181>
```

Note: This test case has been marked as Conditional Passed as ATT IPFR trunk 1-800 test services were unavailable at the time of testing. The SIP manipulation rule will be applicable when testing and has been verified tested.

Refer message manipulation for Call transfer scenarios

For Network based call transfer scenarios, (Attended Consultative transfer and unattended consultative transfer), the Avaya SM sends Refer message with blank Refer-To header user portion as well as blank Request URI in the REFER. The E-SBC uses To header user information in the REFER message which indicates the call transferee, copies that and inserts it into the Refer-To header as well as the Request-URI of the REFER message. The complete SIP manipulation is given below:

```
sip-manipulation
        name                                    changeRefer
        description
        split-headers
        join-headers
        header-rule
                name                                    ModReferto
                header-name                             Refer-To
                action                                  manipulate
                comparison-type                         case-sensitive
                msg-type                                any
                methods                                 REFER
                match-value
                new-value
                element-rule
                        name
ChangeURIhost
                        parameter-name
                        type                                    uri-host
                        action                                  replace
                        match-val-type                          any
```

```
                        comparison-type                         case-
sensitive
                        match-value
                        new-value                               $LOCAL_IP
        header-rule
                name                                    ModReferredBY
                header-name                             Referred-By
                action                                  manipulate
                comparison-type                         case-sensitive
                msg-type                                any
                methods                                 REFER
                match-value
                new-value
                element-rule
                        name
ChangeURIhost
                        parameter-name
                        type                                    uri-host
                        action                                  replace
                        match-val-type                          any
                        comparison-type                         case-
sensitive
                        match-value
                        new-value                               $LOCAL_IP
        header-rule
                name                                    StoreTouser
                header-name                             To
                action                                  store
                comparison-type                         pattern-rule
                msg-type                                request
                methods                                 REFER
                match-value
                new-value
                element-rule
                        name
CheckReferTo
                        parameter-name
                        type                                    uri-user
                        action                                  store
                        match-val-type                          any
                        comparison-type                         pattern-
rule
```

```
                        match-value
                        new-value
        header-rule
                name                                    ModifyReferto
                header-name                             Refer-To
                action                                  manipulate
                comparison-type                         boolean
                msg-type                                request
                methods                                 REFER
                match-value
$StoreTouser.$CheckReferTo
                new-value
                element-rule
                        name
ChangeReferTo
                        parameter-name
                        type                                    uri-user
                        action                                  add
                        match-val-type                          any
                        comparison-type                         pattern-
rule
                        match-value
                        new-value
$StoreTouser.$CheckReferTo.$0
        header-rule
                name                                    ChangeReferRURI
                header-name                             Request-URI
                action                                  manipulate
                comparison-type                         boolean
                msg-type                                request
                methods                                 REFER
                match-value
$StoreTouser.$CheckReferTo
                new-value
                element-rule
                        name                                    ModRURI
                        parameter-name
                        type                                    uri-user
                        action                                  add
                        match-val-type                          any
                        comparison-type                         pattern-
rule
```

```
                        match-value
                        new-value
$StoreTouser.$CheckReferTo.$0
```

All the above SIP manipulations are then consolidated into one single HMR by calling individual ones within a header-rule

```
sip-manipulation
        name                                    ChangeforPAIandNAT
        description
        split-headers
        join-headers
        header-rule
                name                                    changePAI
                header-name                             From
                action                                  sip-manip
                comparison-type                         case-sensitive
                msg-type                                any
                methods
                match-value
                new-value                               ChangePAI
        header-rule
                name                                    forprivacy
                header-name                             From
                action                                  sip-manip
                comparison-type                         case-sensitive
                msg-type                                any
                methods
                match-value
                new-value                               NATting
        header-rule
                name                                    fordelavayaheaders
                header-name                             From
                action                                  sip-manip
                comparison-type                         case-sensitive
                msg-type                                any
                methods
                match-value
                new-value                               RemoveAvayaheaders
        header-rule
                name                                    fordiv
                header-name                             From
```

```
                action                                  sip-manip
                comparison-type                         case-sensitive
                msg-type                                any
                methods
                match-value
                new-value                               AddDiversion
        header-rule
                name                                    ForREFER
                header-name                             From
                action                                  sip-manip
                comparison-type                         case-sensitive
                msg-type                                any
                methods
                match-value
                new-value                               changeRefer
```

Once configured, this sip-manipulation needs to be applied as an out-manipulationid on the ATT trunk facing sip-interface of E-SBC

```
sip-interface
        state                                   enabled
        realm-id                                ATT-Trunk
        description
        sip-port
                address                                 167.167.167.181
                port                                    5060
                transport-protocol                      UDP
                tls-profile
                allow-anonymous                         agents-only
                multi-home-addrs
                ims-aka-profile
        carriers
        trans-expire                            0
…
out-manipulationid                      ChangeforPAIandNAT
```

Change display and add Privacy header for Anonymous calls

For anonymous calls, the From header needs to have display and user portion changed to Anonymous and needs to add Privacy header as shwn below

```
sip-manipulation
        name                                    changedisplayname
        description
        split-headers
        join-headers
        header-rule
                name                                    changedisplay
                header-name                             From
                action                                  manipulate
                comparison-type                         case-sensitive
                msg-type                                request
                methods                                 INVITE
                match-value
                new-value
                element-rule
                        name
ChngFromuser
                        parameter-name
                        type                                    uri-user
                        action                                  replace
                        match-val-type                          any
                        comparison-type                         case-
sensitive
                        match-value
                        new-value                               Anonymous
                element-rule
                        name
Changefromdisplay
                        parameter-name
                        type                                    uri-
display
                        action                                  replace
                        match-val-type                          any
                        comparison-type                         case-
sensitive
                        match-value
                        new-value
\"Anonymous\"
```

```
        header-rule
                name                                    Addprivacyheader
                header-name                             Privacy
                action                                  add
                comparison-type                         case-sensitive
                msg-type                                request
                methods                                 INVITE
                match-value
                new-value                               id
```

SIP Manipulation on Core sip interface of E-SBC towards Avaya for topology hiding

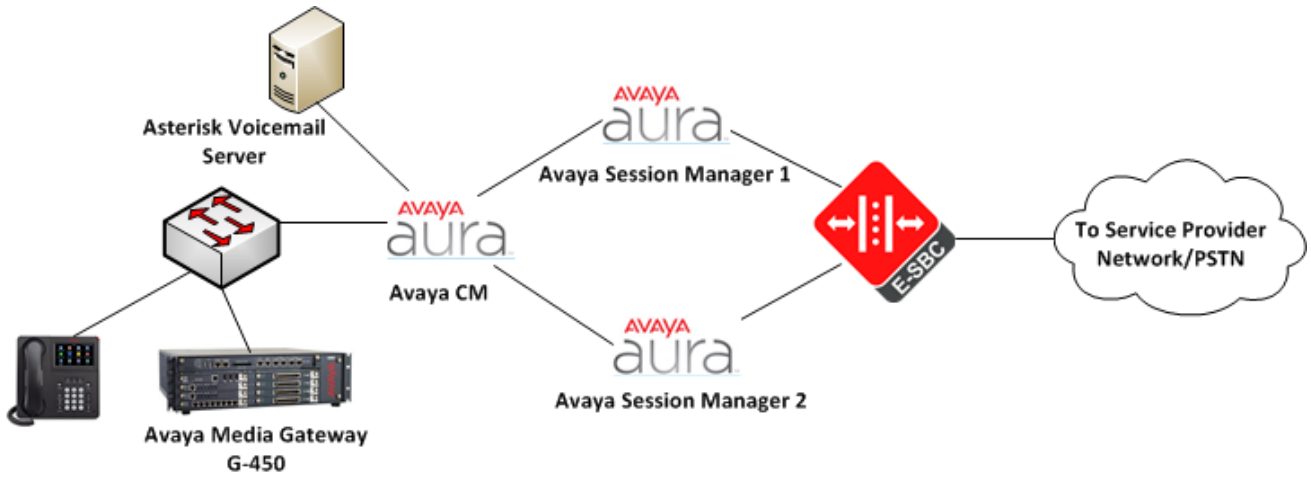
The E-SBC in-built variable ACME_TO_FROM_NAT_IP is applied as an out-manipulation on the sip-interface facing Avaya SM.

This completes the major configuration highlights from the testing. A fully copy of the E-SBC configuration is elaborated in the Appendix Section of this document.

Phase 2 – Configuring the Avaya Aura Session Manager v6.3.15

The enterprise will have a fully functioning Avaya SM installed and deployed for this certification. The Avaya Aura setup consists of Avaya session manager, system manager, Communication manager and the media gateway for any TDM based trunk termination.

The following diagram gives an overview on the Avaya Aura System architecture.



The Avaya Aura session manager is a SIP routing and integration tool and the core component within the Avaya Aura Enterprise edition solution. It connects the Avaya Aura Communication Manager as a SIP feature server and enterprise PBX for SIP and no-SIP phones, and routes SIP sessions across the network. In addition to the above, a free-pbx/Asterisk was used to provide voicemail services for two test cases. This will also be described later in this document.

In this section we describe the steps for configuring Avaya SM server, system manager and integrate it with the E-SBC.

In Scope

- Configuration in System manager, routing policy, SIP entity definition to establish connectivity with E-SBC.

Out of Scope

- Installing the Avaya SM and network management to connect to E-SBC and CM topology

What you will need

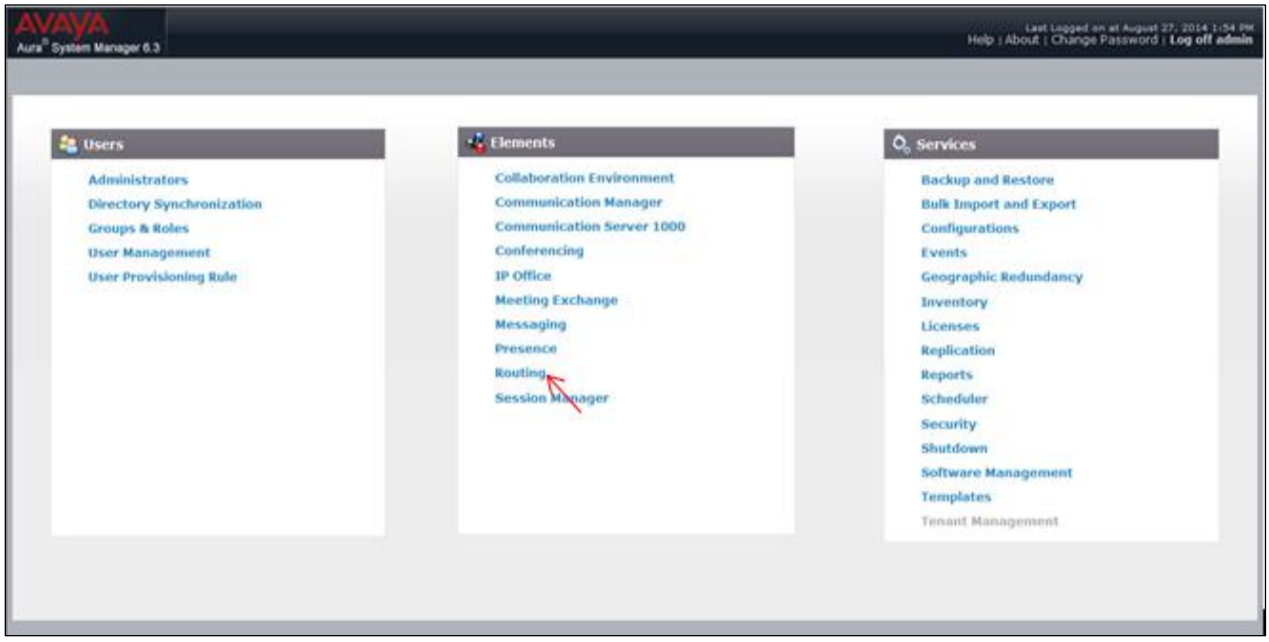
Avaya SM installed and base configuration

To configure the session manager, one the System manager portal is used. The Avaya aura system manager is a central management system that delivers a set of shared management services and common console for Avaya Aura applications and systems like Session manager. The system manager has synchronization tool to provide replication across the session manager clusters. The configuration to operate and connect to the E-SBC consists of the following steps:

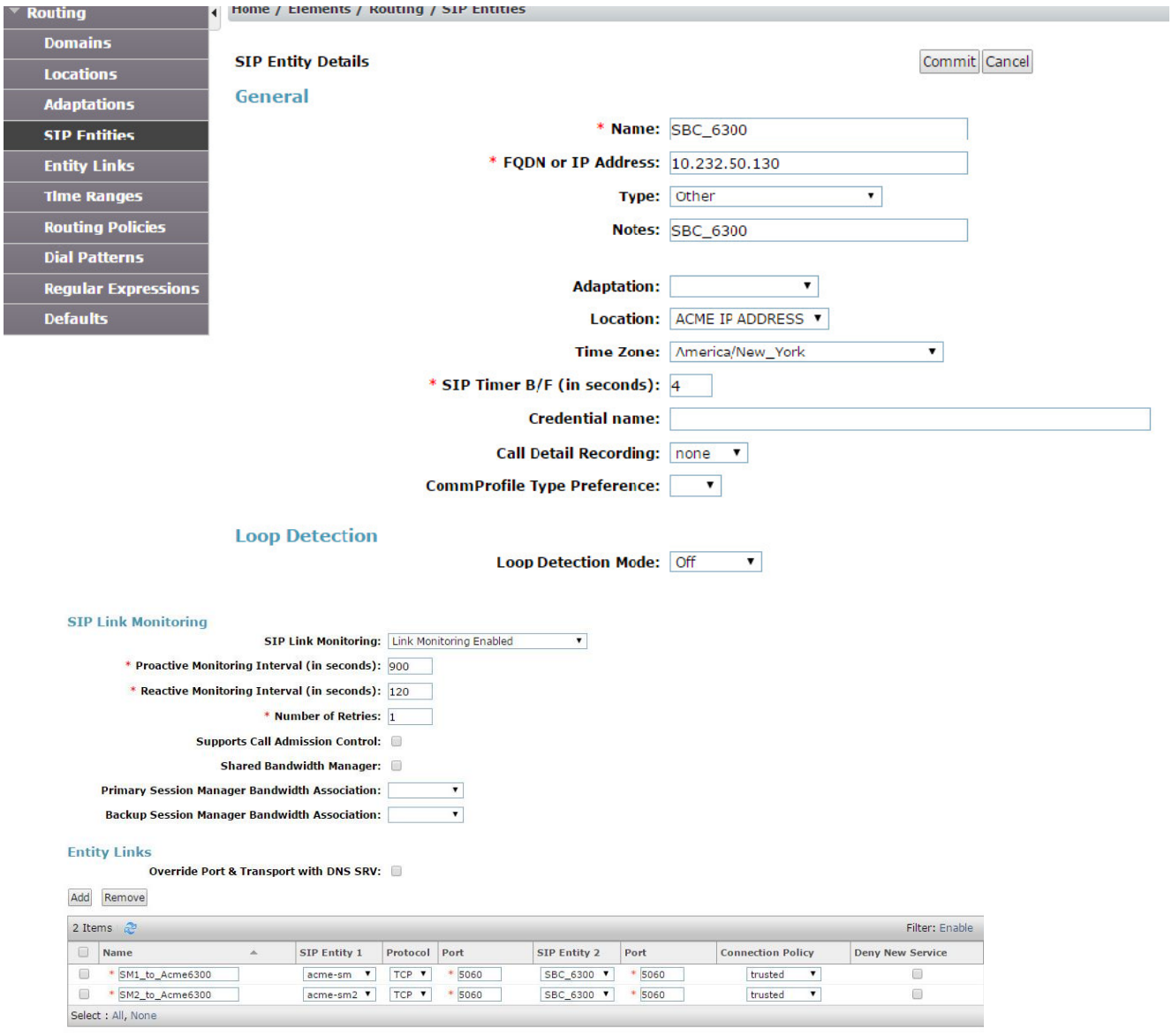
- Adding the E-SBC as a SIP Entity
- Configuring an Entity link between E-SBC and Session Manager
- Creating a Routing policy to assign the appropriate routing destination

Adding the E-SBC as a SIP Entity

Login to the Aura system manager. Click on **Routing**, under the **Elements** section

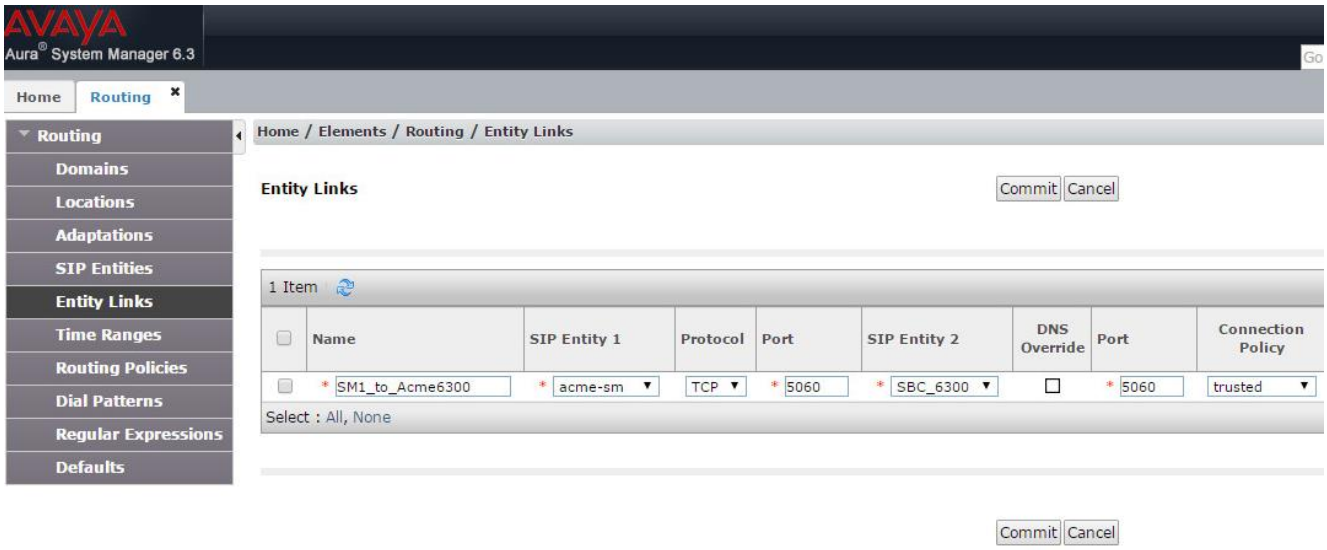


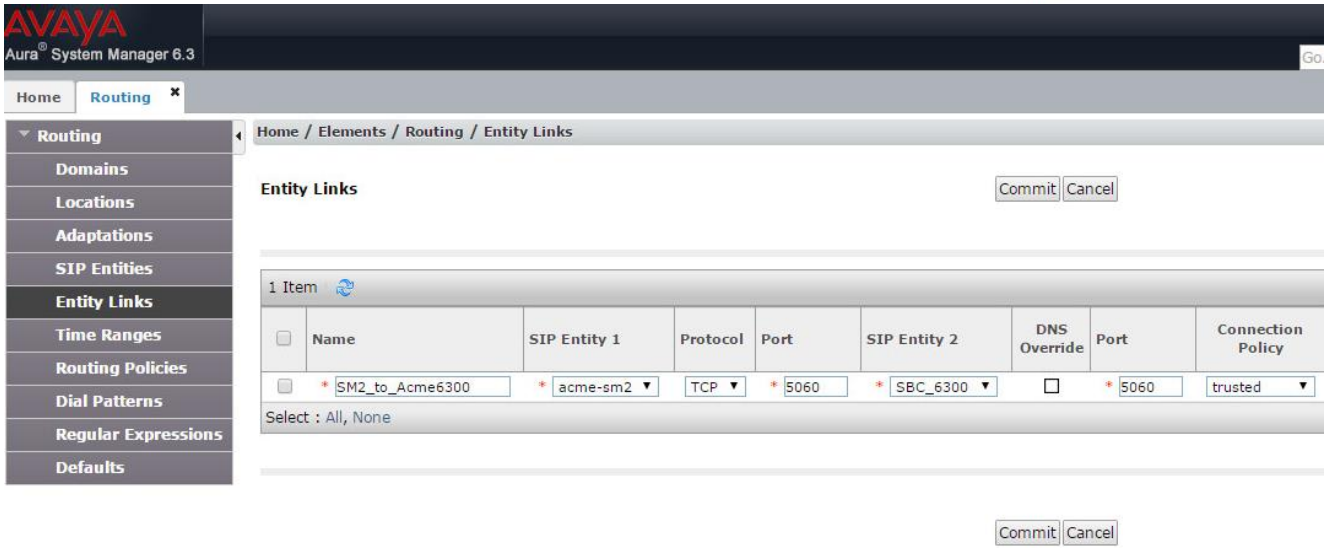
On the **Routing** tab, select **SIP Entities** from the menu on the left side of the screen. Click **New** to add E-SBC as a SIP entity as shown below and click **Commit**



Configure Entity Link between Session manager and E-SBC

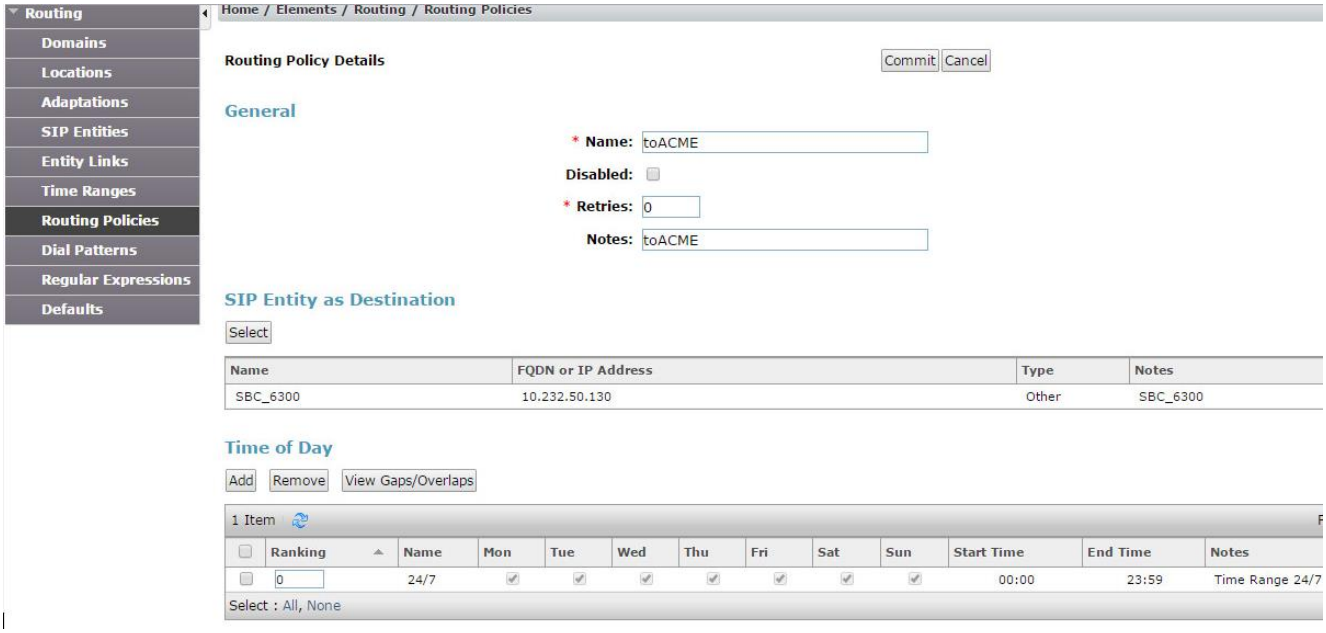
Select **Entity Links** from the menu and click on **New** to add an Entity Link between E-SBC and SM (for SM1 and SM2) with the following settings and click **Commit.**



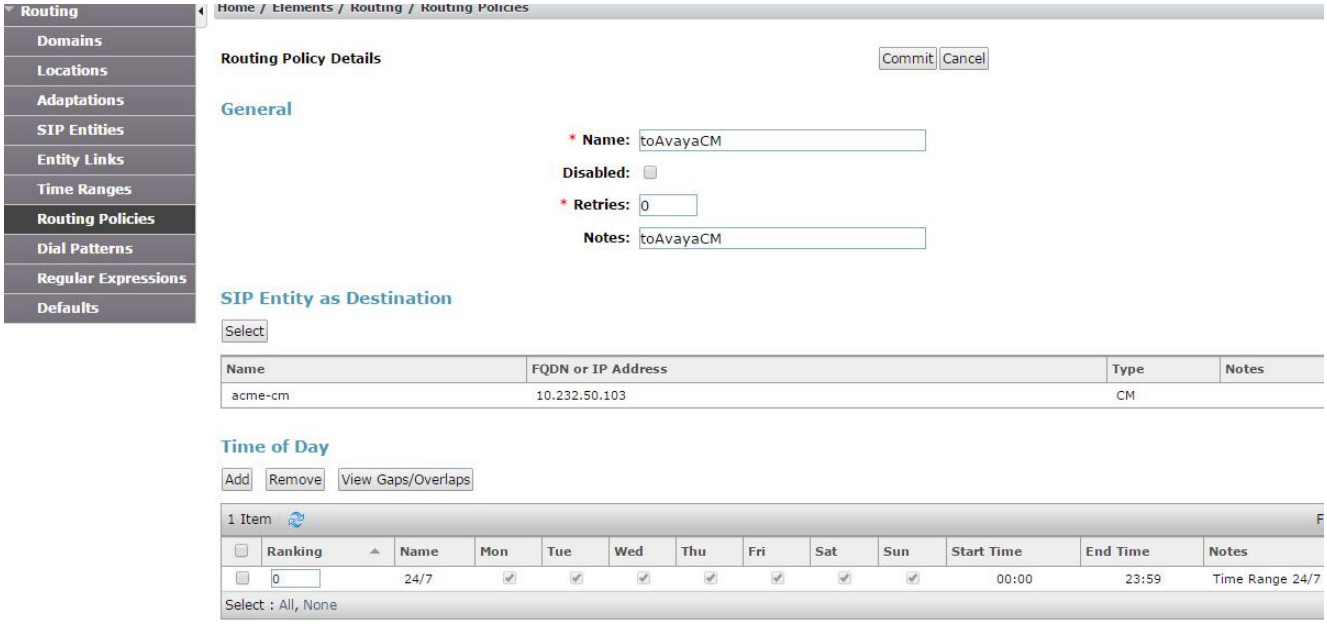


Creating a Routing policy to assign the appropriate routing destination

Select **Routing policies** from the menu and click on **New** to add a routing policy between E-SBC interface (10.232.50.130) and SM with the following settings and click **Commit**.



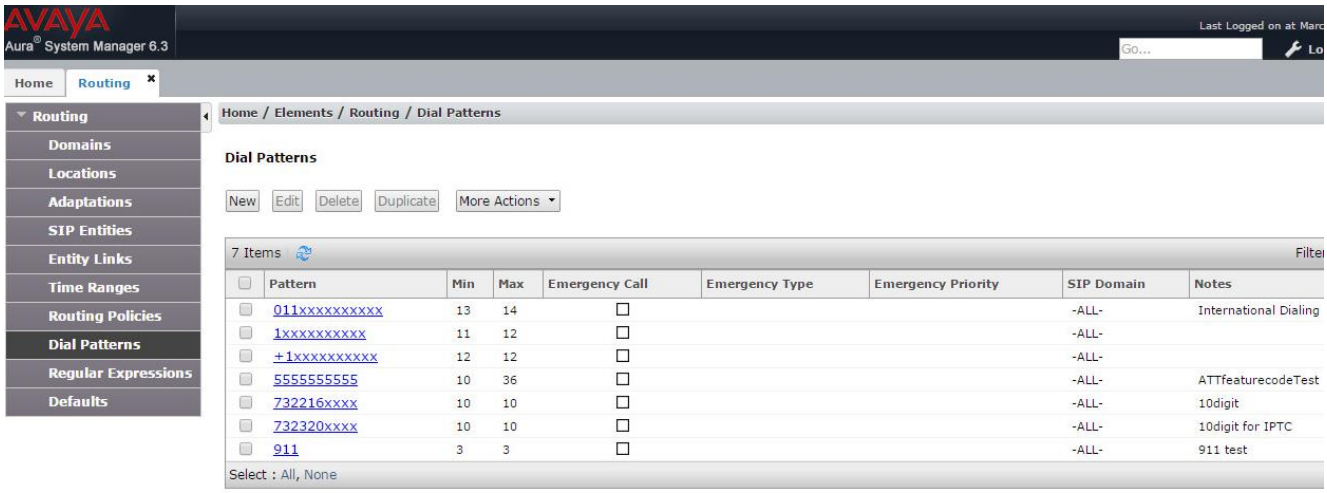
Another routing policy destination is added for route from SM to CM (Communication manager) as show in below screenshot:



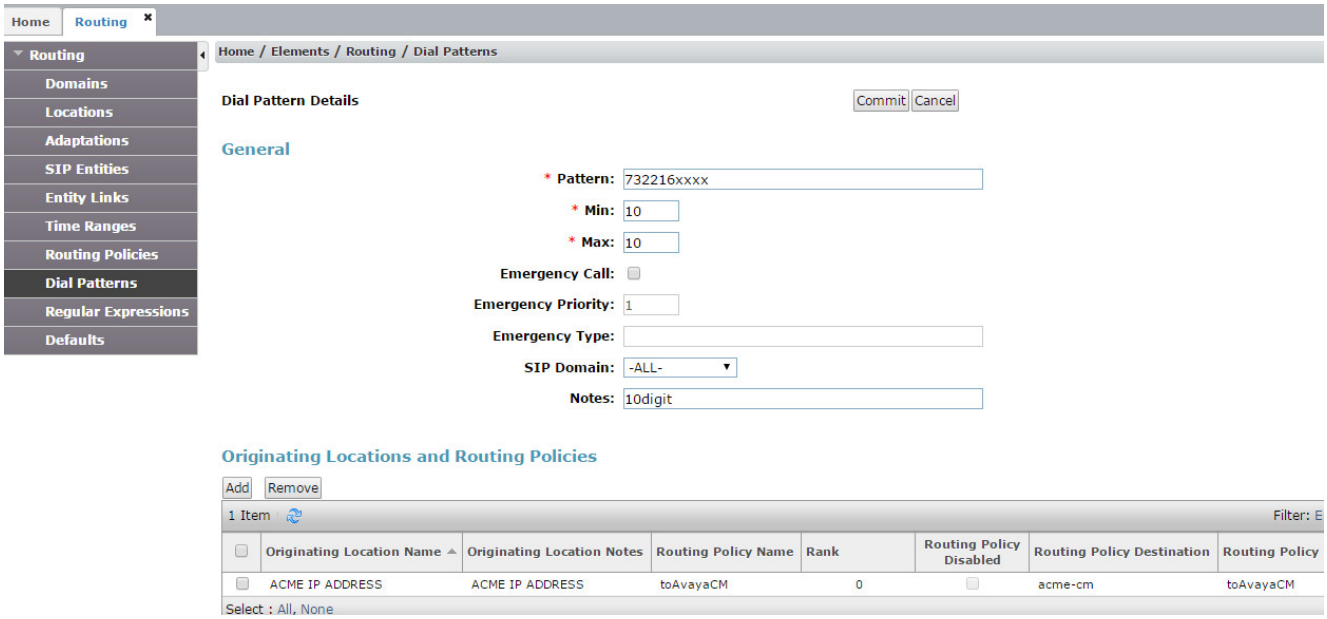
The configuration to establish SIP connectivity with the SBC is now complete. Following next sections talk about Dial patterns, Feature code based tests for which additional configuration is required on the system manager and that is described in greater detail.

Dial Patterns

The above steps have configured the SM to establish connectivity with the SBC. For dialing outbound, regular outbound calls, and certain tests require 911 as well as international call dialing. The system manager has Dial patterns section under **Routing** tab where one can configure these. This is shown below in the screen shots:

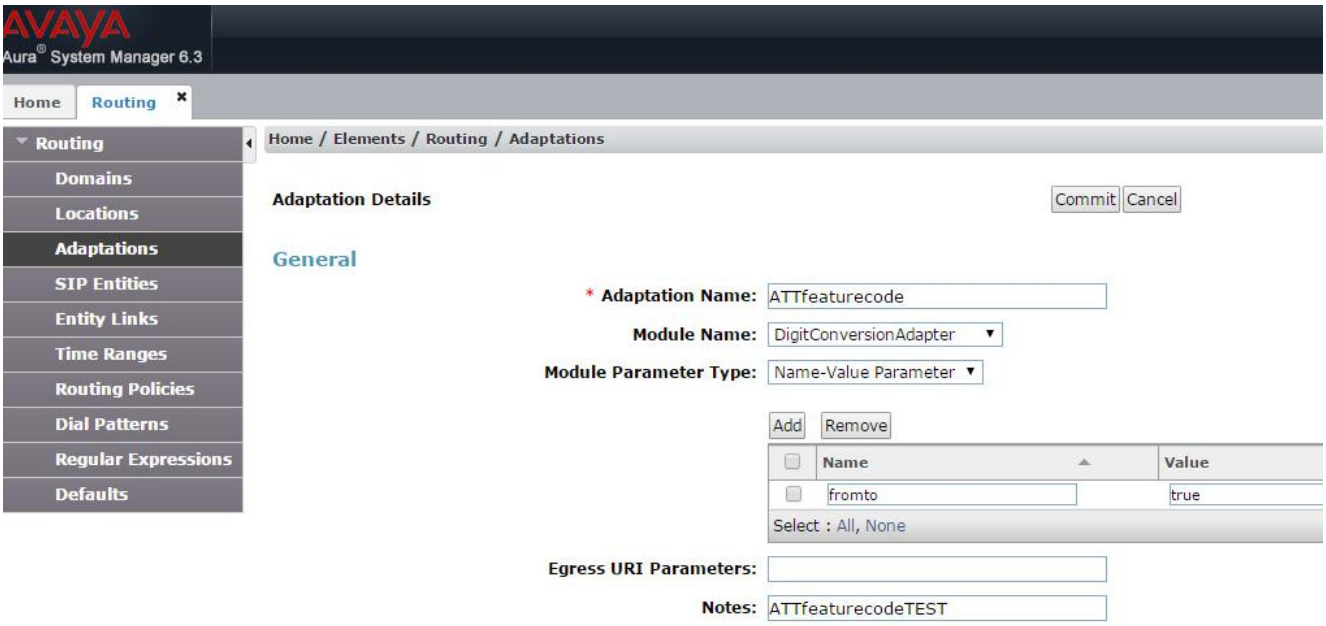


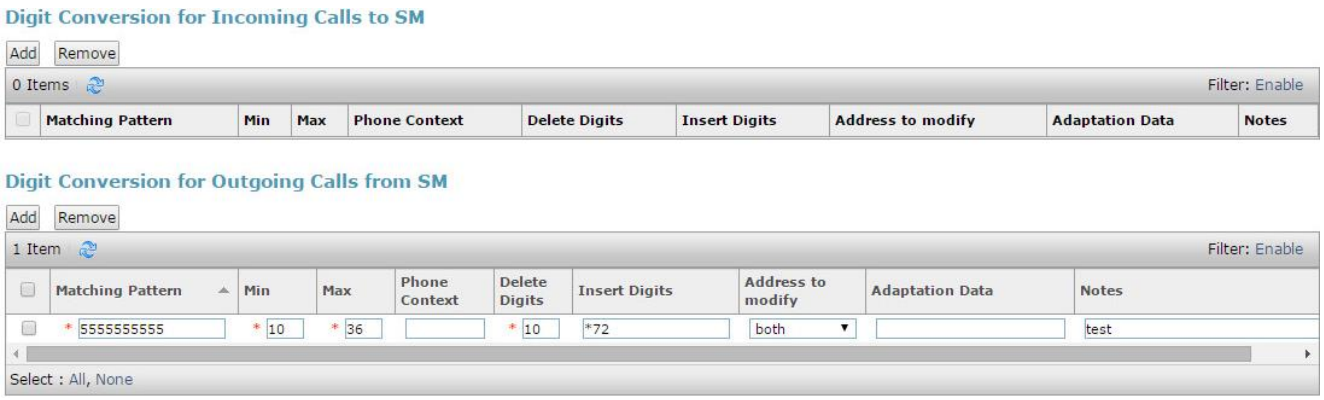
Clicking on one of the assigned DID patterns



Adaptations for feature code based tests

In ATT IP Flex Reach service, certain tests like Network-based call forwarding scenarios are based on ATT's enhanced network portal. This requires activation and deactivation of the feature per test case by dialing special digits from CPE phone to the trunk. Since Avaya phones use the character "*" for invoking its own feature codes (local to its PBX), an adaptation in system manager is necessary to invoke the feature and send this dialing towards the trunk. In the system manager, maneuver to Routing tab and click on **Adaptations** link. Click on **New** to add adaptation to dial 5555555555 to be converted to *72 (for TC 20421) and then hit **Commit**. For each individual test case, this adaptation needed to be changed. A system administrator can set different digits to dial different patterns so that all network-based call forwarding scenarios are covered in the enterprise. This is shown below in the screenshots:





Phase 3 - Configuring the Avaya Communication Manager

Avaya Communication manager provides centralized call control for a distributed network of IP-communication devices, gateways. It consolidates several components into a holistic package that enterprises need for Unified communications. To define configuration, one can use the Avaya Site Administration tool (ASA) to login/connect to the communication manager and execute different commands.

In this section we describe the steps for configuring Avaya CM server to support Voicemail, Auto Attendant scenarios and also integrate it with the existing SM topology to E-SBC to be fully functional.

In Scope

ASA tool, configuring and assigning trunk group, hunt group, call vector, creating announcement, codec set, and establishing connectivity with SM.

Out of Scope

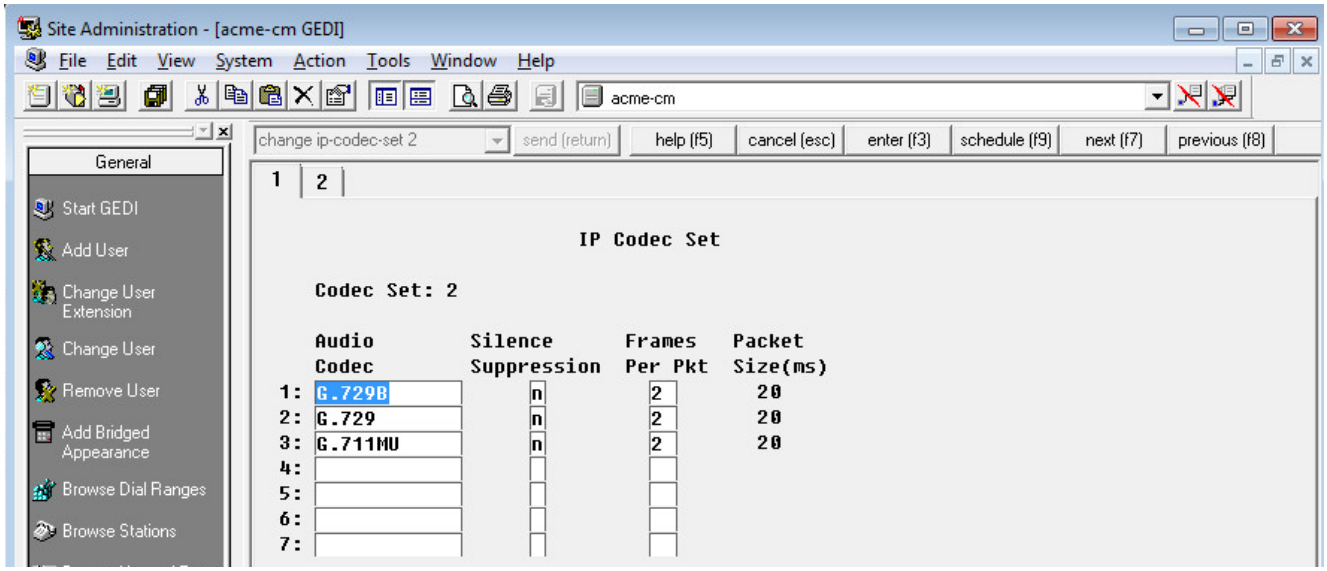
- Installing the Avaya CM on a VM and network management to connect to SM topology

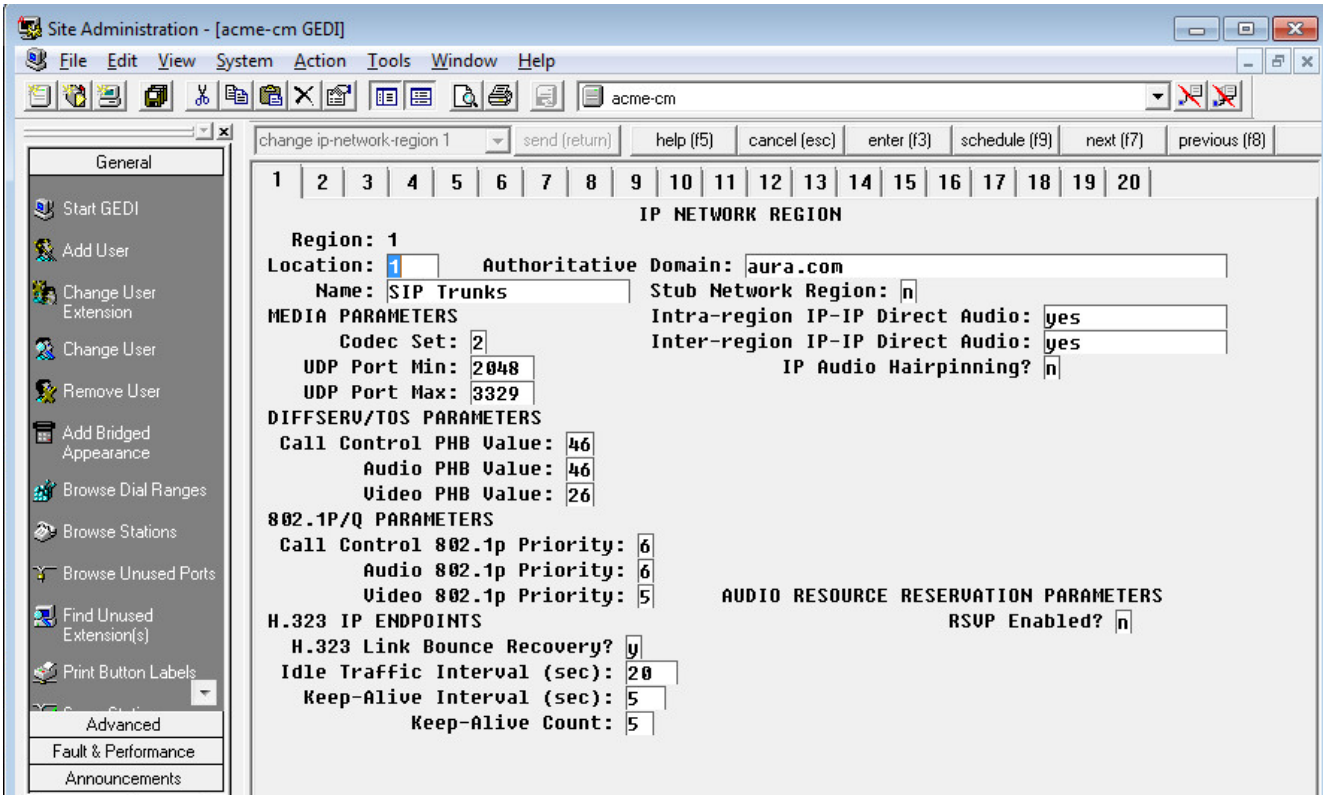
What you will need

- Avaya CM installed and base configuration

Define codec set and reference in network region

ATT IP Flex Reach service requires G.729 annex B offered as first codec for outbound calls, hence the codec set is defined and referenced in ip-network-region (see codec set 2 referenced) as shown below:



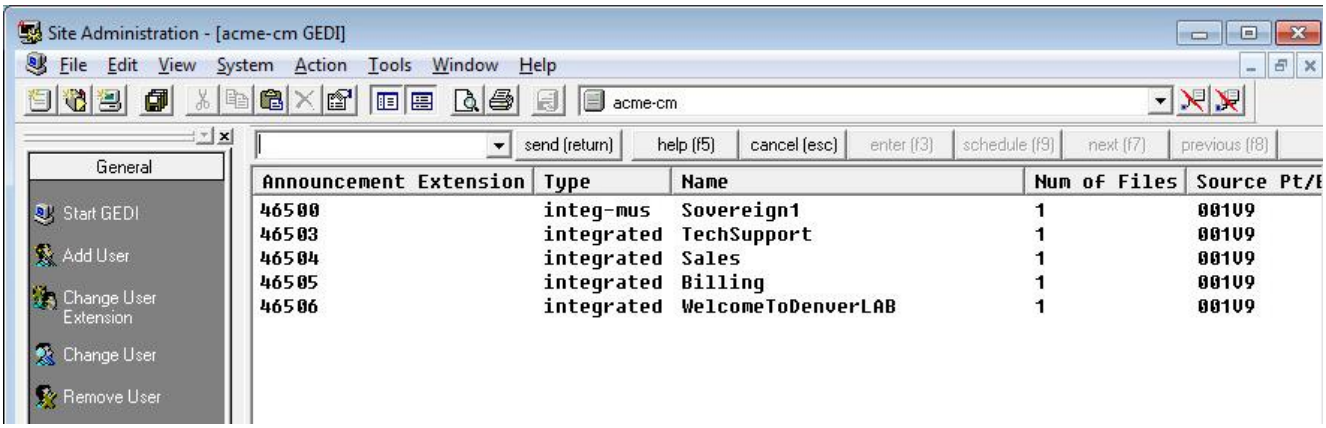

Site Administration - [acme-cm GEDI]
File Edit View System Action Tools Window Help
acme-cm
General
Start GEDI
Add User
Change User Extension
Change User
Remove User
Add Bridged Appearance
Browse Dial Ranges
Browse Stations
Browse Unused Ports
Find Unused Extension(s)
Print Button Labels
Advanced
Fault & Performance
Announcements
change ip-network-region 1
send (return)
help (f5)
cancel (esc)
enter (f3)
schedule (f9)
next (f7)
previous (f8)
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
IP NETWORK REGION
Region: 1
Location: 1
Authoritative Domain: aura.com
Name: SIP Trunks
Stub Network Region: n
MEDIA PARAMETERS
Intra-region IP-IP Direct Audio: yes
Codec Set: 2
Inter-region IP-IP Direct Audio: yes
UDP Port Min: 2048
IP Audio Hairpinning? n
UDP Port Max: 3329
DIFFSERV/TOS PARAMETERS
Call Control PHB Value: 46
Audio PHB Value: 46
Video PHB Value: 26
802.1P/Q PARAMETERS
Call Control 802.1p Priority: 6
Audio 802.1p Priority: 6
Video 802.1p Priority: 5
AUDIO RESOURCE RESERVATION PARAMETERS
H.323 IP ENDPOINTS
RSVP Enabled? n
H.323 Link Bounce Recovery? y
Idle Traffic Interval (sec): 20
Keep-Alive Interval (sec): 5
Keep-Alive Count: 5

Configuration for Auto attendant test

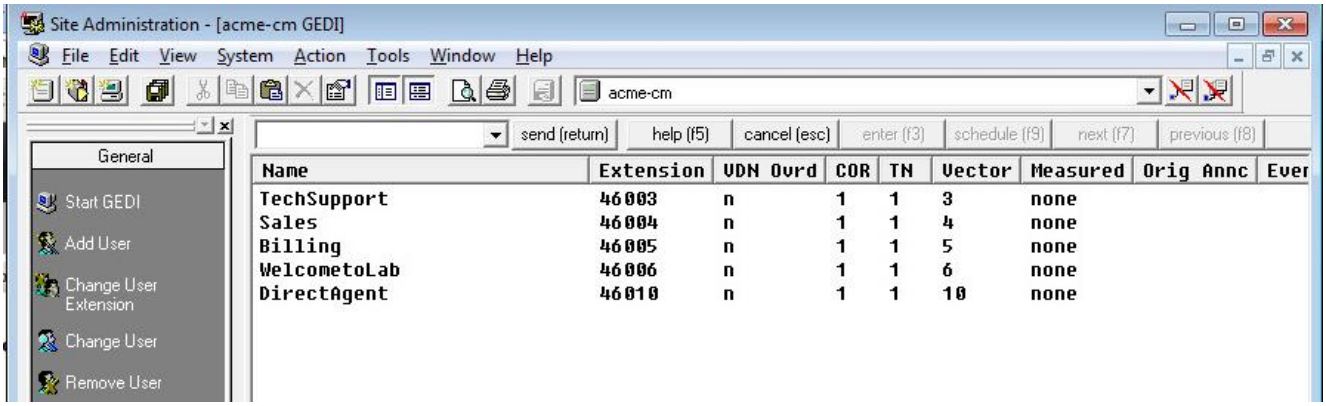
For auto attendant test (TC 20201), the Avaya communication manger Vector directory number feature is used. Vector design handles incoming calls into the Avaya environment. Incoming call on a particular trunk is handled differently and transposed to a VDN and played an announcements. The following steps need to be accomplished:

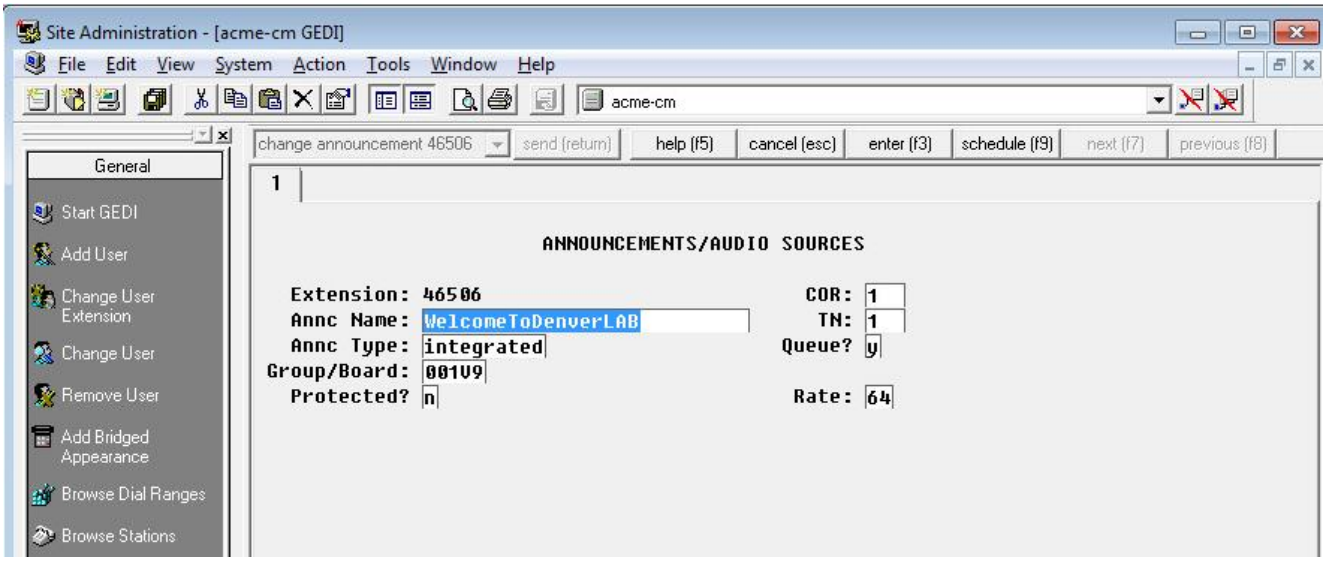
- Create announcement
- Create VDN
- Create Call Vector
- Change incoming call handling on trunk

Create Announcement

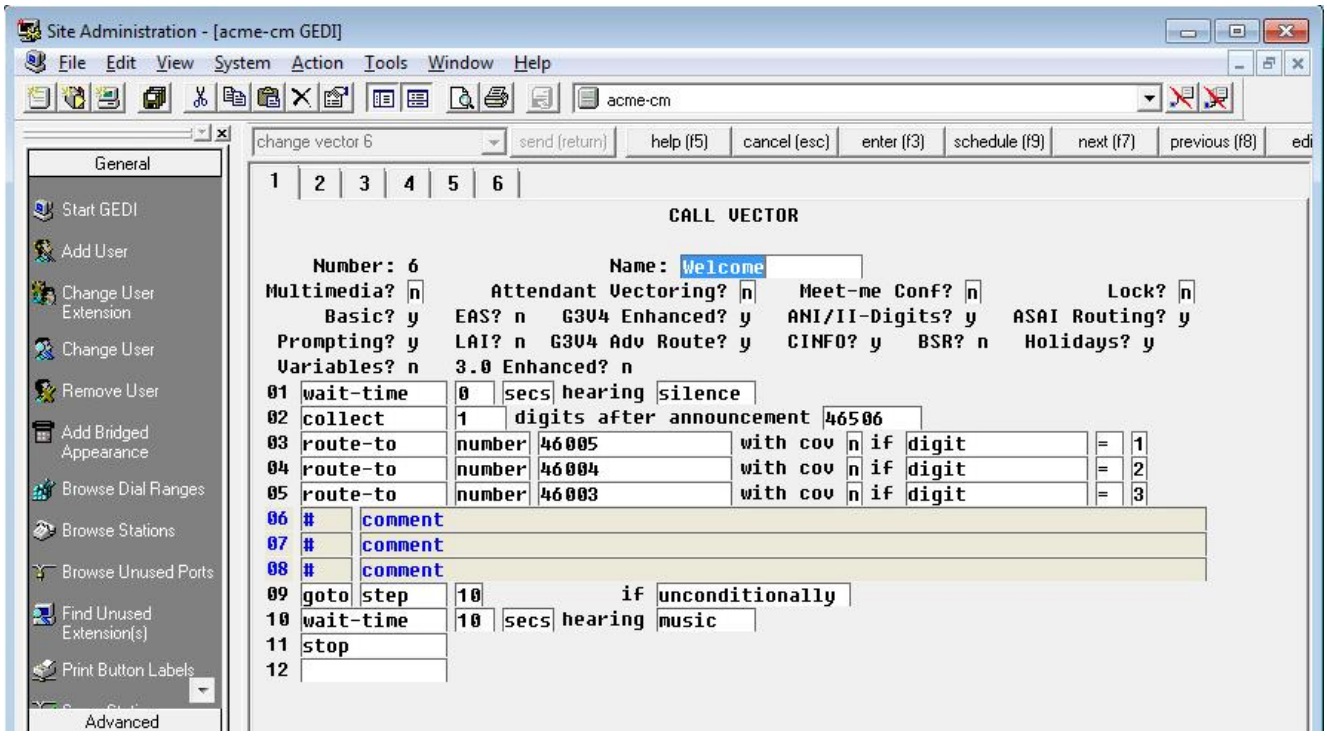


Create Vector directory numbers

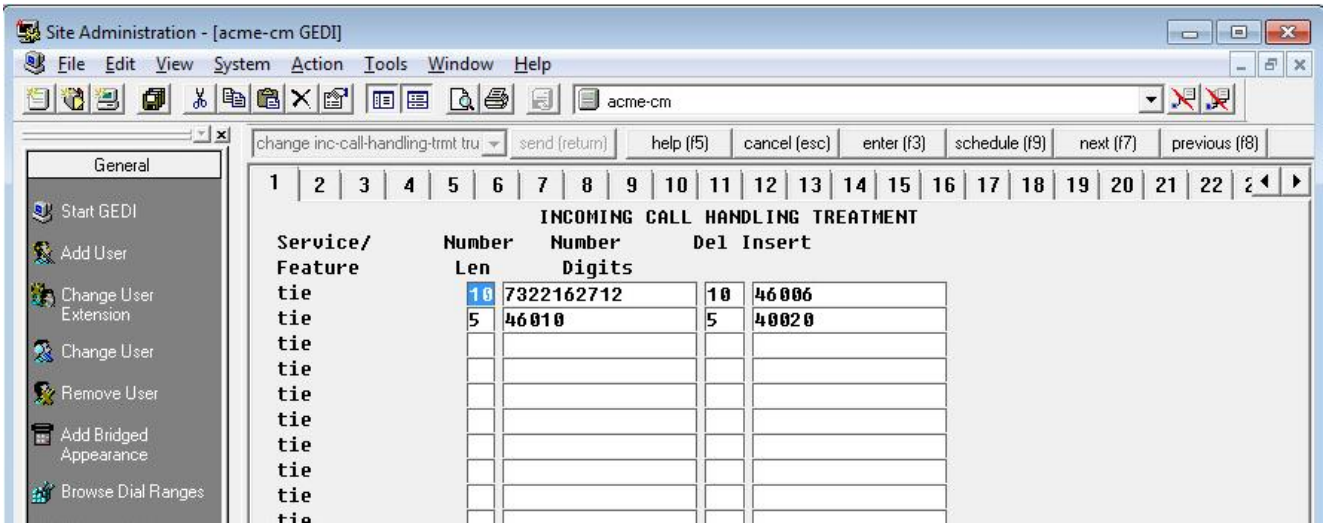




Create Call Vector



Change incoming call handling on trunk

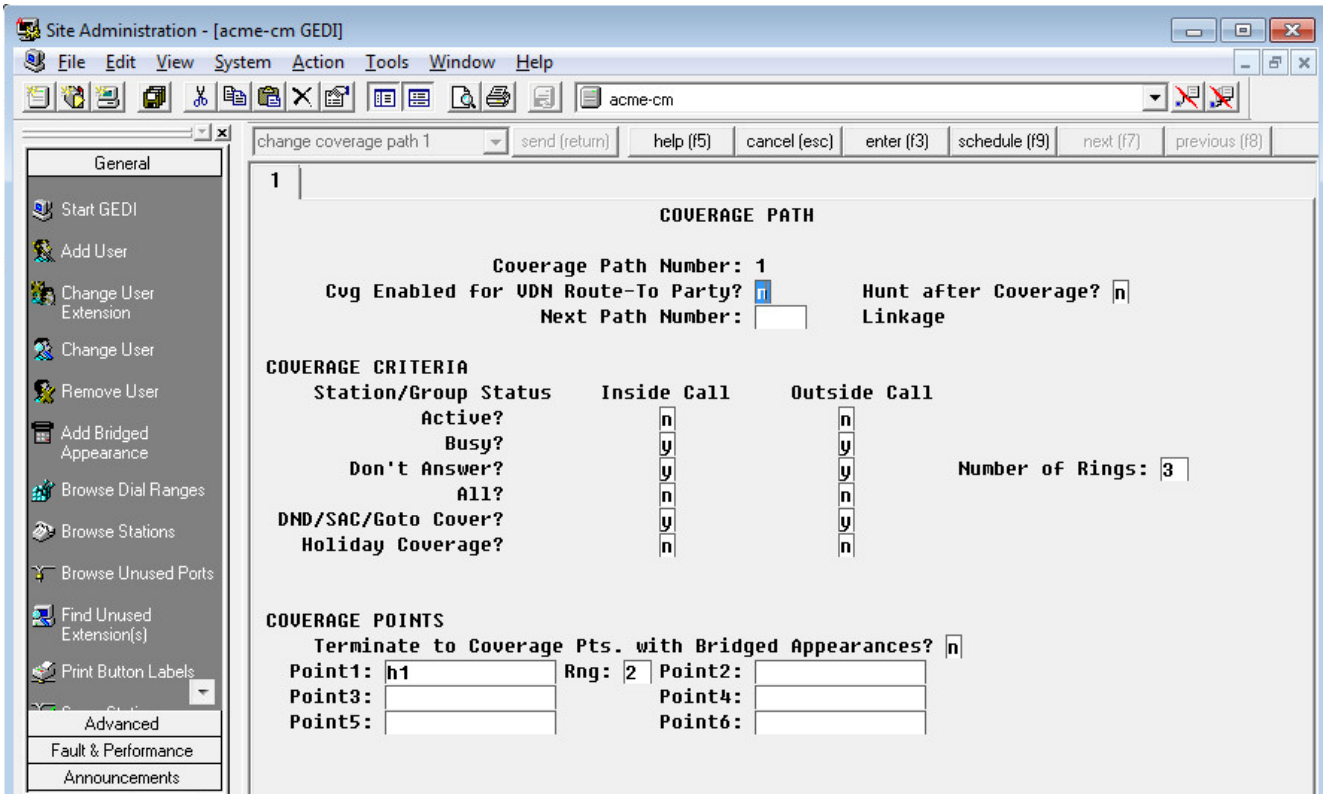


Configuration for Voicemail Test

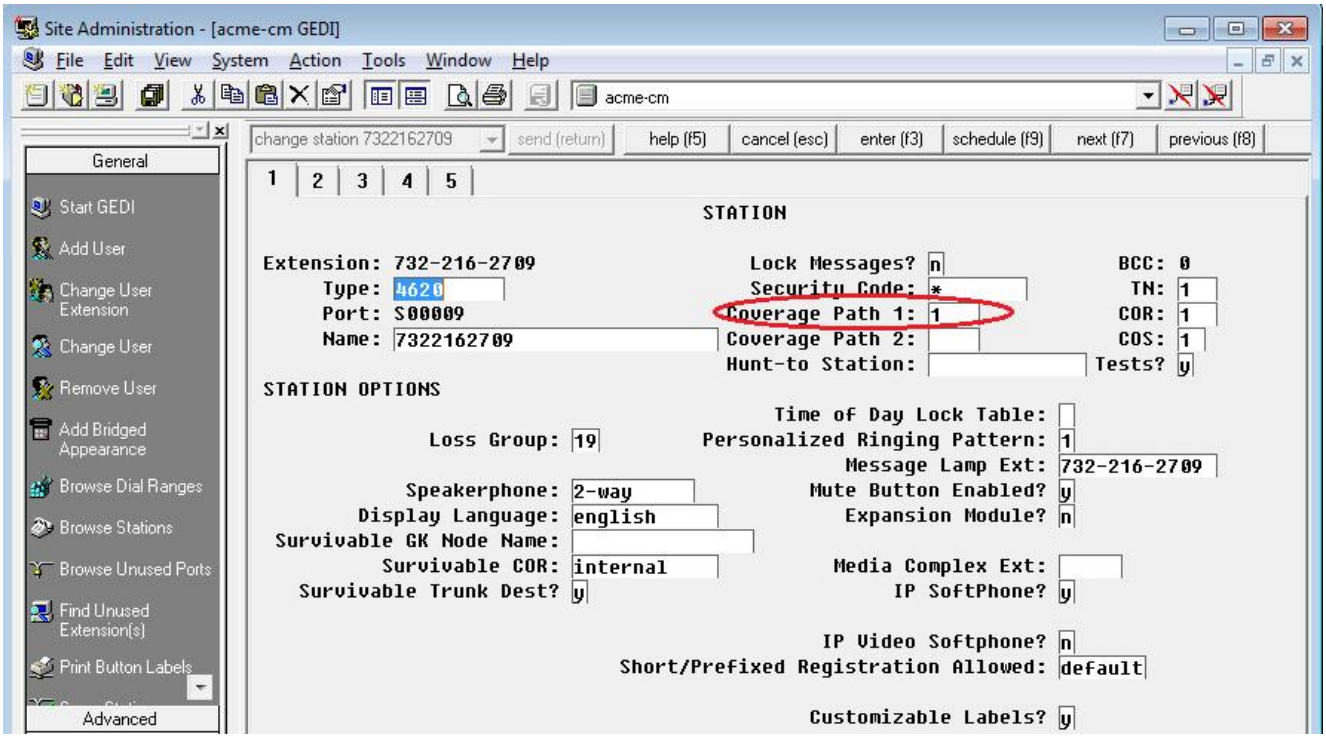
The ATT IPFR test required a PSTN caller to call into the enterprise and deposit voicemail and then place a second call to retrieve the voice message (TC 20151 and TC 20152). One of the Avaya Aura session manager system components – Avaya Messaging server was not available during the testing, therefore the team decided to use an Asterisk server (FreePBX) as an alternative. A trunk and coverage path established for a particular DID in Avaya to bounce call to voicemail if not answered within a few rings. The following steps need to be accomplished to have voicemail working:

- Install and create trunk in asterisk (out of scope of this document)
- Create coverage path with hunt group and assign to station (DID)
- Map hunt group to Asterisk trunk in Avaya CM
- Ensure AAR routing is mapped to asterisk trunk

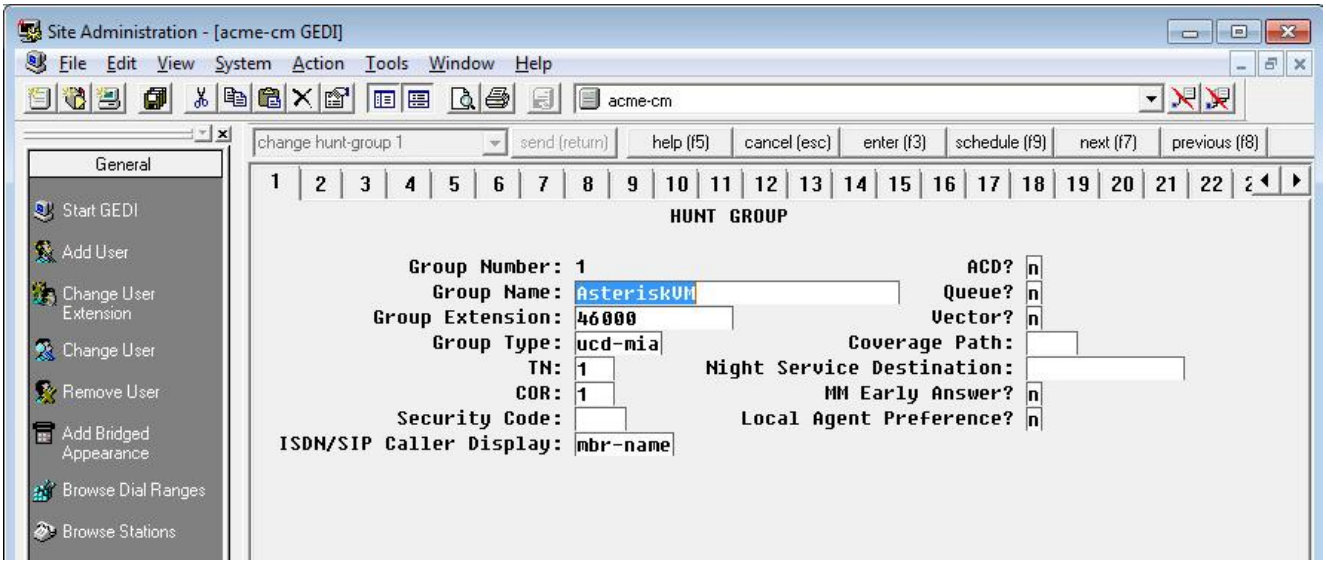
Create Coverage path and assign to station

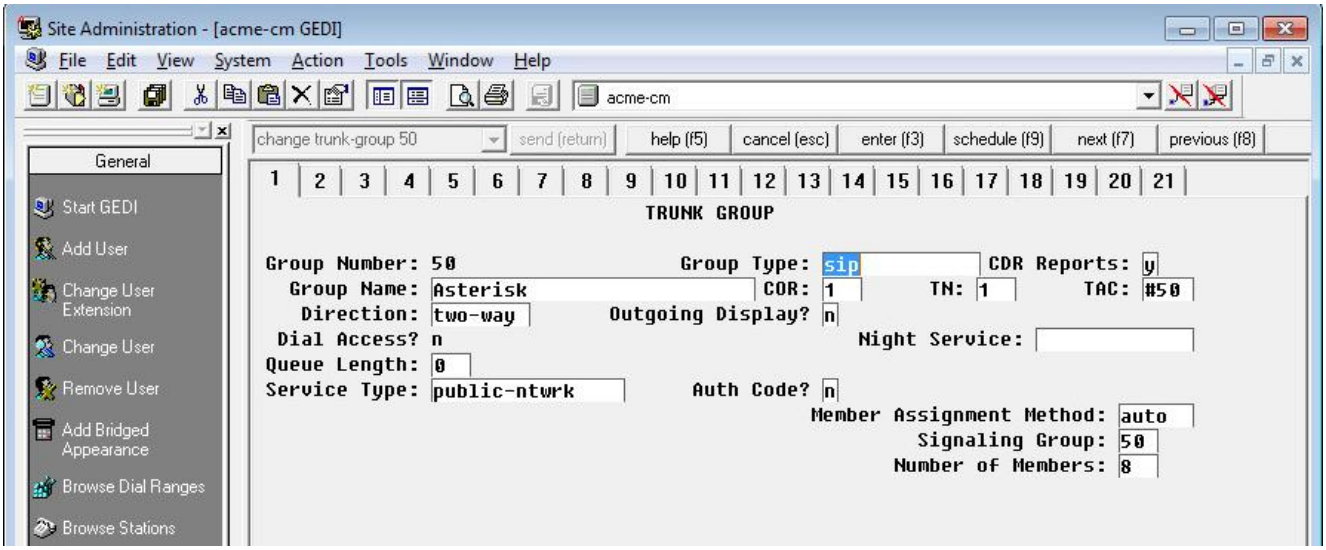


Assign it to station

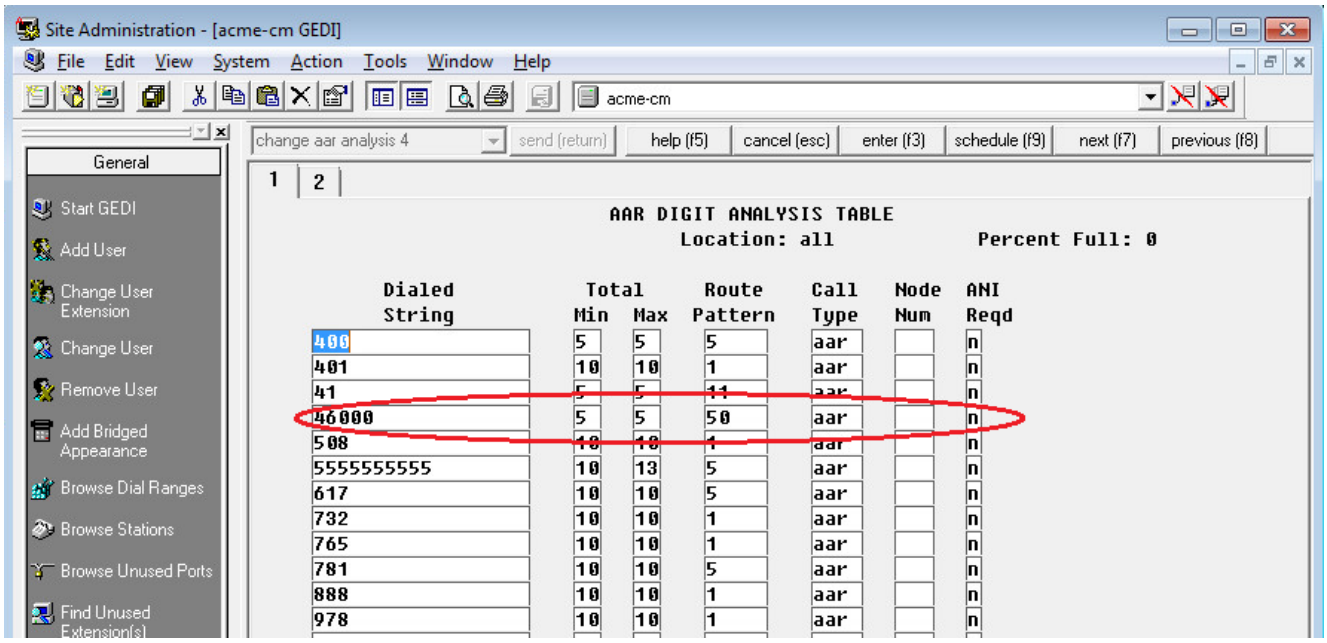


Map hunt group to Asterisk





Alternate Abbreviated Routing – AAR (internal routing) to map to trunk



Test Summary

A comprehensive test plan was executed per ATT test specifications and call flows. For a copy of full test report, please contact your Oracle Sales account team.

Troubleshooting Tools

If you find that you are not able to complete calls or run into issues when going through the test plan, there are a few tools and methodologies available in Avaya SM and CM, Oracle SBC logging and tracing which may be of assistance. In this section we will provide a list of tools which you can use to aid in troubleshooting any issues you may encounter.

A good area to start troubleshooting when calls are not working or having issues is to look at signaling traces for SIP messages during call establishment through traces between Avaya Aura SM and SBC.

Avaya Aura Session Manager and Communication Manager

The Avaya Aura session manager can be accessed via a SSH session. One can run a command traceSM to start tracing messages between Avaya SM and CM.

Configuration checklist when outbound calls are failing:

- Check for Dial plan/route issues
- Check for codec mismatch or signaling complete as ATT IPFR requires G.729 as first choice codec on the offer
- Check Gateway and trunk configuration for TCP connections
- SIP OPTIONS message connectivity between SBC and Avaya Aura environment

The Avaya Communication manager site administration tool console gives ability to list and view the configuration, trunk, signaling groups, stations assigned, etc. The documentation available at the following link will help in navigating through different menus and commands:

https://downloads.avaya.com/elmodocs2/comm_mgr/r2_0/245801_1_1/233506_7/233506_7.pdf

Wireshark

Wireshark is also a network protocol analyzer which is freely downloadable from www.wireshark.org. Wireshark could be installed on the server hosting Avaya softphone/one-x communicator and have the SBC send packet trace to this remote location.

Oracle E-SBC 6300

The Oracle SBC provides a rich set of statistical counters available from the ACLI, as well as log file output with configurable detail. The follow sections detail enabling, adjusting and accessing those interfaces.

Resetting the statistical counters, enabling logging and restarting the log files.

At the SBC Console:

```
Avaya-SBC-ATT# reset sipd
Avaya-SBC-ATT# notify sipd debug
Avaya-SBC-ATT#
enabled SIP Debugging
Avaya-SBC-ATT# notify all rotate-logs
```

Examining the log files

Note: You will FTP to the management interface of the SBC with the username user and user mode password (the default is "**acme**").

```
C:\Documents and Settings\user>ftp 192.168.5.24
Connected to 192.168.85.55.
220 Avaya-SBC-ATTFTP server (VxWorks 6.4) ready.
User (192.168.85.55:(none)): user
331 Password required for user.
Password: acme
230 User user logged in.
ftp> cd /ramdrv/logs
250 CWD command successful.
ftp> get sipmsg.log
200 PORT command successful.
150 Opening ASCII mode data connection for '/ramdrv/logs/sipmsg.log' (3353
bytes).
226 Transfer complete.
ftp: 3447 bytes received in 0.00Seconds 3447000.00Kbytes/sec.
ftp> get log.sipd
200 PORT command successful.
150 Opening ASCII mode data connection for '/ramdrv/logs/log.sipd' (204681
bytes).
226 Transfer complete.
ftp: 206823 bytes received in 0.11Seconds 1897.46Kbytes/sec.
ftp> bye
221 Goodbye.
```

You may now examine the log files with the text editor of your choice.

Through the Web GUI

You can also check the display results of filtered SIP session data from the Oracle Enterprise Session Border Controller, and provides traces in a common log format for local viewing or for exporting to your PC. Please check the "Monitor and Trace" section (page 145) of the Web GUI User Guide available at http://docs.oracle.com/cd/E56581_01/index.htm

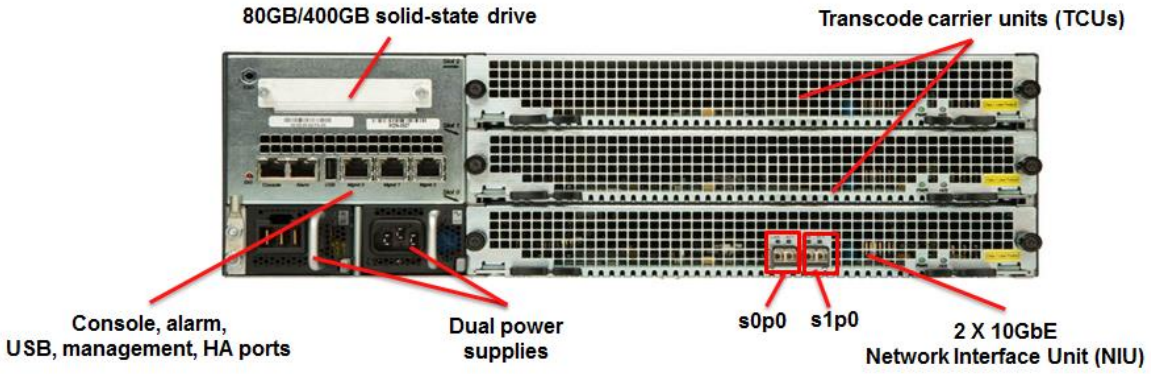
Appendix A

Accessing the ACLI

Access to the ACLI is provided by:

- The serial console connection;
- TELNET, which is enabled by default but may be disabled; and
- SSH, this must be explicitly configured.

Initial connectivity will be through the serial console port. At a minimum, this is how to configure the management (eth0) interface on the SBC.

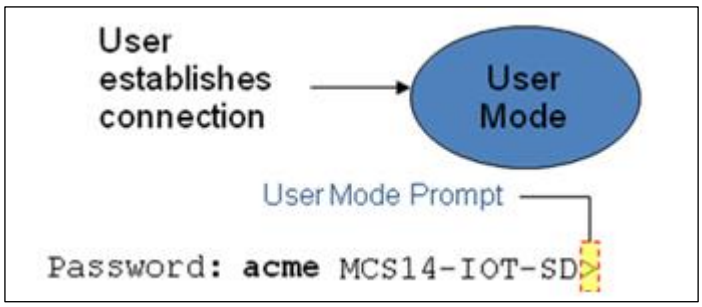


ACLI Basics

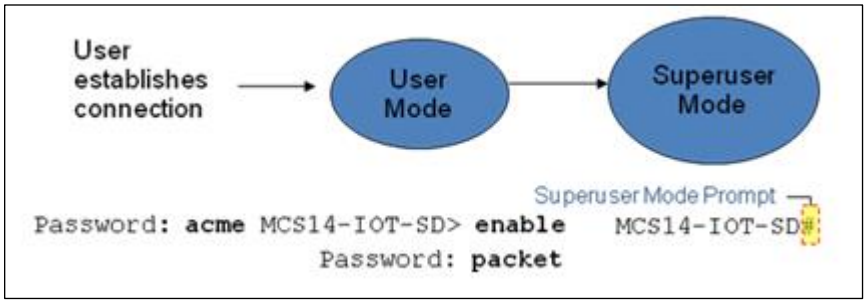
There are two password protected modes of operation within the ACLI, User mode and Superuser mode.

When you establish a connection to the SBC, the prompt for the User mode password appears. The default password is acme.

User mode consists of a restricted set of basic monitoring commands and is identified by the greater than sign (>) in the system prompt after the target name. You cannot perform configuration and maintenance from this mode.



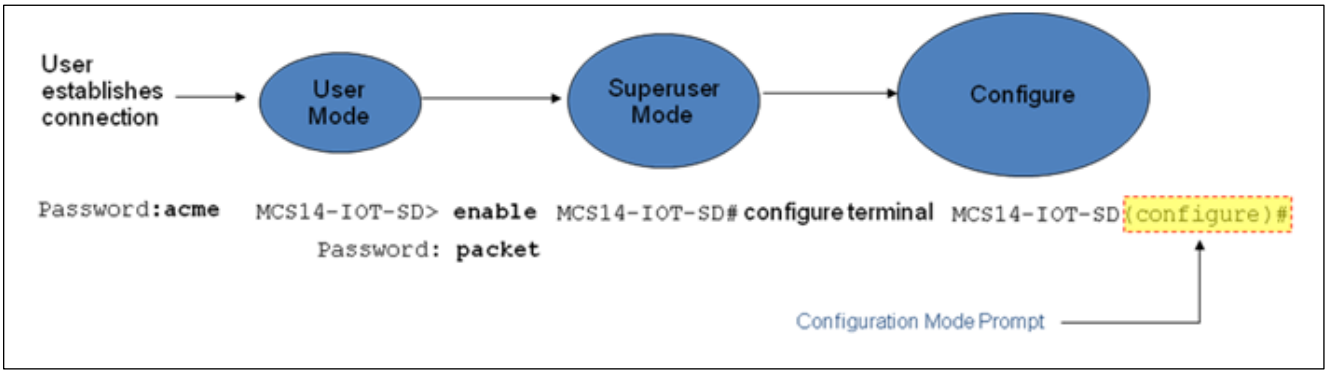
The Superuser mode allows for access to all system commands for operation, maintenance, and administration. This mode is identified by the pound sign (#) in the prompt after the target name. To enter the Superuser mode, issue the enable command in the User mode.



From the Superuser mode, you can perform monitoring and administrative tasks; however you cannot configure any elements. To return to User mode, issue the exit command.

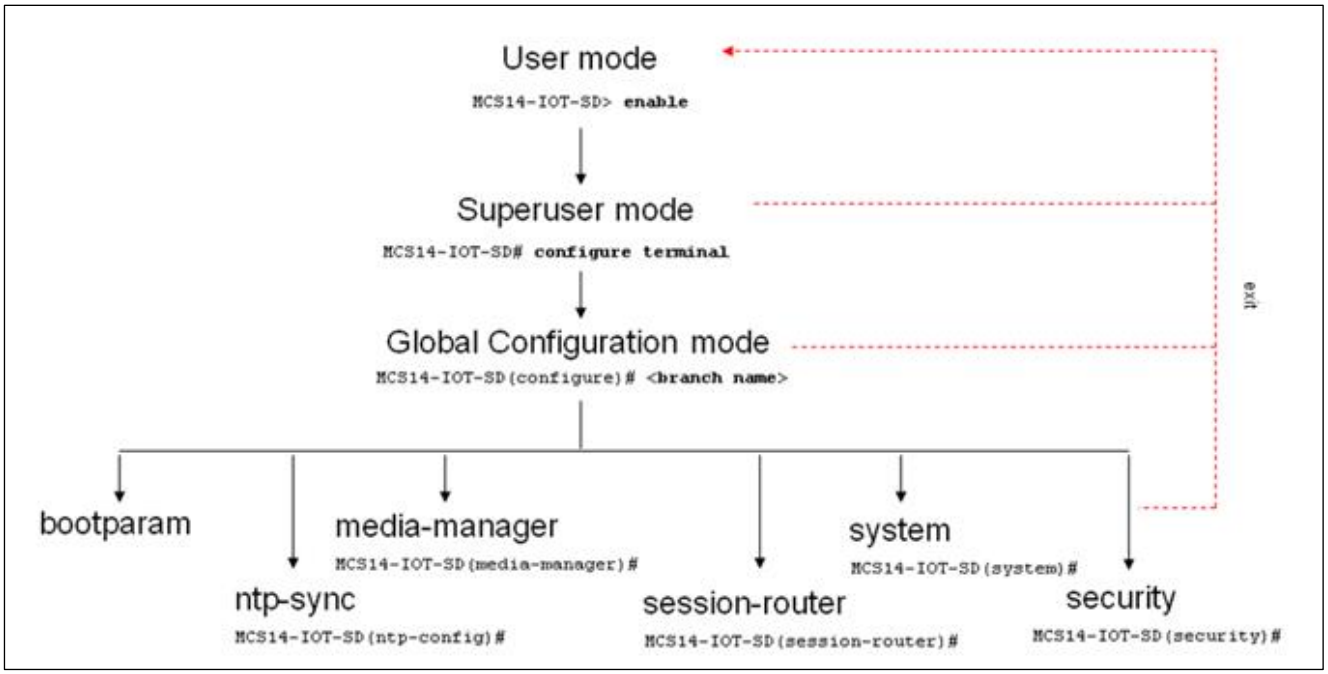
You must enter the Configuration mode to configure elements. For example, you can access the configuration branches and configuration elements for signaling and media configurations. To enter the Configuration mode, issue the **`configure terminal`** command in the Superuser mode.

Configuration mode is identified by the word configure in parenthesis followed by the pound sign (#) in the prompt after the target name, for example, **Avaya-SBC-ATT(configure)#**. To return to the Superuser mode, issue the **`exit`** command.



In the configuration mode, there are six configuration branches:

- bootparam;
- ntp-sync;
- media-manager;
- session-router;
- system; and
- security.



The ntp-sync and bootparams branches are flat branches (i.e., they do not have elements inside the branches). The rest of the branches have several elements under each of the branches.

The bootparam branch provides access to SBC boot parameters. Key boot parameters include:

- boot device – The global management port, usually eth0
- file name – The boot path and the image file.
- inet on ethernet – The IP address and subnet mask (in hex) of the management port of the SD.

- host inet –The IP address of external server where image file resides.
- user and ftp password – Used to boot from the external FTP server.
- gateway inet – The gateway IP address for reaching the external server, if the server is located in a different network.

```
Avaya-SBC-ATT#(configure)bootparam
'.' = clear field;  '-' = go to previous field;  q = quit
boot device             : eth0
processor number        : 0
host name               : acmesystem
file name               : /boot/ EZ720p6.64.bz --- >location where the
software is loaded on the SBC
inet on ethernet (e)    : 172.18.255.104:ffffff80 --- > This is the ip
address of the management interface of the SBC, type the IP address and
mask in hex
inet on backplane (b)   :
host inet (h)           :
gateway inet (g)        : 172.18.0.1 --- > gateway address here
user (u)                : vxftp
ftp password (pw) (blank = use rsh)     : vxftp
flags (f)               :
target name (tn)        : Avaya-SBC-ATT
startup script (s)      :
other (o)               :
```

The ntp-sync branch provides access to ntp server configuration commands for synchronizing the SBC time and date.

The security branch provides access to security configuration.

The system branch provides access to basic configuration elements as system-config, snmp-community, redundancy, physical interfaces, network interfaces, etc.

The session-router branch provides access to signaling and routing related elements, including H323-config, sip-config, iwf-config, local-policy, sip-manipulation, session-agent, etc.

The media-manager branch provides access to media-related elements, including realms, steering pools, dns-config, media-manager, and so forth.

You will use media-manager, session-router, and system branches for most of your working configuration.

Configuration Elements

The configuration branches contain the configuration elements. Each configurable object is referred to as an element. Each element consists of a number of configurable parameters.

Some elements are single-instance elements, meaning that there is only one of that type of the element - for example, the global system configuration and redundancy configuration.

Some elements are multiple-instance elements. There may be one or more of the elements of any given type. For example, physical and network interfaces.

Some elements (both single and multiple instance) have sub-elements. For example:

- SIP-ports - are children of the sip-interface element
- peers – are children of the redundancy element
- destinations – are children of the peer element

Creating an Element

1. To create a single-instance element, you go to the appropriate level in the ACLI path and enter its parameters. There is no need to specify a unique identifier property because a single-instance element is a global element and there is only one instance of this element.
2. When creating a multiple-instance element, you must specify a unique identifier for each instance of the element.
3. It is important to check the parameters of the element you are configuring before committing the changes. You do this by issuing the **`show`** command before issuing the **`done`** command. The parameters that you did not configure are filled with either default values or left empty.

4. On completion, you must issue the **done** command. The done command causes the configuration to be echoed to the screen and commits the changes to the volatile memory. It is a good idea to review this output to ensure that your configurations are correct.
5. Issue the **exit** command to exit the selected element.

Note that the configurations at this point are not permanently saved yet. If the SBC reboots, your configurations will be lost.

Editing an Element

The procedure of editing an element is similar to creating an element, except that you must select the element that you will edit before editing it.

1. Enter the element that you will edit at the correct level of the ACLI path.
2. Select the element that you will edit, and view it before editing it.
   The **select** command loads the element to the volatile memory for editing. The **show** command allows you to view the element to ensure that it is the right one that you want to edit.
3. Once you are sure that the element you selected is the right one for editing, edit the parameter one by one. The new value you provide will overwrite the old value.
4. It is important to check the properties of the element you are configuring before committing it to the volatile memory. You do this by issuing the **show** command before issuing the **done** command.
5. On completion, you must issue the **done** command.
6. Issue the **exit** command to exit the selected element.

Note that the configurations at this point are not permanently saved yet. If the SBC reboots, your configurations will be lost.

Deleting an Element

The **no** command deletes an element from the configuration in editing.

To delete a single-instance element,

1. Enter the **no** command from within the path for that specific element
2. Issue the **exit** command.

To delete a multiple-instance element,

1. Enter the **no** command from within the path for that particular element.
   The key field prompt, such as <name>:<sub-port-id>, appears.
2. Use the <Enter> key to display a list of the existing configured elements.
3. Enter the number corresponding to the element you wish to delete.

4. Issue the **`select`** command to view the list of elements to confirm that the element was removed.

Note that the configuration changes at this point are not permanently saved yet. If the SBC reboots, your configurations will be lost.

Configuration Versions

At any time, three versions of the configuration can exist on the SBC: the edited configuration, the saved configuration, and the running configuration.

- The **edited configuration** – this is the version that you are making changes to. This version of the configuration is stored in the SBC's volatile memory and will be lost on a reboot.
  To view the editing configuration, issue the **`show configuration`** command.
- The **saved configuration –** on issuing the **`save-config`** command, the edited configuration is copied into the non-volatile memory on the SBC and becomes the saved configuration. Because the saved configuration has not been activated yet, the changes in the configuration will not take effect. On reboot, the last activated configuration (i.e., the last running configuration) will be loaded, not the saved configuration.
- The **running configuration** is the saved then activated configuration. On issuing the **`activate-config`** command, the saved configuration is copied from the non-volatile memory to the volatile memory. The saved configuration is activated and becomes the running configuration. Although most of the configurations can take effect once being activated without reboot, some configurations require a reboot for the changes to take effect.
  To view the running configuration, issue command show **`running-config`**.

Saving the Configuration

The **`save-config`** command stores the edited configuration persistently.

Because the saved configuration has not been activated yet, changes in configuration will not take effect. On reboot, the last activated configuration (i.e., the last running configuration) will be loaded. At this stage, the saved configuration is different from the running configuration.

Because the saved configuration is stored in non-volatile memory, it can be accessed and activated at later time.

Upon issuing the **`save-config`** command, the SBC displays a reminder on screen stating that you must use the **`activate-config`** command if you want the configurations to be updated.

```
Avaya-SBC-ATT# save-config
Save-Config received, processing.
waiting 1200 for request to finish
Request to 'SAVE-CONFIG' has Finished,
Save complete
Currently active and saved configurations do not match!
```

```
To sync & activate, run 'activate-config' or 'reboot activate'.
Avaya-SBC-ATT#
```

Activating the Configuration

On issuing the **`activate-config`** command, the saved configuration is copied from the non-volatile memory to the volatile memory. The saved configuration is activated and becomes the running configuration.

Some configuration changes are service affecting when activated. For these configurations, the SBC warns that the change could have an impact on service with the configuration elements that will potentially be service affecting. You may decide whether or not to continue with applying these changes immediately or to apply them at a later time.

```
Avaya-SBC-ATT# activate-config
Activate-Config received, processing.
waiting 120000 for request to finish
Request to 'ACTIVATE-CONFIG' has Finished,
Activate Complete
Avaya-SBC-ATT#
```

Appendix B: E-SBC Configuration

```
Avaya-SBC-ATT# show running-config
capture-receiver
        state                                   enabled
        address                                 10.232.50.78
        network-interface                       M01:0
        last-modified-by                        admin@172.18.0.141
        last-modified-date                      2015-12-04 14:00:37
local-policy
        from-address                            *
        to-address                              *
        source-realm                            ATT-Trunk
        description
        activate-time
        deactivate-time
        state                                   enabled
        policy-priority                         none
        policy-attribute
                next-hop                                SAG:Avaya-SM-SAG
                realm                                   Core
                action                                  replace-uri
                terminate-recursion                     disabled
                carrier
                start-time                              0000
                end-time                                2400
                days-of-week                            U-S
                cost                                    0
                state                                   enabled
                app-protocol                            SIP
                methods
                media-profiles
                lookup                                  single
                next-key
                eloc-str-lkup                           disabled
                eloc-str-match
        last-modified-by                        admin@172.18.0.115
        last-modified-date                      2015-10-14 10:51:33
local-policy
        from-address                            *
```

```
        to-address                              *
        source-realm                            Core
        description
        activate-time
        deactivate-time
        state                                   enabled
        policy-priority                         none
        policy-attribute
                next-hop                                14.1.1.10
                realm                                   ATT-Trunk
                action                                  replace-uri
                terminate-recursion                     disabled
                carrier
                start-time                              0000
                end-time                                2400
                days-of-week                            U-S
                cost                                    0
                state                                   enabled
                app-protocol                            SIP
                methods
                media-profiles
                lookup                                  single
                next-key
                eloc-str-lkup                           disabled
                eloc-str-match
        last-modified-by                        admin@172.18.0.115
        last-modified-date                      2015-10-14 11:17:21
media-manager
        state                                   enabled
        latching                                enabled
        flow-time-limit                         86400
        initial-guard-timer                     300
        subsq-guard-timer                       300
        tcp-flow-time-limit                     86400
        tcp-initial-guard-timer                 300
        tcp-subsq-guard-timer                   300
        tcp-number-of-ports-per-flow            2
        hnt-rtcp                                disabled
        algd-log-level                          NOTICE
        mbcd-log-level                          NOTICE
        options
```

```
        red-flow-port                           1985
        red-mgcp-port                           1986
        red-max-trans                           10000
        red-sync-start-time                     5000
        red-sync-comp-time                      1000
        media-policing                          enabled
        max-signaling-bandwidth                 10000000
        max-untrusted-signaling                 100
        min-untrusted-signaling                 30
        tolerance-window                        30
        trap-on-demote-to-deny                  disabled
        trap-on-demote-to-untrusted             disabled
        syslog-on-demote-to-deny                disabled
        syslog-on-demote-to-untrusted           disabled
        rtcp-rate-limit                         0
        anonymous-sdp                           disabled
        arp-msg-bandwidth                       32000
        rfc2833-timestamp                       disabled
        default-2833-duration                   100
        rfc2833-end-pkts-only-for-non-sig       enabled
        translate-non-rfc2833-event             disabled
        media-supervision-traps                 disabled
        dnsalg-server-failover                  disabled
        syslog-on-call-reject                   disabled
        last-modified-by                        admin@172.18.0.198
        last-modified-date                      2015-03-25 16:48:52
network-interface
        name                                    M00
        sub-port-id                             0
        description
        hostname
        ip-address                              167.167.167.181
        pri-utility-addr                        167.167.167.182
        sec-utility-addr                        167.167.167.183
        netmask                                 255.255.255.0
        gateway                                 167.167.167.1
        sec-gateway
        gw-heartbeat
                state                                   disabled
                heartbeat                               0
                retry-count                             0
```

```
                retry-timeout                           1
                health-score                            0
        dns-ip-primary
        dns-ip-backup1
        dns-ip-backup2
        dns-domain
        dns-timeout                             11
        signaling-mtu                           0
        hip-ip-list                             167.167.167.181
                                                167.167.167.182
                                                167.167.167.183
        ftp-address
        icmp-address                            167.167.167.181
                                                167.167.167.182
                                                167.167.167.183
        snmp-address
        telnet-address
        ssh-address
        last-modified-by                        admin@172.18.0.136
        last-modified-date                      2015-11-10 15:39:35
network-interface
        name                                    M01
        sub-port-id                             0
        description
        hostname
        ip-address                              10.232.50.130
        pri-utility-addr                        10.232.50.131
        sec-utility-addr                        10.232.50.132
        netmask                                 255.255.255.0
        gateway                                 10.232.50.1
        sec-gateway
        gw-heartbeat
                state                                   disabled
                heartbeat                               0
                retry-count                             0
                retry-timeout                           1
                health-score                            0
        dns-ip-primary
        dns-ip-backup1
        dns-ip-backup2
        dns-domain
```

```
        dns-timeout                             11
        signaling-mtu                           0
        hip-ip-list                             10.232.50.130
        ftp-address                             10.232.50.130
        icmp-address                            10.232.50.130
        snmp-address
        telnet-address
        ssh-address                             10.232.50.130
        last-modified-by                        admin@172.18.0.152
        last-modified-date                      2015-12-18 16:40:45
network-interface
        name                                    wancom1
        sub-port-id                             0
        description
        hostname
        ip-address
        pri-utility-addr                        169.254.1.1
        sec-utility-addr                        169.254.1.2
        netmask                                 255.255.255.252
        gateway
        sec-gateway
        gw-heartbeat
                state                                   disabled
                heartbeat                               0
                retry-count                             0
                retry-timeout                           1
                health-score                            0
        dns-ip-primary
        dns-ip-backup1
        dns-ip-backup2
        dns-domain
        dns-timeout                             11
        signaling-mtu                           0
        hip-ip-list
        ftp-address
        icmp-address
        snmp-address
        telnet-address
        ssh-address
        last-modified-by                        admin@172.18.0.115
        last-modified-date                      2015-10-23 14:52:02
```

```
network-interface
        name                                    wancom2
        sub-port-id                             0
        description
        hostname
        ip-address
        pri-utility-addr                        169.254.2.1
        sec-utility-addr                        169.254.2.2
        netmask                                 255.255.255.252
        gateway
        sec-gateway
        gw-heartbeat
                state                                   disabled
                heartbeat                               0
                retry-count                             0
                retry-timeout                           1
                health-score                            0
        dns-ip-primary
        dns-ip-backup1
        dns-ip-backup2
        dns-domain
        dns-timeout                             11
        signaling-mtu                           0
        hip-ip-list
        ftp-address
        icmp-address
        snmp-address
        telnet-address
        ssh-address
        last-modified-by                        admin@172.18.0.115
        last-modified-date                      2015-10-23 14:52:44
phy-interface
        name                                    M00
        operation-type                          Media
        port                                    0
        slot                                    0
        virtual-mac                             00:08:25:a3:36:ee
        admin-state                             enabled
        auto-negotiation                        enabled
        duplex-mode
        speed                                   100
```

```
        wancom-health-score                     50
        overload-protection                     disabled
        last-modified-by                        admin@172.18.0.115
        last-modified-date                      2015-10-23 14:50:01
phy-interface
        name                                    M01
        operation-type                          Media
        port                                    1
        slot                                    0
        virtual-mac                             00:08:25:a3:36:ef
        admin-state                             enabled
        auto-negotiation                        enabled
        duplex-mode
        speed
        wancom-health-score                     50
        overload-protection                     disabled
        last-modified-by                        admin@172.18.0.115
        last-modified-date                      2015-10-23 14:50:20
phy-interface
        name                                    wancom1
        operation-type                          Control
        port                                    1
        slot                                    0
        virtual-mac
        admin-state                             enabled
        auto-negotiation                        enabled
        duplex-mode
        speed
        wancom-health-score                     8
        overload-protection                     disabled
        last-modified-by                        admin@172.18.0.115
        last-modified-date                      2015-10-23 14:50:57
phy-interface
        name                                    wancom2
        operation-type                          Control
        port                                    2
        slot                                    0
        virtual-mac
        admin-state                             enabled
        auto-negotiation                        enabled
        duplex-mode
```

```
        speed
        wancom-health-score                   9
        overload-protection                   disabled
        last-modified-by                      admin@172.18.0.115
        last-modified-date                    2015-10-23 14:51:12
realm-config
        identifier                            ATT-Trunk
        description
        addr-prefix                           0.0.0.0
        network-interfaces                    M00:0
        mm-in-realm                           enabled
        mm-in-network                         enabled
        mm-same-ip                            enabled
        mm-in-system                          enabled
        bw-cac-non-mm                         disabled
        msm-release                           disabled
        qos-enable                            disabled
        max-bandwidth                         0
        fallback-bandwidth                    0
        max-priority-bandwidth                0
        max-latency                           0
        max-jitter                            0
        max-packet-loss                       0
        observ-window-size                    0
        parent-realm
        dns-realm
        media-policy
        media-sec-policy
        srtp-msm-passthrough                  disabled
        class-profile
        in-translationid
        out-translationid
        in-manipulationid
        out-manipulationid
        average-rate-limit                    0
        access-control-trust-level            none
        invalid-signal-threshold              0
        maximum-signal-threshold              0
        untrusted-signal-threshold            0
        nat-trust-threshold                   0
        max-endpoints-per-nat                 0
```

```
        nat-invalid-message-threshold           0
        wait-time-for-invalid-register          0
        deny-period                             30
        cac-failure-threshold                   0
        untrust-cac-failure-threshold           0
        ext-policy-svr
        diam-e2-address-realm
        subscription-id-type                    END_USER_NONE
        symmetric-latching                      disabled
        pai-strip                               disabled
        trunk-context
        device-id
        early-media-allow
        enforcement-profile
        additional-prefixes
        restricted-latching                     none
        restriction-mask                        32
        user-cac-mode                           none
        user-cac-bandwidth                      0
        user-cac-sessions                       0
        icmp-detect-multiplier                  0
        icmp-advertisement-interval             0
        icmp-target-ip
        monthly-minutes                         0
        options
        spl-options
        accounting-enable                       enabled
        net-management-control                  enabled
        delay-media-update                      disabled
        refer-call-transfer                     disabled
        refer-notify-provisional                none
        dyn-refer-term                          disabled
        codec-policy
        codec-manip-in-realm                    disabled
        codec-manip-in-network                  enabled
        rtcp-policy
        constraint-name
        call-recording-server-id
        session-recording-server
        session-recording-required              disabled
        manipulation-string
```

```
        manipulation-pattern
        stun-enable                           disabled
        stun-server-ip                        0.0.0.0
        stun-server-port                      3478
        stun-changed-ip                       0.0.0.0
        stun-changed-port                     3479
        sip-profile
        sip-isup-profile
        match-media-profiles
        qos-constraint
        block-rtcp                            disabled
        hide-egress-media-update              disabled
        tcp-media-profile
        monitoring-filters
        node-functionality
        default-location-string
        alt-family-realm
        pref-addr-type                        none
        last-modified-by                      admin@172.18.0.177
        last-modified-date                    2015-09-03 13:56:27
realm-config
        identifier                            Core
        description
        addr-prefix                           0.0.0.0
        network-interfaces                    M01:0
        mm-in-realm                           enabled
        mm-in-network                         enabled
        mm-same-ip                            enabled
        mm-in-system                          enabled
        bw-cac-non-mm                         disabled
        msm-release                           disabled
        qos-enable                            disabled
        max-bandwidth                         0
        fallback-bandwidth                    0
        max-priority-bandwidth                0
        max-latency                           0
        max-jitter                            0
        max-packet-loss                       0
        observ-window-size                    0
        parent-realm
        dns-realm
```

```
        media-policy
        media-sec-policy
        srtp-msm-passthrough                    disabled
        class-profile
        in-translationid
        out-translationid
        in-manipulationid
        out-manipulationid
        average-rate-limit                      0
        access-control-trust-level              none
        invalid-signal-threshold                0
        maximum-signal-threshold                0
        untrusted-signal-threshold              0
        nat-trust-threshold                     0
        max-endpoints-per-nat                   0
        nat-invalid-message-threshold           0
        wait-time-for-invalid-register          0
        deny-period                             30
        cac-failure-threshold                   0
        untrust-cac-failure-threshold           0
        ext-policy-svr
        diam-e2-address-realm
        subscription-id-type                    END_USER_NONE
        symmetric-latching                      disabled
        pai-strip                               disabled
        trunk-context
        device-id
        early-media-allow
        enforcement-profile
        additional-prefixes
        restricted-latching                     none
        restriction-mask                        32
        user-cac-mode                           none
        user-cac-bandwidth                      0
        user-cac-sessions                       0
        icmp-detect-multiplier                  0
        icmp-advertisement-interval             0
        icmp-target-ip
        monthly-minutes                         0
        options
        spl-options
```

```
        accounting-enable                       enabled
        net-management-control                  disabled
        delay-media-update                      disabled
        refer-call-transfer                     disabled
        refer-notify-provisional                none
        dyn-refer-term                          disabled
        codec-policy
        codec-manip-in-realm                    disabled
        codec-manip-in-network                  enabled
        rtcp-policy
        constraint-name
        call-recording-server-id
        session-recording-server
        session-recording-required              disabled
        manipulation-string
        manipulation-pattern
        stun-enable                             disabled
        stun-server-ip                          0.0.0.0
        stun-server-port                        3478
        stun-changed-ip                         0.0.0.0
        stun-changed-port                       3479
        sip-profile
        sip-isup-profile
        match-media-profiles
        qos-constraint
        block-rtcp                              disabled
        hide-egress-media-update                disabled
        tcp-media-profile
        monitoring-filters
        node-functionality
        default-location-string
        alt-family-realm
        pref-addr-type                          none
        last-modified-by                        admin@172.18.0.182
        last-modified-date                      2015-10-16 14:07:15
redundancy-config
        state                                   enabled
        log-level                               INFO
        health-threshold                        75
        emergency-threshold                     50
        port                                    9090
```

```
        advertisement-time                      500
        percent-drift                           210
        initial-time                            1250
        becoming-standby-time                   180000
        becoming-active-time                    100
        cfg-port                                1987
        cfg-max-trans                           10000
        cfg-sync-start-time                     5000
        cfg-sync-comp-time                      1000
        gateway-heartbeat-interval              0
        gateway-heartbeat-retry                 0
        gateway-heartbeat-timeout               1
        gateway-heartbeat-health                0
        media-if-peercheck-time                 0
        peer
                name                                    PE-6300-1
                state                                   enabled
                type                                    Primary
                destination
                        address
169.254.1.1:9090
                        network-interface                       wancom1:0
                destination
                        address
169.254.2.1:9090
                        network-interface                       wancom2:0
        peer
                name                                    PE-6300-2
                state                                   enabled
                type                                    Secondary
                destination
                        address
169.254.1.2:9090
                        network-interface                       wancom1:0
                destination
                        address
169.254.2.2:9090
                        network-interface                       wancom2:0
        last-modified-by                        admin@172.18.0.115
        last-modified-date                      2015-10-23 15:07:19
response-map
        name                                    change486to603
```

```
        entries
                recv-code                               486
                xmit-code                               603
                reason                                  Decline
                method
                register-response-expires
        last-modified-by                        admin@172.18.0.115
        last-modified-date                      2015-12-03 10:45:21
session-agent
        hostname                                10.232.50.102
        ip-address
        port                                    5060
        state                                   enabled
        app-protocol                            SIP
        app-type
        transport-method                        StaticTCP
        realm-id                                Core
        egress-realm-id
        description                             Avaya SM1
        carriers
        allow-next-hop-lp                       enabled
        constraints                             disabled
        max-sessions                            0
        max-inbound-sessions                    0
        max-outbound-sessions                   0
        max-burst-rate                          0
        max-inbound-burst-rate                  0
        max-outbound-burst-rate                 0
        max-sustain-rate                        0
        max-inbound-sustain-rate                0
        max-outbound-sustain-rate               0
        min-seizures                            5
        min-asr                                 0
        time-to-resume                          0
        ttr-no-response                         0
        in-service-period                       0
        burst-rate-window                       0
        sustain-rate-window                     0
        req-uri-carrier-mode                    None
        proxy-mode
        redirect-action
```

```
        loose-routing                           enabled
        send-media-session                      enabled
        response-map
        ping-method                             OPTIONS
        ping-interval                           60
        ping-send-mode                          keep-alive
        ping-all-addresses                      disabled
        ping-in-service-response-codes
        out-service-response-codes
        load-balance-dns-query                  hunt
        options
        spl-options
        media-profiles
        in-translationid
        out-translationid
        trust-me                                disabled
        request-uri-headers
        stop-recurse
        local-response-map
        ping-to-user-part
        ping-from-user-part
        in-manipulationid
        out-manipulationid
        manipulation-string
        manipulation-pattern
        p-asserted-id
        trunk-group
        max-register-sustain-rate               0
        early-media-allow
        invalidate-registrations                disabled
        rfc2833-mode                            none
        rfc2833-payload                         0
        codec-policy
        enforcement-profile
        refer-call-transfer                     disabled
        refer-notify-provisional                none
        reuse-connections                       NONE
        tcp-keepalive                           none
        tcp-reconn-interval                     0
        max-register-burst-rate                 0
        register-burst-window                   0
```

```
        sip-profile
        sip-isup-profile
        kpml-interworking                       inherit
        monitoring-filters
        session-recording-server
        session-recording-required              disabled
        last-modified-by                        admin@172.18.0.115
        last-modified-date                      2015-10-15 15:57:50
session-agent
        hostname                                10.232.50.103
        ip-address                              10.232.50.103
        port                                    5060
        state                                   enabled
        app-protocol                            SIP
        app-type
        transport-method                        StaticTCP
        realm-id                                Core
        egress-realm-id
        description
        carriers
        allow-next-hop-lp                       enabled
        constraints                             disabled
        max-sessions                            0
        max-inbound-sessions                    0
        max-outbound-sessions                   0
        max-burst-rate                          0
        max-inbound-burst-rate                  0
        max-outbound-burst-rate                 0
        max-sustain-rate                        0
        max-inbound-sustain-rate                0
        max-outbound-sustain-rate               0
        min-seizures                            5
        min-asr                                 0
        time-to-resume                          0
        ttr-no-response                         0
        in-service-period                       0
        burst-rate-window                       0
        sustain-rate-window                     0
        req-uri-carrier-mode                    None
        proxy-mode
        redirect-action
```

```
        loose-routing                           enabled
        send-media-session                      enabled
        response-map
        ping-method                             OPTIONS;hops=0
        ping-interval                           60
        ping-send-mode                          keep-alive
        ping-all-addresses                      disabled
        ping-in-service-response-codes
        out-service-response-codes
        load-balance-dns-query                  hunt
        options
        spl-options
        media-profiles
        in-translationid
        out-translationid
        trust-me                                disabled
        request-uri-headers
        stop-recurse
        local-response-map
        ping-to-user-part
        ping-from-user-part
        in-manipulationid
        out-manipulationid
        manipulation-string
        manipulation-pattern
        p-asserted-id
        trunk-group
        max-register-sustain-rate               0
        early-media-allow
        invalidate-registrations                disabled
        rfc2833-mode                            none
        rfc2833-payload                         0
        codec-policy
        enforcement-profile
        refer-call-transfer                     disabled
        refer-notify-provisional                none
        reuse-connections                       NONE
        tcp-keepalive                           none
        tcp-reconn-interval                     0
        max-register-burst-rate                 0
        register-burst-window                   0
```

```
        sip-profile
        sip-isup-profile
        kpml-interworking                       inherit
        monitoring-filters
        session-recording-server
        session-recording-required              disabled
        last-modified-by                        admin@172.18.0.177
        last-modified-date                      2015-09-03 13:47:19
session-agent
        hostname                                10.232.50.112
        ip-address
        port                                    5060
        state                                   enabled
        app-protocol                            SIP
        app-type
        transport-method                        StaticTCP
        realm-id                                Core
        egress-realm-id
        description                             Avaya SM 2
        carriers
        allow-next-hop-lp                       enabled
        constraints                             disabled
        max-sessions                            0
        max-inbound-sessions                    0
        max-outbound-sessions                   0
        max-burst-rate                          0
        max-inbound-burst-rate                  0
        max-outbound-burst-rate                 0
        max-sustain-rate                        0
        max-inbound-sustain-rate                0
        max-outbound-sustain-rate               0
        min-seizures                            5
        min-asr                                 0
        time-to-resume                          0
        ttr-no-response                         0
        in-service-period                       0
        burst-rate-window                       0
        sustain-rate-window                     0
        req-uri-carrier-mode                    None
        proxy-mode
        redirect-action
```

```
        loose-routing                           enabled
        send-media-session                      enabled
        response-map
        ping-method                             OPTIONS
        ping-interval                           60
        ping-send-mode                          keep-alive
        ping-all-addresses                      disabled
        ping-in-service-response-codes
        out-service-response-codes
        load-balance-dns-query                  hunt
        options
        spl-options
        media-profiles
        in-translationid
        out-translationid
        trust-me                                disabled
        request-uri-headers
        stop-recurse
        local-response-map
        ping-to-user-part
        ping-from-user-part
        in-manipulationid
        out-manipulationid
        manipulation-string
        manipulation-pattern
        p-asserted-id
        trunk-group
        max-register-sustain-rate               0
        early-media-allow
        invalidate-registrations                disabled
        rfc2833-mode                            none
        rfc2833-payload                         0
        codec-policy
        enforcement-profile
        refer-call-transfer                     disabled
        refer-notify-provisional                none
        reuse-connections                       NONE
        tcp-keepalive                           none
        tcp-reconn-interval                     0
        max-register-burst-rate                 0
        register-burst-window                   0
```

```
        sip-profile
        sip-isup-profile
        kpml-interworking                       inherit
        monitoring-filters
        session-recording-server
        session-recording-required              disabled
        last-modified-by                        admin@172.18.0.115
        last-modified-date                      2015-10-15 15:58:02
session-agent
        hostname                                14.1.1.10
        ip-address                              14.1.1.10
        port                                    5060
        state                                   enabled
        app-protocol                            SIP
        app-type
        transport-method                        UDP
        realm-id                                ATT-Trunk
        egress-realm-id
        description                             ATT
        carriers
        allow-next-hop-lp                       enabled
        constraints                             disabled
        max-sessions                            0
        max-inbound-sessions                    0
        max-outbound-sessions                   0
        max-burst-rate                          0
        max-inbound-burst-rate                  0
        max-outbound-burst-rate                 0
        max-sustain-rate                        0
        max-inbound-sustain-rate                0
        max-outbound-sustain-rate               0
        min-seizures                            5
        min-asr                                 0
        time-to-resume                          0
        ttr-no-response                         0
        in-service-period                       0
        burst-rate-window                       0
        sustain-rate-window                     0
        req-uri-carrier-mode                    None
        proxy-mode
        redirect-action
```

```
        loose-routing                           enabled
        send-media-session                      enabled
        response-map
        ping-method                             OPTIONS
        ping-interval                           30
        ping-send-mode                          keep-alive
        ping-all-addresses                      disabled
        ping-in-service-response-codes
        out-service-response-codes
        load-balance-dns-query                  hunt
        options
        spl-options
        media-profiles
        in-translationid
        out-translationid
        trust-me                                disabled
        request-uri-headers
        stop-recurse
        local-response-map
        ping-to-user-part
        ping-from-user-part
        in-manipulationid
        out-manipulationid
        manipulation-string
        manipulation-pattern
        p-asserted-id
        trunk-group
        max-register-sustain-rate               0
        early-media-allow
        invalidate-registrations                disabled
        rfc2833-mode                            none
        rfc2833-payload                         0
        codec-policy
        enforcement-profile
        refer-call-transfer                     disabled
        refer-notify-provisional                none
        reuse-connections                       NONE
        tcp-keepalive                           none
        tcp-reconn-interval                     0
        max-register-burst-rate                 0
        register-burst-window                   0
```

```
        sip-profile
        sip-isup-profile
        kpml-interworking                       inherit
        monitoring-filters
        session-recording-server
        session-recording-required              disabled
        last-modified-by                        admin@172.18.0.177
        last-modified-date                      2015-09-03 13:57:13
session-group
        group-name                              Avaya-SM-SAG
        description                             Avaya SMs
        state                                   enabled
        app-protocol                            SIP
        strategy                                Hunt
        dest                                    10.232.50.102
                                                10.232.50.112
        trunk-group
        sag-recursion                           enabled
        stop-sag-recurse                        401,407
        last-modified-by                        admin@172.18.0.115
        last-modified-date                      2015-10-14 10:30:40
sip-config
        state                                   enabled
        operation-mode                          dialog
        dialog-transparency                     enabled
        home-realm-id                           Core
        egress-realm-id
        auto-realm-id
        nat-mode                                None
        registrar-domain                        *
        registrar-host                          *
        registrar-port                          5060
        register-service-route                  always
        init-timer                              5000
        max-timer                               4000
        trans-expire                            128
        initial-inv-trans-expire                0
        invite-expire                           180
        inactive-dynamic-conn                   32
        enforcement-profile
        pac-method
```

```
        pac-interval                            10
        pac-strategy                            PropDist
        pac-load-weight                         1
        pac-session-weight                      1
        pac-route-weight                        1
        pac-callid-lifetime                     600
        pac-user-lifetime                       3600
        red-sip-port                            1988
        red-max-trans                           10000
        red-sync-start-time                     5000
        red-sync-comp-time                      1000
        options                                 max-udp-length=0
        add-reason-header                       disabled
        sip-message-len                         4096
        enum-sag-match                          disabled
        extra-method-stats                      disabled
        extra-enum-stats                        disabled
        rph-feature                             disabled
        nsep-user-sessions-rate                 0
        nsep-sa-sessions-rate                   0
        registration-cache-limit                0
        register-use-to-for-lp                  disabled
        refer-src-routing                       disabled
        add-ucid-header                         disabled
        proxy-sub-events
        allow-pani-for-trusted-only             disabled
        atcf-stn-sr
        atcf-psi-dn
        atcf-route-to-sccas                     enabled
        eatf-stn-sr
        pass-gruu-contact                       disabled
        sag-lookup-on-redirect                  disabled
        set-disconnect-time-on-bye              disabled
        msrp-delayed-bye-timer                  15
        transcoding-realm
        transcoding-agents
        create-dynamic-sa                       disabled
        node-functionality                      P-CSCF
        last-modified-by                        admin@172.18.0.177
        last-modified-date                      2015-09-03 13:59:33
sip-interface
```

```
        state                                   enabled
        realm-id                                ATT-Trunk
        description
        sip-port
                address                                 167.167.167.181
                port                                    5060
                transport-protocol                      UDP
                tls-profile
                allow-anonymous                         agents-only
                multi-home-addrs
                ims-aka-profile
        carriers
        trans-expire                            0
        initial-inv-trans-expire                0
        invite-expire                           0
        max-redirect-contacts                   0
        proxy-mode
        redirect-action
        contact-mode                            none
        nat-traversal                           none
        nat-interval                            30
        tcp-nat-interval                        90
        registration-caching                    disabled
        min-reg-expire                          300
        registration-interval                   3600
        route-to-registrar                      disabled
        secured-network                         disabled
        teluri-scheme                           disabled
        uri-fqdn-domain
        options
        spl-options
        trust-mode                              all
        max-nat-interval                        3600
        nat-int-increment                       10
        nat-test-increment                      30
        sip-dynamic-hnt                         disabled
        stop-recurse                            401,407
        port-map-start                          0
        port-map-end                            0
        in-manipulationid
        out-manipulationid                      ChangeforPAIandNAT
```

```
        sip-ims-feature                         disabled
        sip-atcf-feature                        disabled
        subscribe-reg-event                     disabled
        operator-identifier
        anonymous-priority                      none
        max-incoming-conns                      0
        per-src-ip-max-incoming-conns           0
        inactive-conn-timeout                   0
        untrusted-conn-timeout                  0
        network-id
        ext-policy-server
        ldap-policy-server
        default-location-string
        term-tgrp-mode                          none
        charging-vector-mode                    pass
        charging-function-address-mode          pass
        ccf-address
        ecf-address
        implicit-service-route                  disabled
        rfc2833-payload                         101
        rfc2833-mode                            transparent
        constraint-name
        response-map
        local-response-map
        ims-aka-feature                         disabled
        enforcement-profile
        route-unauthorized-calls
        tcp-keepalive                           none
        add-sdp-invite                          disabled
        add-sdp-profiles
        manipulation-string
        manipulation-pattern
        sip-profile
        sip-isup-profile
        tcp-conn-dereg                          0
        tunnel-name
        register-keep-alive                     none
        kpml-interworking                       disabled
        msrp-delay-egress-bye                   disabled
        send-380-response
        pcscf-restoration
```

```
        session-timer-profile
        session-recording-server
        session-recording-required              disabled
        service-tag
        last-modified-by                        admin@172.18.0.141
        last-modified-date                      2015-12-04 14:44:00
sip-interface
        state                                   enabled
        realm-id                                Core
        description
        sip-port
                address                                 10.232.50.130
                port                                    5060
                transport-protocol                      TCP
                tls-profile
                allow-anonymous                         agents-only
                multi-home-addrs
                ims-aka-profile
        carriers
        trans-expire                            0
        initial-inv-trans-expire                0
        invite-expire                           0
        max-redirect-contacts                   0
        proxy-mode
        redirect-action
        contact-mode                            none
        nat-traversal                           none
        nat-interval                            30
        tcp-nat-interval                        90
        registration-caching                    disabled
        min-reg-expire                          300
        registration-interval                   3600
        route-to-registrar                      disabled
        secured-network                         disabled
        teluri-scheme                           disabled
        uri-fqdn-domain
        options
        spl-options
        trust-mode                              all
        max-nat-interval                        3600
        nat-int-increment                       10
```

```
        nat-test-increment                      30
        sip-dynamic-hnt                         disabled
        stop-recurse                            401,407
        port-map-start                          0
        port-map-end                            0
        in-manipulationid
        out-manipulationid                      ACME_NAT_TO_FROM_IP
        sip-ims-feature                         disabled
        sip-atcf-feature                        disabled
        subscribe-reg-event                     disabled
        operator-identifier
        anonymous-priority                      none
        max-incoming-conns                      0
        per-src-ip-max-incoming-conns           0
        inactive-conn-timeout                   0
        untrusted-conn-timeout                  0
        network-id
        ext-policy-server
        ldap-policy-server
        default-location-string
        term-tgrp-mode                          none
        charging-vector-mode                    pass
        charging-function-address-mode          pass
        ccf-address
        ecf-address
        implicit-service-route                  disabled
        rfc2833-payload                         101
        rfc2833-mode                            transparent
        constraint-name
        response-map
        local-response-map
        ims-aka-feature                         disabled
        enforcement-profile
        route-unauthorized-calls
        tcp-keepalive                           none
        add-sdp-invite                          disabled
        add-sdp-profiles
        manipulation-string
        manipulation-pattern
        sip-profile
        sip-isup-profile
```

```
        tcp-conn-dereg                          0
        tunnel-name
        register-keep-alive                     none
        kpml-interworking                       disabled
        msrp-delay-egress-bye                   disabled
        send-380-response
        pcscf-restoration
        session-timer-profile
        session-recording-server
        session-recording-required              disabled
        service-tag
        last-modified-by                        admin@172.18.0.115
        last-modified-date                      2015-10-14 10:52:56
sip-manipulation
        name                                    AddDiversion
        description
        split-headers
        join-headers
        header-rule
                name                                    checkfor800
                header-name                             To
                action                                  manipulate
                comparison-type                         case-sensitive
                msg-type                                request
                methods                                 INVITE
                match-value
                new-value
                element-rule
                        name
checcuriuser
                        parameter-name
                        type                                    uri-user
                        action                                  store
                        match-val-type                          any
                        comparison-type                         pattern-
rule
                        match-value
18772427372
                        new-value
        header-rule
                name                                    addDiv
                header-name                             Diversion
```

```
                action                                  add
                comparison-type                         boolean
                msg-type                                request
                methods                                 INVITE
                match-value
$checkfor800.$checuriuser
                new-value
<sip:7322162709@167.167.167.181>
        last-modified-by                        admin@172.18.0.115
        last-modified-date                      2015-12-09 13:48:38
sip-manipulation
        name                                    ChangePAI
        description
        split-headers
        join-headers
        header-rule
                name                                    Storecontacthost
                header-name                             Contact
                action                                  store
                comparison-type                         pattern-rule
                msg-type                                any
                methods                                 INVITE
                match-value
                new-value
                element-rule
                        name                                    storehost
                        parameter-name
                        type                                    uri-host
                        action                                  store
                        match-val-type                          any
                        comparison-type                         pattern-
rule
                        match-value
                        new-value
        header-rule
                name                                    ModPAI
                header-name                             P-Asserted-
Identity
                action                                  manipulate
                comparison-type                         boolean
                msg-type                                any
                methods                                 INVITE
```

```
                match-value
$Storecontacthost.$storehost.$0
                new-value
                element-rule
                        name                                    modhost
                        parameter-name
                        type                                    uri-host
                        action                                  replace
                        match-val-type                          any
                        comparison-type                         pattern-
rule
                        match-value
                        new-value
$Storecontacthost.$storehost.$0
        last-modified-by                        admin@172.18.0.182
        last-modified-date                      2015-10-16 13:08:23
sip-manipulation
        name                                    ChangeforPAIandNAT
        description
        split-headers
        join-headers
        header-rule
                name                                    changePAI
                header-name                             From
                action                                  sip-manip
                comparison-type                         case-sensitive
                msg-type                                any
                methods
                match-value
                new-value                               ChangePAI
        header-rule
                name                                    forprivacy
                header-name                             From
                action                                  sip-manip
                comparison-type                         case-sensitive
                msg-type                                any
                methods
                match-value
                new-value                               NATting
        header-rule
                name                                    fordelavayaheaders
                header-name                             From
```

```
                action                                  sip-manip
                comparison-type                         case-sensitive
                msg-type                                any
                methods
                match-value
                new-value                               RemoveAvayaheaders
        header-rule
                name                                    fordiv
                header-name                             From
                action                                  sip-manip
                comparison-type                         case-sensitive
                msg-type                                any
                methods
                match-value
                new-value                               AddDiversion
        header-rule
                name                                    ForREFER
                header-name                             From
                action                                  sip-manip
                comparison-type                         case-sensitive
                msg-type                                any
                methods
                match-value
                new-value                               changeRefer
        last-modified-by                        admin@172.18.0.189
        last-modified-date                      2016-01-28 12:08:37
sip-manipulation
        name                                    NATting
        description
        split-headers
        join-headers
        header-rule
                name                                    From
                header-name                             From
                action                                  manipulate
                comparison-type                         case-sensitive
                msg-type                                any
                methods
                match-value
                new-value
                element-rule
```

```
                        name
From_header
                        parameter-name
                        type                                    uri-host
                        action                                  replace
                        match-val-type                          any
                        comparison-type                         case-
sensitive
                        match-value
                        new-value                               $LOCAL_IP
        header-rule
                name                                    To
                header-name                             To
                action                                  manipulate
                comparison-type                         case-sensitive
                msg-type                                any
                methods
                match-value
                new-value
                element-rule
                        name                                    To
                        parameter-name
                        type                                    uri-host
                        action                                  replace
                        match-val-type                          any
                        comparison-type                         case-
sensitive
                        match-value
                        new-value                               $REMOTE_IP
        last-modified-by                        admin@172.18.0.182
        last-modified-date                      2015-10-16 14:41:55
sip-manipulation
        name                                    RemoveAvayaheaders
        description                             remove avaya specific non-
important headers towards ATT
        split-headers
        join-headers
        header-rule
                name                                    delPAVMessageID
                header-name                             P-AV-Message-Id
                action                                  delete
                comparison-type                         case-sensitive
```

```
                msg-type                                any
                methods                                 INVITE
                match-value
                new-value
        header-rule
                name
delAVGlobalsessionid
                header-name                             AV-Global-Session-
ID
                action                                  delete
                comparison-type                         case-sensitive
                msg-type                                any
                methods                                 INVITE
                match-value
                new-value
        header-rule
                name                                    delPlocation
                header-name                             P-Location
                action                                  delete
                comparison-type                         case-sensitive
                msg-type                                any
                methods                                 INVITE
                match-value
                new-value
        last-modified-by                        admin@172.18.0.177
        last-modified-date                      2015-11-18 16:25:58
sip-manipulation
        name                                    changeRefer
        description
        split-headers
        join-headers
        header-rule
                name                                    ModReferto
                header-name                             Refer-To
                action                                  manipulate
                comparison-type                         case-sensitive
                msg-type                                any
                methods                                 REFER
                match-value
                new-value
                element-rule
                        name
```

```
ChangeURIhost
                        parameter-name
                        type                                    uri-host
                        action                                  replace
                        match-val-type                          any
                        comparison-type                         case-
sensitive
                        match-value
                        new-value                               $LOCAL_IP
        header-rule
                name                                    ModReferredBY
                header-name                             Referred-By
                action                                  manipulate
                comparison-type                         case-sensitive
                msg-type                                any
                methods                                 REFER
                match-value
                new-value
                element-rule
                        name
ChangeURIhost
                        parameter-name
                        type                                    uri-host
                        action                                  replace
                        match-val-type                          any
                        comparison-type                         case-
sensitive
                        match-value
                        new-value                               $LOCAL_IP
        header-rule
                name                                    StoreTouser
                header-name                             To
                action                                  store
                comparison-type                         pattern-rule
                msg-type                                request
                methods                                 REFER
                match-value
                new-value
                element-rule
                        name
CheckReferTo
                        parameter-name
```

```
                        type                                    uri-user
                        action                                  store
                        match-val-type                          any
                        comparison-type                         pattern-
rule
                        match-value
                        new-value
        header-rule
                name                                    ModifyReferto
                header-name                             Refer-To
                action                                  manipulate
                comparison-type                         boolean
                msg-type                                request
                methods                                 REFER
                match-value
$StoreTouser.$CheckReferTo
                new-value
                element-rule
                        name
ChangeReferTo
                        parameter-name
                        type                                    uri-user
                        action                                  add
                        match-val-type                          any
                        comparison-type                         pattern-
rule
                        match-value
                        new-value
$StoreTouser.$CheckReferTo.$0
        header-rule
                name                                    ChangeReferRURI
                header-name                             Request-URI
                action                                  manipulate
                comparison-type                         boolean
                msg-type                                request
                methods                                 REFER
                match-value
$StoreTouser.$CheckReferTo
                new-value
                element-rule
                        name                                    ModRURI
                        parameter-name
```

```
                        type                                    uri-user
                        action                                  add
                        match-val-type                          any
                        comparison-type                         pattern-
rule
                        match-value
                        new-value
$StoreTouser.$CheckReferTo.$0
        last-modified-by                        admin@172.18.0.158
        last-modified-date                      2016-02-04 23:14:55
sip-manipulation
        name                                    changedisplayname
        description
        split-headers
        join-headers
        header-rule
                name                                    changedisplay
                header-name                             From
                action                                  manipulate
                comparison-type                         case-sensitive
                msg-type                                request
                methods                                 INVITE
                match-value
                new-value
                element-rule
                        name
ChngFromuser
                        parameter-name
                        type                                    uri-user
                        action                                  replace
                        match-val-type                          any
                        comparison-type                         case-
sensitive
                        match-value
                        new-value                               Anonymous
                element-rule
                        name
Changefromdisplay
                        parameter-name
                        type                                    uri-
display
                        action                                  replace
```

```
                        match-val-type                          any
                        comparison-type                         case-
sensitive
                        match-value
                        new-value
\"Anonymous\"
        header-rule
                name                                    Addprivacyheader
                header-name                             Privacy
                action                                  add
                comparison-type                         case-sensitive
                msg-type                                request
                methods                                 INVITE
                match-value
                new-value                               id
        last-modified-by                        admin@172.18.0.149
        last-modified-date                      2015-12-16 15:05:21
steering-pool
        ip-address                              10.232.50.130
        start-port                              20000
        end-port                                30000
        realm-id                                Core
        network-interface
        last-modified-by                        admin@172.18.0.182
        last-modified-date                      2015-10-16 15:10:40
steering-pool
        ip-address                              167.167.167.181
        start-port                              16384
        end-port                                32767
        realm-id                                ATT-Trunk
        network-interface
        last-modified-by                        admin@172.18.0.182
        last-modified-date                      2015-10-16 15:10:16
system-config
        hostname
        description
        location
        mib-system-contact
        mib-system-name
        mib-system-location
        snmp-enabled                            enabled
```

```
        enable-snmp-auth-traps                  disabled
        enable-snmp-syslog-notify               disabled
        enable-snmp-monitor-traps               disabled
        enable-env-monitor-traps                disabled
        snmp-syslog-his-table-length            1
        snmp-syslog-level                       WARNING
        system-log-level                        WARNING
        process-log-level                       DEBUG
        process-log-ip-address                  0.0.0.0
        process-log-port                        0
        collect
                sample-interval                         5
                push-interval                           15
                boot-state                              disabled
                start-time                              now
                end-time                                never
                red-collect-state                       disabled
                red-max-trans                           1000
                red-sync-start-time                     5000
                red-sync-comp-time                      1000
                push-success-trap-state                 disabled
        comm-monitor
                state                                   disabled
                sbc-grp-id                              0
                tls-profile
                qos-enable                              enabled
        call-trace                              disabled
        internal-trace                          disabled
        log-filter                              all
        default-gateway                         167.167.167.1
        restart                                 enabled
        exceptions
        telnet-timeout                          0
        console-timeout                         0
        remote-control                          enabled
        cli-audit-trail                         enabled
        link-redundancy-state                   disabled
        source-routing                          disabled
        cli-more                                disabled
        terminal-height                         24
        debug-timeout                           0
```

```
        trap-event-lifetime                     0
        ids-syslog-facility                     -1
        options
        default-v6-gateway                      ::
        ipv6-signaling-mtu                      1500
        ipv4-signaling-mtu                      1500
        cleanup-time-of-day                     00:00
        snmp-engine-id-suffix
        snmp-agent-mode                         v1v2
        last-modified-by                        admin@172.18.0.115
        last-modified-date                      2015-11-30 15:30:06
task done
Avaya-SBC-ATT#
```

Oracle Corporation, World Headquarters
500 Oracle Parkway
Redwood Shores, CA 94065, USA

Worldwide Inquiries
Phone: +1.650.506.7000
Fax: +1.650.506.7200

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