



Oracle Enterprise Session Border Controller and Avaya CM with Telus Enterprise SIP Trunking R2 for Dedicated and Registration Connection

**Technical Application Note** 

## Disclaimer

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## **Intended Audience**

This document is intended for use by Oracle Systems Engineers, third party Systems Integrators, and end users of the Oracle Enterprise Session Border Controller (E-SBC). It assumes that the reader is familiar with basic operations of the Oracle Enterprise Session Border Controller.

### **Document Overview**

Avaya CM offers the ability to connect to Internet telephony service providers (ITSP) using an IP-based SIP trunk. This reduces the cost and complexity of extending an enterprise's telephony system outside its network borders. Oracle Enterprise Session Border Controllers (E-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 SIP trunking between Avaya CM, Oracle E-SBCs and IP Trunking services are configured in the optimal manner.

### Introduction

### **Audience**

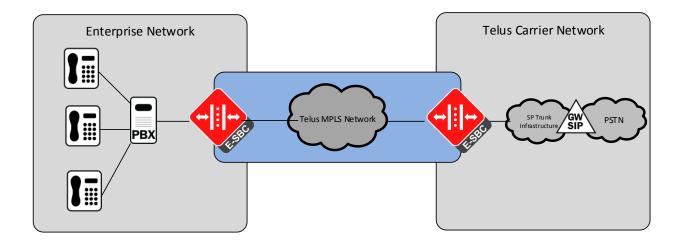
This is a technical document intended for telecommunications engineers with the purpose of configuring the Oracle Enterprise Session Border Controller and the Avaya CM. There will be steps that require navigating the Command Line Interface (ACLI). Understanding the basic concepts of TCP/UDP, IP/Routing, and SIP/RTP are also necessary to complete the configuration and for troubleshooting, if necessary.

## **Requirements**

- Avaya Call Manager 6.3.6.6.2013
- Avaya Session Manager 6.3.6.1.663005
- Oracle Enterprise Session Border Controller is running ECZ720p2.64.bz. (Build 166) Note: the configuration running on the E-SBC is backward/forward compatible with any release in the 7.2.0 stream.

#### **Architecture**

The following reference architecture shows a logical view of the connectivity between CM and the E-SBC.



# **Lab Configuration**

Following are the IP addresses used for the Interoperability tests. The IPs below are specific to lab setup at Telus, the IPs in production will be vastly different from one's listed below.

description	network- interface	realm	interface IP	sip-port
uescription	SBC inter		miteriace ii	3ip-port
	3DC IIICI	Taccs		
management	wancom0		192.168.1.22	
redundancy	wancom1		169.254.1.1	
redundancy	wancom2		169.254.2.1	
media/signalling	s0p0:0	core	172.16.153.34	5060
media/signalling	s1p0:0	peer	172.16.154.35	5060
Session-Agents		gents		
CM trunk	_	peer	172.16.149.38	5060
Telus trunk		core	10.27.56.7	5060

## **Configuring the Oracle Enterprise Session Border Controller**

In this section we describe the steps for configuring an Oracle Enterprise Session Border Controller, formally known as an Acme Packet Net-Net Enterprise Session Director, for use with CM Server in a SIP trunking scenario.

### In Scope

The following guide configuring the Oracle E-SBC assumes that this is a newly deployed device dedicated to a single customer. If a service provider currently has the E-SBC deployed then please see the ACLI Configuration

Guide on http://docs.oracle.com/cd/E56581\_01/index.htm for a better understanding of the Command Line Interface (CLI).

Note that Oracle offers several models of E-SBC. This document covers the setup for the E-SBC platform running ECZ7.2.0 or later. If instructions are needed for other Oracle E-SBC models, please contact your Oracle representative.

### **Out of Scope**

Configuration of Network management including SNMP and RADIUS

## What will you need

- Hypervisor with console connectivity through the hypervisor
- Terminal emulation application such as PuTTY or HyperTerm
- Passwords for the User and Super user modes on the Oracle E-SBC
- IP address to be assigned to management interface (Wancom0) of the E-SBC the Wancom0 management interface
  must be connected and configured to a management network separate from the service interfaces. Otherwise the E-SBC
  is subject to ARP overlap issues, loss of system access when the network is down, and compromising DDoS protection.
  Oracle does not support E-SBC configurations with management and media/service interfaces on the same subnet.
- IP address of CM external facing NIC
- IP addresses to be used for the E-SBC internal and external facing ports (Service Interfaces)
- IP address of the next hop gateway in the service provider network

## **Configuring the E-SBC**

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

```
Password: acme
TLAB-ACME-SBC1> enable
Password: packet
TLAB-ACME-SBC1# configure terminal
TLAB-ACME-SBC1 (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 E-SBC by going to

TLAB-ACME-SBC1#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

```
TLAB-ACME-SBC1#(configure)bootparam
'.' = clear field; '-' = go to previous field; q = quit
host name : acmesystem

file name : /code/images/nnECZ720p2.64.bz --- >location
inet on ethernet (e) : 192.168.1.22:fffffff80 --- > 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) : 192.16
user (u) : vxftp
                    : 192.168.1.1 -> gateway address here
ftp password (pw) (blank = use rsh)
vxftp flags (f)
                     : TLAB-ACME-SBC1 -> ACLI prompt name & HA peer name
target name (tn)
startup script (s)
other (o)
```

Configuring the E-SBC

The following section walks you through configuring the Oracle E-SBC. It is outside the scope of this document to include all of the configuration elements as it will differ in every deployment.

### **High Availability**

For additional information on High Availability please see the enterprise SBC documentation for more information (http://www.oracle.com/technetwork/indexes/documentation/oracle-comms-acme-packet-2046907.html)

Interfaces wancom1 and 2 need to be added to facilitate HA communication between the two HA pairs.

```
network-interface
                                                 wancom1
        sub-port-id
        description
                                                 HA HEARTBEAT1
       hostname
        ip-address
        pri-utility-addr
                                                 169.254.1.1
        sec-utility-addr
                                                 169.254.1.2
                                                 255.255.255.252
        netmask
        gateway
        sec-gateway
        gw-heartbeat
                                                         disabled
                state
                                                         0
               heartbeat
                                                          0
               retry-count
                retry-timeout
                                                          1
                health-score
        dns-ip-primary
        dns-ip-backup1
        dns-ip-backup2
        dns-domain
        dns-timeout
                                                 11
        hip-ip-list
        ftp-address
        icmp-address
        snmp-address
        telnet-address
        ssh-address
network-interface
       name
                                                 wancom2
        sub-port-id
        description
                                                 HA HEARTBEAT2
        hostname
        ip-address
        pri-utility-addr
                                                 169.254.2.1
                                                 169.254.2.2
        sec-utility-addr
                                                 255.255.255.252
        netmask
        gateway
        sec-gateway
        gw-heartbeat
                                                         disabled
                state
                heartbeat
                                                          0
                                                          0
                retry-count
                retry-timeout
                                                          1
```

health-score	0
dns-ip-primary	
dns-ip-backup1	
dns-ip-backup2	
dns-domain	
dns-timeout	11
hip-ip-list	
ftp-address	
icmp-address	
snmp-address	
telnet-address	
ssh-address	

```
redundancy-config
       becoming-standby-time
                                                360000
        peer
                name
                                                        TLAB-ACME-SBC1
                type
                                                        Primary
                destination
                                                                169.254.1.1:9090
                        address
                        network-interface
                                                                wancom1:0
                destination
                                                                169.254.2.1:9090
                        address
                                                                wancom2:0
                        network-interface
        peer
                                                        TLAB-ACME-SBC2
                name
                                                        Secondary
                type
                destination
                                                                169.254.1.2:9090
                        address
                                                                wancom1:0
                        network-interface
                destination
                        address
                                                                169.254.2.2:9090
                                                                wancom2:0
                        network-interface
```

#### Additionally primary and secondary interface IPs need to be added to the media/signaling network-interfaces

```
network-interface
                                                 s0p0
        name
        sub-port-id
        description
                                                 Outside/Untrusted
        hostname
        ip-address
                                                172.16.153.24
        pri-utility-addr
                                                172.16.153.2
        sec-utility-addr
                                                172.16.153.3
        netmask
                                                 255.255.255.0
                                                172.16.153.1
        gateway
        sec-gateway
        gw-heartbeat
                                                         disabled
                state
               heartbeat
                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
network-interface
        name
                                                s1p0
        sub-port-id
        description
                                                Inside/Trusted
        hostname
        ip-address
                                                172.16.154.25
                                                172.16.154.2
        pri-utility-addr
        sec-utility-addr
                                                172.16.154.3
        netmask
                                                255.255.255.0
                                                172.16.154.1
        gateway
        sec-gateway
        gw-heartbeat
                                                        disabled
               state
               heartbeat
                                                        0
               retry-count
               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
```

#### **Telus Trunk Authentication**

Telus offers two types of connections: direct connections over dedicated data circuits or MPLS and trunks over public networks. Trunk authentication and surrogate registration are only required for publicly connected connections. If the connection is a private connection, the following section is NOT required. TELUS IP Trunking Release 2 requires both Registration of the trunk and Authentication challenges on SIP INVITE Methods. Telus will provide the information similar to the following:

- SIP User Name: user123456
- SIP Domain: ipnet4.com
- SIP Password: pass123456
- DID: 2223334444

There are 3 parts to the configuration. A surrogate agent is needed to register the trunk on behalf of the IPPBX. Surrogate registration requires **registration-caching** to be set to **enabled** on the **sip-interface** of **PBX realm**. Auth challenges to INVITEs are handled on the **session-agent** to the **IP-PBX** via **auth-attributes**.

```
surrogate-agent
                                                 ipinet4.com
        register-host
                                                 user123456
        register-user
        description
        realm-id
                                                 core
        state
                                                 enabled
        customer-host
                                                 172.16.154.35
                                                 10.27.56.7
        customer-next-hop
        register-contact-host
                                                 ipinet4.com
                                                 user123456
        register-contact-user
        password
                                                 pass123456
        register-expires
                                                 3600
        replace-contact
                                                 disabled
        options
                                                 auth-info=refresh
                                                 auth-
method="INVITE, CANCEL, ACK, BYE"
                                                 enabled
        route-to-registrar
        aor-count
                                                 1
                                                 user123456
        auth-user
                                                 10
        max-register-attempts
        register-retry-time
                                                 300
        count-start
        register-mode
                                                 automatic
        triggered-inactivity-interval
                                                 30
                                                  503
        triggered-oos-response
```

#### Reg-cache on the IPPBX sip-interface

```
sip-interface
                                                  enabled
        realm-id
                                                 core
        description
        sip-port
                                                          172.16.153.34
                address
                                                          5060
                port
                                                          UDP
                transport-protocol
                tls-profile
                                                          all
                allow-anonymous
                multi-home-addrs
                ims-aka-profile
        carriers
                                                  90
        tcp-nat-interval
        registration-caching
                                                 enabled
```

#### IP-PBX session-agent configuration

```
session-agent
       hostname
                                                172.16.149.38
                                                172.16.149.38
       ip-address
                                                5060
       port
                                                enabled
        state
       app-protocol
                                                SIP
       sip-isup-profile
        kpml-interworking
                                                inherit
       monitoring-filters
        auth-attributes
               auth-realm
                                                        ipnet4.com
                username
                                                        user123456
                password
                                                         *****
                in-dialog-methods
                                                        INVITE BYE ACK CANCEL
OPTIONS SUBSCRIBE PRACK NOTIFY UPDATE REFER
```

#### **Routing via Local Policy**

For outbound calls the local-policy determines which trunk to forward the call based on the NPA of the request-URI. This is configured in the local policy of the "To". For most configurations there will be only 1 inside and outside realm. For a single inside/outside realm configuration the local policy to and from would be set to "\*". Redundant trunk configurations will use a session-agent group.

```
local-policy
        from-address
        to-address
        source-realm
                                                 peer
        description
        activate-time
        deactivate-time
                                                 enabled
        state
        policy-priority
                                                 none
        policy-attribute
                next-hop
                                                         10.27.56.7
                realm
                                                         core
                action
                                                         none
                terminate-recursion
                                                         disabled
                carrier
                start-time
                                                         0000
                end-time
                                                         2400
                days-of-week
                                                         U-S
                cost
                state
                                                         enabled
                                                         SIP
                app-protocol
                methods
                media-profiles
                lookup
                                                         single
                next-key
                eloc-str-lkup
                                                         disabled
                eloc-str-match
local-policy
        from-address
```

```
to-address
source-realm
                                         core
description
activate-time
deactivate-time
state
                                         enabled
policy-priority
                                         none
policy-attribute
                                                 172.16.149.38
        next-hop
        realm
                                                 peer
        action
                                                 none
        terminate-recursion
                                                 disabled
        carrier
                                                 0000
        start-time
        end-time
                                                 2400
        days-of-week
                                                 U-S
        cost
                                                 0
                                                 enabled
        state
        app-protocol
                                                 SIP
        methods
        media-profiles
        lookup
                                                 single
        next-key
                                                  disabled
        eloc-str-lkup
        eloc-str-match
```

#### Header manipulation rules required for the Telus Trunk

The HMRs update the host portion of the URI to the Telus trunk IP for Request-URI and To headers. The host portion of the URI is updated with the E-SBC outside sip-interface IP for From, P-Asserted-Identity and Contact so that the E-SBC presents its interface IP to the next hop.

```
header-rule
                                                     manipRURI
           name
           header-name
                                                     request-uri
           action
                                                     manipulate
           comparison-type
                                                     case-sensitive
           msg-type
                                                     anv
                                                     INVITE
           methods
           match-value
           new-value
           element-rule
                                                             modRURI
                   name
                   parameter-name
                                                             uri-host
                    type
                                                              replace
                    action
                   match-val-type
                                                             any
                   comparison-type
                                                             case-sensitive
                   match-value
                   new-value
                                                             ipnet4.com
   header-rule
           name
                                                     manipFrom
           header-name
                                                     From
           action
                                                     manipulate
                                                     case-sensitive
           comparison-type
```

msg-type	any
methods	
match-value	
new-value	
element-rule	
name	From
parameter-name	
type	uri-host
action	replace
match-val-type	any
comparison-type	case-sensitive
match-value	
new-value	ipnet4.com
header-rule	
name	manipTo
header-name	То
action	manipulate
comparison-type	case-sensitive
msg-type	any
methods	
match-value	
new-value	
element-rule	
name	То
parameter-name	
type	uri-host
action	replace
match-val-type	any
comparison-type	case-sensitive
match-value	
new-value	\$REMOTE IP
header-rule	
name	maniPassert
header-name	P-Asserted-Identity
action	manipulate
comparison-type	case-sensitive
msg-type	any
methods	
match-value	
new-value	
element-rule	
name	chgDisplay
parameter-name	
type	uri-host
action	replace
match-val-type	any
comparison-type	case-sensitive
match-value	
new-value	ipnet4.com

#### **Contact header handling via HMRs**

Internal calls on the CM that are transferred to the PSTN have the endpoint extension only in the contact header. This set of header manipulation rules normalizes the contact header user portion of the URI by copying the user uri from the P-Asserted-Identity header and replacing the contact uri user.

```
header-rule
                                                         StrPAIURIUsr
                header-name
                                                         P-Asserted-Identity
                action
                                                         store
                comparison-type
                                                         case-sensitive
                msg-type
                                                         any
                methods
                match-value
                new-value
                element-rule
                                                                 StrPAIURIUsr
                        name
                        parameter-name
                                                                 uri-user
                        type
                        action
                                                                 store
                        match-val-type
                                                                 any
                       comparison-type
                                                                 case-sensitive
                        match-value
                        new-value
        header-rule
                                                         UpdtContact
                name
                header-name
                                                         Contact
                                                         manipulate
                action
                comparison-type
                                                         case-sensitive
               msg-type
                                                         any
                methods
                match-value
                new-value
                element-rule
                                                                 UpdtCtactHost
                       name
                        parameter-name
                                                                 uri-host
                        type
                        action
                                                                 replace
                        match-val-type
                                                                 any
                        comparison-type
                                                                 case-sensitive
                        match-value
                       new-value
                                                                 $LOCAL IP
                element-rule
                                                                 UpdtCtactUsr
                        name
                        parameter-name
                                                                 uri-user
                        type
                        action
                                                                 replace
                        match-val-type
                                                                 any
                        comparison-type
                                                                 case-sensitive
                        match-value
                        new-value
$StrPAIUriHost.$StrPAI
```

## **Removing headers to Telus Trunks**

HMRs are required to standardize messages to Telus SIP trunks removing Alert-Info, History-Info, P-Charging-Vector, P-Location, and P-AV-Message-ID.

header-r	ule	
	name	DelAlrtInfo
	header-name	Alert-Info
	action	delete
	comparison-type	case-sensitive
	msg-type	any
	methods	
	match-value	
	new-value	
header-r	rule	
	name	DelHstInfo
	header-name	History-Info
	action	delete
	comparison-type	case-sensitive
	msg-type	any
	methods	
	match-value	
	new-value	
header-r	rule	
	name	DelPChg
	header-name	P-Charging-Vector
	action	delete
	comparison-type	case-sensitive
	msg-type	any
	methods	
	match-value	
	new-value	
header-r	rule	
	name	DelPLocation
	header-name	P-Location
	action	delete
	comparison-type	case-sensitive
	msg-type	any
	methods	
	match-value	
	new-value	
header-r	ule	
	name	DelPAV
	header-name	P-AV-Message-Id
	action	delete
	comparison-type	case-sensitive
	msg-type	any
	methods	
	match-value	
	new-value	

## **Enabling health checks on session agents**

In order to check health of session agents, enable OPTIONS message on the session-agent config and set ping-method and ping-interval as below.

session-agent	
hostname	172.16.149.38
ip-address	172.16.149.38
port	5060
state	enabled
app-protocol	SIP
app-type	
transport-method	UDP
realm-id	peer
egress-realm-id	
description	CM Trunk
carriers	
ping-method	OPTIONS
ping-interval	20
ping-send-mode	keep-alive
ping-all-addresses	disabled
ping-in-service-response-codes	
session-agent	
hostname	10.27.56.7
ip-address	10.27.56.7
port	5060
state	enabled
app-protocol	SIP
app-type	
transport-method	UDP
realm-id	core
egress-realm-id	
description	Telus Core Trunk
	07770110
ping-method	OPTIONS
ping-interval	20
ping-send-mode	keep-alive
ping-all-addresses	disabled
ping-in-service-response-codes	

## **Webserver Configuration**

A webserver is available on all Enterprise versions of Oracle E-SBCs. The Webserver can be used to provide tracing, configuration and dashboard info. For tracing info, 2 parts must be configured.

- The webserver must be enabled.
- Tracing filters must be applied.

web-server-config		
state	enabled	
inactivity-timeout	5	
http-state	enabled	
http-port	80	
https-state	disabled	
https-port	443	
tls-profile		

sip-monitoring	
match-any-filter	disabled
state	enabled
short-session-duration	0
monitoring-filters	*
trigger-window	30

## **Test Plan**

Caveats and out of scope items: Fax was not tested because the Lab CM did not have an analog card to test these capability there for Fax is considered out of scope for this testing.

Following is the test plan executed against this setup and results have been documented below.

CDE authorized to CD Officet		
CPE outbound to SP Offnet gateway(PSTN) (G.729 is offered	Call ringback	pass
first)	voice cut through on connect	pass
	ring terminated on calling party disconnect	pass
	long duration call: 1 hour	pass
	DTMF relay (both directions)	pass
	Called party disconnect, calling party	puss
	automatically disconnected	pass
	automaticany dissormected	pass
SP offnet gateway (PSTN)		
inbound to CPE (G.729 offered	Call ringback	pass
first)	voice cut through on connect	pass
	ring terminated on calling party disconnect	pass
	long duration call: 1 hour	
	DTMF relay (both directions)	pass
	Called party disconnect, calling party	
	automatically disconnected	pass
CPE to CPE (place call out to the		
SP network and back) (G.729 is	Call ringback	pass
offered first)	voice cut through on connect	pass
	ring terminated on calling party disconnect	pass
	long duration call: 1 hour	
	DTMF relay (both directions)	pass
	Called party disconnect, calling party	
	automatically disconnected	pass
	Pass calling number: IP PBX to Offnet Mark	
CPE Calling number privacy	Calling Number Private	pass
	Pass calling number: IP PBX to another IP	
	PBX: Mark Calling Number Private	pass
CPE Telephone Number Support		
	IP PBX to offnet: translate private extension	
	to 10 DID calling number	pass

	Offnet to IP PBX: IP PBX must translate 10	
	digit called number to private extension.	pass
	IP PBX to IP PBX: translate private extension	
	to 10 DID calling number	pass
	IP PBX to IP PBX: IP PBX must translate 10	
	digit called number to private extension.	pass
CDE Calling Name a Dalinery	angle cance named to private extension	pass
CPE Calling Name Delivery	ID DDV to ID DDV, pass display name	nass
	IP PBX to IP PBX: pass display name	pass
	Offnet1 to IP PBX phone 1, IP PBX phone1	
CPE offnet Call Conference	conferences Offnet2	pass
	IP PBX phone1 to Offnet1, IP PBX phone1	
	conferences Offnet2	pass
	Offnet 1 to IP PBX phone 1, IP PBX phone1	
	transfers to Offnet2 (does caller ID update	
	on Offnet2?)	pass
	IP PBX phone1 to Offnet1, IP PBX phone1	
	transfers to Offnet 2 (does caller ID update	
	on Offnet2?)	pass
	on onnetz:)	pass
	Phone1 to Phone2. Phone1 transfers to	
CDE Intra Cita Attanded Call	Offnet PSTN	pass
CPE Intra-Site Attended Call Transfer	Phone1 to Offnet PSTN. Phone 1 transfers	
Transier	to Phone2	pass
	Offnet PSTN to Phone1. Phone1 transfers to	
	Phone2	pass
		'
	Offnet 1 to IP PBX phone 1, IP PBX phone1	
	transfers to Offnet2 (does caller ID update	
	on Offnet2?)	pass
	,	, pass
	IP PBX phone1 to Offnet1, IP PBX phone1	
	transfers to Offnet 2 (does caller ID update	
	on Offnet2?)	pass
	Phone1 to Phone2. Phone1 transfers to	
	Phone3 at 2nd IP PBX site	pass
	Phone1 to Phone2. Phone1 transfers to	
CPE Intra-Site Unattended Call	Offnet PSTN	pass
Transfer	Phone1 to Offnet PSTN. Phone 1 transfers	-
	to Phone2	pass
		, pass
	Offnet PSTN to Phone1. Phone1 transfers to Phone2	nacc
	FIIOTIEZ	pass

		I
CPE Call Hold and Resume (call		
hold is always done on the IP		
PBX side)	IP PBX to Offnet PSTN	pass
,	IP PBX to IP PBX	pass
	Offnet PSTN to IP PBX	pass
CPE Voice Mail	Offnet to IP PBX: leave voice mail	pass
	Offnet to IP PBX: retrieve voice mail	pass
SP Voice Mail (e.g. using mobile	IP PBX to Offnet (mobile VM): leave voice	
phone (Vz or at&t) voicemail)	mail	pass
,	Offnet to IP PBX call invokes to find me	·
	feature	pass
	IP PBX to IP PBX call invokes to find me	ļ l
	feature	pass
CPE Find Me (Call Forward	Offnet to IP PBX phone1 call invokes find	pass
Unconditionally	me feature to offnet	pass
	IP PBX to IP PBX phone1 call invokes find	pass
	me feature to offnet	pass
Simultana a usa Calla (Minimum 2)	CPE to PSTN Offnet gateway	pass
Simultaneous Calls (Minimum 2)	Offnet gateway inbound to CPE	pass
	Offnet to IP PBX: call auto attendant	
CPE Auto Attendant	Offnet to IP PBX: connect to extension via	pass
	auto attendant	
CPE to PSTN Offnet gateway	Call ringback	pass
international call	Voice cut through on connect	pass
	ringback terminated on caller disconnect	pass
	Offnet to IP PBX phone1 call invokes find	pass
	me feature to phone2	pass
	·	pass
	Offnet to IP PBX phone1 call invokes find me feature to offnet	nacc
CPE Find Me (Call Forward On		pass
Busy)	IP PBX to IP PBX phone1 call invokes find me feature to phone2	nacc
	·	pass
	IP PBX to IP PBX phone1 call invokes find me feature to offnet	nacc
		pass
	Offnet to IP PBX phone1 call invokes find	nacc
	me feature to phone2	pass
	Offnet to IP PBX phone1 call invokes find me feature to offnet	l nacc
CPE Find Me (Call Forward Don't		pass
Answer)	IP PBX to IP PBX phone1 call invokes find	
	me feature to phone2	pass
	IP PBX to IP PBX phone1 call invokes find	
	me feature to offnet	pass

Dial Plans	Test 0, 0+10, 911, 411 1+10	pass
PRACK with SDP (early-media		
cut-through with DTMF		
(RFC2833) navigation before	IP PBX phone1 call 800 number, phone user	
200OK)) - call 800-864-8331 -	navigates through AA to reach correct menu	
United Airlines	option.	pass

## **Troubleshooting Tools**

#### Wireshark

Wireshark is also a network protocol analyzer which is freely downloadable from www.wireshark.org.

#### On the Oracle E-SBC

The Oracle E-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 E-SBC Console:

```
TLAB-ACME-SBC1# reset sipd
TLAB-ACME-SBC1# notify sipd debug
TLAB-ACME-SBC1#
enabled SIP Debugging
TLAB-ACME-SBC1# notify all rotate-logs
```

#### **Examining the log files**

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

```
C:\Documents and Settings\user>ftp 192.168.1.22
Connected to 192.168.85.55.
220 TLAB-ACME-SBC1 server (VxWorks 6.4) ready.
User (192.168.1.22:(none)): user
331 Password required for user.
Password: acme
230 User user logged in.
ftp> cd /opt/logs
250 CWD command successful.
ftp> get sipmsg.log
200 PORT command successful.
150 Opening ASCII mode data connection for '/opt/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 '/opt/logs/log.sipd' (204681
bytes).
226 Transfer complete.
ftp: 206823 bytes received in 0.11Seconds 1897.46Kbytes/sec
```

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 <a href="http://docs.oracle.com/cd/E56581\_01/index.htm">http://docs.oracle.com/cd/E56581\_01/index.htm</a>

## **Appendix A**

## **Full E-SBC Configuration**

```
Local-policy
        from-address
        to-address
        source-realm
                                                 peer
        description
        activate-time
        deactivate-time
        state
                                                 enabled
        policy-priority
                                                 none
        policy-attribute
               next-hop
                                                         10.27.56.7
                realm
                                                         core
                action
                                                         none
                terminate-recursion
                                                         disabled
                carrier
                                                         0000
                start-time
                                                         2400
                end-time
                                                         U-S
                days-of-week
                cost
                state
                                                         enabled
                app-protocol
                                                         SIP
                methods
                media-profiles
                lookup
                                                         single
                next-key
                eloc-str-lkup
                                                         disabled
                eloc-str-match
local-policy
        from-address
        to-address
        source-realm
                                                 core
        description
        activate-time
        deactivate-time
        state
                                                 enabled
        policy-priority
                                                 none
        policy-attribute
                                                        172.16.149.38
                next-hop
                realm
                                                         peer
                action
                                                         none
                terminate-recursion
                                                         disabled
                carrier
                start-time
                                                         0000
                end-time
                                                         2400
                                                         U-S
                days-of-week
                cost
                state
                                                         enabled
                app-protocol
                                                         SIP
                methods
                media-profiles
```

lockup			
eloc-str-lkup		lookup	single
eloc-str-match			
media-manager	eloc-str-lkup		disabled
state	-		
latching	media-manager		
flow-time-limit	state		enabled
initial-quard-timer 300 subsq-quard-timer 300 tcp-flow-time-limit 864400 tcp-initial-quard-timer 300 tcp-subsq-quard-timer 300 tcp-subsq-quard-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-max-trans 10000 red-sync-start-time 5000 red-sync-start-time 5000 red-sync-start-time 5000 max-drusted-packet-rate 50000 max-trusted-packet-rate 50000 max-trusted-packet-rate 50000 max-trusted-packet-rate 1000 tolerance-window 30 trap-on-demote-to-deny disabled syslog-on-demote-to-deny disabled rtcp-rate-limi 0 anonymous-sdp disabled rtcp-rate-limi 0 anonymous-sdp disabled default-2833-duration 100 rec2833-ent-per-failover disabled media-supervision-traps disabled media-supervision-traps disabled media-supervision-traps disabled media-policy name G711 network-interface name SOPO sub-port-id 0 description Outside/Untrusted hostname ip-address 172.16.153.2 pri-utility-addr 172.16.153.1 sec-utility-addr 172.16.153.1 netmask 255.255.255.0 qateway 172.16.153.1	latch	ing	enabled
subsq-guard-timer         300           tcp-flow-time-limit         86400           tcp-subsq-guard-timer         300           tcp-subsq-guard-timer         300           tcp-subsq-guard-timer         2           hnt-rtcp         disabled           algd-log-level         NOTICE           options         NOTICE           red-mode-port         1985           red-may-port         1986           red-max-trans         1000           red-sync-start-time         5000           red-sync-comp-time         1000           media-policing         enabled           max-untrusted-packet-rate         50000           max-trusted-packet-rate         50000           max-trusted-packet-rate         1000           tclerance-window         30           trap-on-demote-to-deny         disabled           trap-on-demote-to-deny         disabled           syslog-on-demote-to-untrusted         disabled           syslog-on-demote-to-untrusted         disabled           rtcp-rate-limit         0           anonymous-sdp         disabled           rfc2833-duration         100           rfc2833-end-pkts-only-for-non-sig         enabled	flow-	time-limit	86400
tcp-flow-time-limit tcp-subsq-guard-timer subsq-guard-timer subsq-guard-time subsq-guard-times subsq-guard-	initi	al-guard-timer	300
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-max-trans 10000 red-sync-start-time 5000 red-sync-start-time 1000 media-policing enabled max-untrusted-packet-rate 50000 max-trusted-packet-rate 50000 max-trusted-packet-rate 1000 max-arp-packet-rate 1000 tolerance-window 30 trap-on-demote-to-deny disabled trap-on-demote-to-deny disabled syslog-on-demote-to-deny disabled rtcp-rate-limit 0 anonymous-sdp disabled rtc2833-timestamp disabled default-2833-duration 100 rfc2833-end-pkts-only-for-non-sig enabled media-supervision-traps disabled dasaly-server-failover disabled media-policy aname G711 name G711 name G711 name G711 name 172.16.153.24 pri-utility-addr 172.16.153.3 netmask 255.255.255.0 qateway sec-gateway	subsq	-guard-timer	300
tcp-subsq-quard-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-mgcp-port 1986 red-sync-start-time 5000 red-sync-comp-time 1000 media-policing enabled max-untrusted-packet-rate 50000 max-trusted-packet-rate 50000 max-trusted-packet-rate 1000 tolerance-window 30 trap-on-demote-to-deny disabled trap-on-demote-to-deny disabled syslog-on-demote-to-deny disabled rtcp-rate-limit 0 anonymous-sdp disabled rfc2833-timestamp disabled dault-2833-duration 100 rfc2833-end-pkts-only-for-non-sig enabled translate-non-rfc2833-event disabled media-supervision-traps disabled dsalg-server-failover disabled media-supervision-traps disabled media-policy name 6711 media-policy name 771 nework-interface name SOPO sub-port-id 0 0 description Outside/Untrusted hostname ip-address 172.16.153.2 sec-utility-addr 172.16.153.3 netmask 255.255.255.0 sqateway 572.16.153.1	tcp-f	low-time-limit	86400
tcp-number-of-ports-per-flow disabled algd-log-level NOTICE mbcd-log-level NOTICE options red-flow-port 1985 red-max-trans 10000 red-sync-start-time 5000 red-sync-comp-time 1000 max-instance 1000 max-instance 1000 max-instance 1000 max-instance 1000 max-arp-packet-rate 50000 max-arp-packet-rate 50000 max-arp-packet-rate 1000 max-arp-packet-rate 1000 tolerance-window 30 trap-on-demote-to-deny disabled syslog-on-demote-to-deny disabled rtcp-rate-limit 0 max-instance disabled rtcp-rate-limit 100 max-instance 1000 max-arp-packet-rate 1000 max-arp-on-demote-to-deny disabled rtcp-rate-limit 100 max-demote-to-deny disabled max-demonsher 100 max-demote-to-deny disabled rtcp-rate-limit 100 max-demote-to-deny disabled max-default-2833-duration 100 max-demote-to-deny disabled max-default-2833-duration 100 max-demote-to-deny disabled max-default-2833-event disabled disabled disabled disabled max-default-2833-event disabled d	tcp-i	nitial-guard-timer	300
hnt-rtcp algd-log-level mbcd-log-level mbcd-log-level mbcd-log-level options red-flow-port red-mgcp-port red-max-trans l0000 red-sync-start-time red-sync-comp-time media-policing max-untrusted-packet-rate max-urtrusted-packet-rate s0000 max-trusted-packet-rate l0000 max-trusted-packet-rate l0000 max-rusted-packet-rate l0000 max-ruste	tcp-s	ubsq-guard-timer	300
algd-log-level   MOTICE     mbcd-log-level   MOTICE     options     red-flow-port   1985     red-mgcp-port   1986     red-mgcp-port   1986     red-sync-start-time   5000     media-policing   enabled     max-untrusted-packet-rate   50000     max-arp-packet-rate   50000     max-arp-packet-rate   50000     max-arp-packet-rate   1000     tolerance-window   30     trap-on-demote-to-deny   disabled     trap-on-demote-to-deny   disabled     syslog-on-demote-to-deny   disabled     syslog-on-demote-to-untrusted   disabled     rtcp-rate-limit   0     anonymous-sdp   disabled     rfc2833-timestamp   disabled     rfc2833-timestamp   disabled     default-2833-event   disabled     media-supervision-traps   disabled     media-supervision-traps   disabled     media-supervision-traps   disabled     media-policy   name   6711     network-interface     name   SOPO     sub-port-id   0     description   Outside/Untrusted     hostname     ip-address   172.16.153.2     pri-utility-addr   172.16.153.3     netmask   255.255.255.0     gateway   172.16.153.1	tcp-n	umber-of-ports-per-flow	2
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-urtrusted-packet-rate         50000           max-trusted-packet-rate         50000           max-arp-packet-rate         1000           tolerance-window         30           trap-on-demote-to-deny         disabled           trap-on-demote-to-deny         disabled           syslog-on-demote-to-untrusted         disabled           syslog-on-demote-to-untrusted         disabled           rtcp-rate-limit         0           anonymous-sdp         disabled           rfc2833-timestamp         disabled           default-2833-duration         100           rfc2833-end-pkts-only-for-non-sig         enabled           dranslate-non-rfc2833-event         disabled           dmail-supervision-traps         disabled           dmail-policy         disabled           media-policy         name         SOPO           name         SOPO	hnt-r	tcp	disabled
options red-flow-port 1985 red-may-port 1986 red-max-trans 10000 red-sync-start-time 5000 media-policing enabled max-untrusted-packet-rate 50000 max-trusted-packet-rate 50000 max-trusted-packet-rate 1000 tolerance-window 30 trap-on-demote-to-deny disabled syslog-on-demote-to-deny disabled syslog-on-demote-to-deny disabled rtcp-rate-limit 0 anonymous-sdp disabled rfc2833-timestamp disabled rfc2833-timestamp disabled translate-non-rfc2833-event disabled media-supervision-traps disabled media-supervision-traps disabled media-policy name G711 network-interface name SOPO sub-port-id description Outside/Untrusted hostname ip-address 172.16.153.2 pri-utility-addr 172.16.153.3 netmask 255.255.255.0 gateway sec-gateway	algd-	log-level	NOTICE
red-flow-port	mbcd-	log-level	NOTICE
red-mgcp-port 1986 red-max-trans 10000 red-max-trans 10000 media-policing enabled max-untrusted-packet-rate 50000 max-trusted-packet-rate 50000 max-trusted-packet-rate 1000 max-arp-packet-rate 1000 tolerance-window 30 trap-on-demote-to-deny disabled syslog-on-demote-to-deny disabled rtcp-rate-limit 0 anonymous-sdp disabled rfc2833-timestamp disabled dfault-2833-duration 100 rfc2833-end-pkts-only-for-non-sig enabled media-supervision-traps disabled dmsalg-server-failover disabled media-policy name G711 network-interface name S0F0 sub-port-id description Outside/Untrusted hostname ip-address 172.16.153.24 pri-utility-addr 172.16.153.2 sec-utility-addr 172.16.153.1 sec-gateway 172.16.153.1	optio	ns	
red-max-trans 10000 red-sync-comp-time 5000 media-policing enabled max-untrusted-packet-rate 50000 max-trusted-packet-rate 50000 max-trusted-packet-rate 1000 media-policy 30 max-arp-packet-rate 1000 max-arp-packet-rate 1000 tolerance-window 30 trap-on-demote-to-deny disabled trap-on-demote-to-untrusted disabled syslog-on-demote-to-untrusted disabled rtcp-rate-limit 0 anonymous-sdp disabled rtcp-rate-limit 100 rfc2833-timestamp disabled default-2833-duration 100 rfc2833-end-pkts-only-for-non-sig enabled translate-non-rfc2833-event disabled media-supervision-traps disabled media-supervision-traps disabled media-supervision-traps disabled media-policy 100 name 6711 metwork-interface 100 make 1071 metwork-interface 100 m	red-f	low-port	1985
red-sync-comp-time         1000           media-policing         enabled           max-untrusted-packet-rate         50000           max-trusted-packet-rate         50000           max-arp-packet-rate         1000           tolerance-window         30           trap-on-demote-to-deny         disabled           trap-on-demote-to-deny         disabled           syslog-on-demote-to-untrusted         disabled           syslog-on-demote-to-untrusted         disabled           rtcp-rate-limit         0           anonymous-sdp         disabled           rfc2833-timestamp         disabled           default-2833-duration         100           rfc2833-end-pkts-only-for-non-sig         enabled           translate-non-rfc2833-event         disabled           dnsalg-server-failover         disabled           dnsalg-server-failover         disabled           syslog-on-call-reject         disabled           media-policy         0           name         SOPO           sub-port-id         0           description         Outside/Untrusted           hostname         ip-address         172.16.153.24           pri-utility-addr         172.16.153.3      <	red-m	gcp-port	1986
red-sync-comp-time	red-m	ax-trans	10000
media-policing	red-s	ync-start-time	5000
max-untrusted-packet-rate         50000           max-trusted-packet-rate         50000           max-arp-packet-rate         1000           tolerance-window         30           trap-on-demote-to-deny         disabled           trap-on-demote-to-untrusted         disabled           syslog-on-demote-to-untrusted         disabled           rtcp-rate-limit         0           anonymous-sdp         disabled           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           media-policy         name         G711           network-interface         o           name         sopo           sub-port-id         0           description         Outside/Untrusted           hostname         ip-address           pri-utility-addr         172.16.153.24           pri-utility-addr         172.16.153.3           netwash         255.255.255.0           <	red-s	ync-comp-time	1000
max-trusted-packet-rate         50000           max-arp-packet-rate         1000           tolerance-window         30           trap-on-demote-to-deny         disabled           trap-on-demote-to-untrusted         disabled           syslog-on-demote-to-untrusted         disabled           rtcp-rate-limit         0           anonymous-sdp         disabled           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           media-policy         aname         G711           network-interface         aname         SOPO           sub-port-id         0         Outside/Untrusted           hostname         ip-address         172.16.153.24           pri-utility-addr         172.16.153.3         netmask           sec-utility-addr         172.16.153.3         netmask           gateway         172.16.153.1	media	-policing	enabled
max-arp-packet-rate         1000           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           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           media-policy         name         G711           network-interface         sub-port-id         0           description         Outside/Untrusted           hostname         ip-address         172.16.153.24           pri-utility-addr         172.16.153.3         172.16.153.3           netmask         255.255.255.0         255.255.255.0           gateway         172.16.153.1	max-u	ntrusted-packet-rate	50000
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 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 media-policy name G711 network-interface  name SOPO sub-port-id 0 description Outside/Untrusted hostname ip-address 172.16.153.24 pri-utility-addr 172.16.153.3 netmask 255.255.255.0 gateway 172.16.153.1	max-t	rusted-packet-rate	50000
trap-on-demote-to-deny disabled trap-on-demote-to-untrusted disabled syslog-on-demote-to-deny disabled rtcp-rate-limit 0 anonymous-sdp disabled 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 media-policy name G711 network-interface name SOPO sub-port-id 0 description Outside/Untrusted hostname ip-address 172.16.153.24 pri-utility-addr 172.16.153.3 netmask 255.255.255.0 gateway 172.16.153.1	max-a	rp-packet-rate	1000
trap-on-demote-to-untrusted disabled syslog-on-demote-to-deny disabled rtcp-rate-limit 0 anonymous-sdp disabled disabled rfc2833-timestamp disabled default-2833-duration 100 rfc2833-end-pkts-only-for-non-sig enabled disabled media-supervision-traps disabled disabled disabled disabled disabled media-supervision-traps disabled media-policy name G711 network-interface name S0P0 sub-port-id 0 description Outside/Untrusted hostname ip-address pri-utility-addr 172.16.153.2 sec-utility-addr 172.16.153.3 netmask 255.255.255.0 gateway sec-gateway	toler	ance-window	30
syslog-on-demote-to-deny disabled rtcp-rate-limit 0 anonymous-sdp disabled rfc2833-timestamp disabled disabled rtc2833-duration 100 rfc2833-end-pkts-only-for-non-sig enabled translate-non-rfc2833-event disabled syslog-on-call-reject disabled media-policy name G711 network-interface name S0P0 sub-port-id 0 description Outside/Untrusted hostname ip-address 172.16.153.24 pri-utility-addr 172.16.153.2 sec-utility-addr 172.16.153.3 netmask 255.255.255.0 gateway sec-gateway	trap-	on-demote-to-deny	disabled
syslog-on-demote-to-untrusted disabled rtcp-rate-limit 0 anonymous-sdp disabled rfc2833-timestamp disabled default-2833-duration 100 rfc2833-end-pkts-only-for-non-sig enabled translate-non-rfc2833-event disabled media-supervision-traps disabled disabled syslog-on-call-reject disabled media-policy name G711 network-interface sub-port-id description Outside/Untrusted hostname ip-address 172.16.153.24 pri-utility-addr 172.16.153.3 netmask 255.255.255.0 gateway sec-gateway	trap-	on-demote-to-untrusted	disabled
rtcp-rate-limit 0 anonymous-sdp disabled 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 media-policy name G711 network-interface name SOPO sub-port-id 0 description Outside/Untrusted hostname ip-address 172.16.153.24 pri-utility-addr 172.16.153.3 netmask 255.255.255.0 gateway 172.16.153.1 sec-gateway	syslo	g-on-demote-to-deny	disabled
anonymous-sdp rfc2833-timestamp default-2833-duration rfc2833-end-pkts-only-for-non-sig translate-non-rfc2833-event media-supervision-traps disabled dnsalg-server-failover syslog-on-call-reject disabled media-policy name rfc2833-event disabled dnsalg-server-failover syslog-on-call-reject media-policy name sub-port-id description hostname ip-address pri-utility-addr sec-utility-addr netmask gateway sec-gateway disabled disa	syslo	g-on-demote-to-untrusted	disabled
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 media-policy name G711 network-interface sub-port-id 0 description Outside/Untrusted hostname ip-address 172.16.153.24 pri-utility-addr 172.16.153.3 netmask 255.255.255.0 gateway sec-gateway	rtcp-	rate-limit	0
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 media-policy name G711 network-interface name S0P0 sub-port-id 0 description Outside/Untrusted hostname ip-address 172.16.153.24 pri-utility-addr 172.16.153.3 netmask 255.255.255.0 gateway 172.16.153.1 sec-gateway	anony	mous-sdp	disabled
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 media-policy name G711 network-interface name SOPO sub-port-id O description Outside/Untrusted hostname ip-address pri-utility-addr 172.16.153.2 sec-utility-addr 172.16.153.3 netmask 255.255.255.0 gateway 172.16.153.1 sec-gateway	rfc28	33-timestamp	disabled
translate-non-rfc2833-event disabled media-supervision-traps disabled dnsalg-server-failover disabled syslog-on-call-reject disabled media-policy name G711 network-interface name S0P0 sub-port-id description Outside/Untrusted hostname ip-address pri-utility-addr 172.16.153.2 pri-utility-addr 172.16.153.3 netmask 255.255.255.0 gateway 172.16.153.1 sec-gateway	defau	lt-2833-duration	100
media-supervision-traps disabled dnsalg-server-failover syslog-on-call-reject disabled media-policy name name soppo sub-port-id description hostname ip-address pri-utility-addr sec-utility-addr netmask gateway sec-gateway disabled disabl	rfc28	33-end-pkts-only-for-non	-sig enabled
dnsalg-server-failover syslog-on-call-reject  media-policy name network-interface name sub-port-id description hostname ip-address pri-utility-addr sec-utility-addr netmask gateway sec-gateway  disabled disabled disabled disabled forabled forable	trans	late-non-rfc2833-event	disabled
syslog-on-call-reject       disabled         media-policy       6711         name       G711         network-interface       0         name       S0P0         sub-port-id       0         description       Outside/Untrusted         hostname       172.16.153.24         pri-utility-addr       172.16.153.2         sec-utility-addr       172.16.153.3         netmask       255.255.255.0         gateway       172.16.153.1         sec-gateway       172.16.153.1	media	-supervision-traps	disabled
media-policy     name	dnsal	g-server-failover	disabled
name       G711         network-interface       S0P0         sub-port-id       0         description       Outside/Untrusted         hostname       172.16.153.24         pri-utility-addr       172.16.153.2         sec-utility-addr       172.16.153.3         netmask       255.255.255.0         gateway       172.16.153.1         sec-gateway       172.16.153.1	syslo	g-on-call-reject	disabled
network-interface       name       S0P0         sub-port-id       0       Outside/Untrusted         hostname       ip-address       172.16.153.24         pri-utility-addr       172.16.153.2       sec-utility-addr         sec-utility-addr       172.16.153.3         netmask       255.255.255.0       gateway         gateway       172.16.153.1         sec-gateway	media-policy		
name       S0P0         sub-port-id       0         description       Outside/Untrusted         hostname       172.16.153.24         pri-utility-addr       172.16.153.2         sec-utility-addr       172.16.153.3         netmask       255.255.255.0         gateway       172.16.153.1         sec-gateway       172.16.153.1	name		G711
sub-port-id       0         description       Outside/Untrusted         hostname       ip-address         ip-address       172.16.153.24         pri-utility-addr       172.16.153.3         sec-utility-addr       172.16.153.3         netmask       255.255.255.0         gateway       172.16.153.1         sec-gateway	network-inter	face	
description hostname ip-address pri-utility-addr sec-utility-addr netmask gateway 172.16.153.1 sec-gateway Outside/Untrusted 172.16.153.24 172.16.153.2 172.16.153.3 172.16.153.3	name		SOPO
hostname ip-address 172.16.153.24 pri-utility-addr 172.16.153.2 sec-utility-addr 172.16.153.3 netmask 255.255.255.0 gateway 172.16.153.1 sec-gateway	sub-p	ort-id	0
ip-address 172.16.153.24  pri-utility-addr 172.16.153.2  sec-utility-addr 172.16.153.3  netmask 255.255.255.0  gateway 172.16.153.1  sec-gateway	descr	iption	Outside/Untrusted
pri-utility-addr 172.16.153.2 sec-utility-addr 172.16.153.3 netmask 255.255.255.0 gateway 172.16.153.1 sec-gateway	hostn	ame	
sec-utility-addr 172.16.153.3 netmask 255.255.255.0 gateway 172.16.153.1 sec-gateway	ip-ad	dress	172.16.153.24
netmask 255.255.255.0 gateway 172.16.153.1 sec-gateway	pri-u	tility-addr	172.16.153.2
gateway 172.16.153.1 sec-gateway	sec-u	tility-addr	172.16.153.3
sec-gateway	netma	sk	255.255.255.0
	gatew	ay	172.16.153.1
gw-heartbeat	sec-g	ateway	
	gw-he	artbeat	

```
state
                                                         disabled
                heartbeat
                retry-count
                                                         0
                retry-timeout
                                                         1
                health-score
        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
network-interface
                                                 S1P0
        name
        sub-port-id
                                                 Inside/Trusted
        description
        hostname
        ip-address
                                                 172.16.154.25
                                                172.16.154.2
        pri-utility-addr
                                                172.16.154.3
        sec-utility-addr
        netmask
                                                 255.255.255.0
        gateway
                                                 172.16.154.1
        sec-gateway
        gw-heartbeat
                state
                                                         disabled
                heartbeat
                                                         0
                                                         0
                retry-count
                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
network-interface
                                                 wancom1
        name
        sub-port-id
        description
                                                 HA HEARTBEAT1
        hostname
        ip-address
        pri-utility-addr
                                                 169.254.1.1
        sec-utility-addr
                                                 169.254.1.2
                                                 255.255.255.252
        netmask
```

```
gateway
        sec-gateway
        gw-heartbeat
                                                         disabled
               state
               heartbeat
                retry-count
                                                         0
                retry-timeout
                                                         1
                health-score
                                                         0
        dns-ip-primary
        dns-ip-backup1
        dns-ip-backup2
        dns-domain
        dns-timeout
                                                11
        hip-ip-list
        ftp-address
        icmp-address
        snmp-address
        telnet-address
        ssh-address
network-interface
        name
                                                 wancom2
        sub-port-id
                                                 0
        description
                                                HA HEARTBEAT2
        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
                                                         disabled
                state
                heartbeat
               retry-count
                                                         0
                retry-timeout
                                                         1
                health-score
        dns-ip-primary
        dns-ip-backup1
        dns-ip-backup2
        dns-domain
        dns-timeout
                                                11
        hip-ip-list
        ftp-address
        icmp-address
        snmp-address
        telnet-address
        ssh-address
        server
phy-interface
                                                 s0p0
        name
        operation-type
                                                 Media
                                                 0
        port
        slot
        virtual-mac
        admin-state
                                                 enabled
```

auto-negot:	iation	enabled
duplex-mode	e	FULL
speed		100
wancom-hea	lth-score	50
overload-p	rotection	disabled
phy-interface		
name		s1p0
operation-	type	Media
port		0
slot		1
virtual-ma	С	
admin-state	e	enabled
auto-negot:	iation	enabled
duplex-mode	e	FULL
speed		100
wancom-heal	lth-score	50
overload-p	rotection	disabled
realm-config		
identifier		core
description	n	
addr-prefi:	x	0.0.0.0
network-in	terfaces	s0p0:0
mm-in-real:	m	enabled
mm-in-netwo	ork	enabled
mm-same-ip		enabled
mm-in-syste	em	enabled
bw-cac-non-	-mm	disabled
msm-release	e	disabled
qos-enable		enabled
max-bandwic	dth	0
fallback-ba	andwidth	0
max-priori	ty-bandwidth	0
max-latency	У	0
max-jitter		0
max-packet	-loss	0
observ-win	dow-size	0
parent-rea	lm	
dns-realm		
media-poli	су	
class-prof	ile	
in-transla	tionid	
out-transla	ationid	
in-manipula	ationid	
out-manipu	lationid	
average-ra	te-limit	0
access-con	trol-trust-level	none
invalid-si	gnal-threshold	0
maximum-si	gnal-threshold	0
untrusted-	signal-threshold	0
nat-trust-	threshold	0
max-endpoi	nts-per-nat	0
nat-invalio	d-message-threshold	0
wait-time-	for-invalid-register	0
deny-perio	d	30
cac-failure	e-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	disabled
	codec-manip-in-realm	disabled
	codec-manip-in-network	disabled
	rtcp-policy	41542164
	constraint-name	
	session-recording-server	
	session-recording-required	disabled
	manipulation-string	disabled
	manipulation-pattern	
	stun-enable	disabled
	stun-server-ip	0.0.0.0
		3478
	stun-server-port stun-changed-ip	0.0.0.0
	stun-changed-port	3479
	sip-profile	3479
	sip-profile	
	match-media-profiles	
	<u>.</u>	
	qos-constraint	ما ما ما ما ما
	block-rtcp	disabled disabled
	hide-egress-media-update tcp-media-profile	disabled
	monitoring-filters	
	node-functionality	
	default-location-string	
	alt-family-realm	none
22.1m	pref-addr-type	none
ealm-c	OHLIG	

identifier	2007
description	peer
addr-prefix	0.0.0.0
network-interfaces	
mm-in-realm	s1p0:0
mm-in-realm mm-in-network	disabled enabled
mm-same-ip	enabled
mm-in-system bw-cac-non-mm	enabled disabled
msm-release	disabled
qos-enable max-bandwidth	enabled
	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	
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	
	nabled
	isabled
-	isabled
	isabled
	one
2 2	isabled
codec-policy	1000100
	isabled
-	isabled
rtcp-policy	13ab1ea
constraint-name	
session-recording-server	
-	isabled
manipulation-string	15ab16a
manipulation-string manipulation-pattern	
	isabled
	.0.0.0
<u> </u>	478
-	.0.0.0
1 1 3 1 1	
	479
sip-profile	
sip-isup-profile	
match-media-profiles	
qos-constraint	
	isabled
1	isabled
tcp-media-profile	
monitoring-filters	
node-functionality	
default-location-string	
alt-family-realm	
1 21	one
redundancy-config	
	50000
peer	TIAD AGMD CDG1
name	TLAB-ACME-SBC1
type destination	Primary
destination address	169.254.1.1:9090
address network-interface	169.254.1.1:9090 wancom1:0
network-interrace destination	wancoill:0
address	169.254.2.1:9090
network-interface	wancom2:0
peer	Warroom2.0
name	TLAB-ACME-SBC2
type	Secondary
destination	7
address	169.254.1.2:9090
network-interface	wancom1:0
destination	
address	169.254.2.2:9090
network-interface	wancom2:0

session-agent	
hostname	172.16.149.38
ip-address	172.16.149.38
port	5060
state	enabled
app-protocol	SIP
app-type	
transport-method	UDP
realm-id	peer
egress-realm-id	F
description	CM Trunk
carriers	011 114
allow-next-hop-lp	enabled
constraints	disabled
max-sessions	0
max-inbound-sessions	0
max-outbound-sessions	0
max-burst-rate	0
max-purst-rate max-inbound-burst-rate	0
max-inbound-burst-rate	0
max-outbound-purst-rate 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	
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
        early-media-allow
        invalidate-registrations
                                               disabled
        rfc2833-mode
                                                none
        rfc2833-payload
        codec-policy
        enforcement-profile
        refer-call-transfer
                                                disabled
        refer-notify-provisional
                                                none
                                                NONE
        reuse-connections
        tcp-keepalive
                                                none
        tcp-reconn-interval
                                                0
        max-register-burst-rate
        register-burst-window
        sip-profile
        sip-isup-profile
        kpml-interworking
                                                inherit
        monitoring-filters
        auth-attributes
               auth-realm
                                                        ipnet4.com
               username
                                                        user123456
                                                        *****
               password
                in-dialog-methods
                                                        INVITE BYE ACK CANCEL
OPTIONS SUBSCRIBE PRACK NOTIFY UPDATE REFER
        session-recording-server
        session-recording-required
                                                disabled
session-agent
       hostname
                                                10.27.56.7
                                                10.27.56.7
        ip-address
       port
                                                5060
       state
                                                enabled
        app-protocol
                                                SIP
        app-type
        transport-method
                                                UDP
        realm-id
                                                core
        egress-realm-id
        description
                                                Telus Core Trunk
        carriers
                                                enabled
        allow-next-hop-lp
        constraints
                                                disabled
       max-sessions
       max-inbound-sessions
       max-outbound-sessions
       max-burst-rate
       max-inbound-burst-rate
       max-outbound-burst-rate
       max-sustain-rate
                                                0
       max-inbound-sustain-rate
        max-outbound-sustain-rate
                                                0
       min-seizures
                                                5
```

min-asr 0 0 time-to-resume ttr-no-response in-service-period Ω burst-rate-window 0 sustain-rate-window 0 req-uri-carrier-mode None proxy-mode redirect-action enabled loose-routing send-media-session enabled response-map ping-method OPTIONS; hops=0 ping-interval 30 keep-alive ping-send-mode disabled ping-all-addresses 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 TELUStoCM out-manipulationid CMtoTELUS manipulation-string manipulation-pattern p-asserted-id trunk-group max-register-sustain-rate 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 max-register-burst-rate 0 register-burst-window sip-profile sip-isup-profile kpml-interworking inherit monitoring-filters session-recording-server

session-recording-required	disabled
sip-config	
state	enabled
operation-mode	dialog
dialog-transparency	enabled
home-realm-id	peer
egress-realm-id	peer
auto-realm-id	
nat-mode	None
registrar-domain	
registrar-host	
registrar-port	0
register-service-route	always
init-timer	500
max-timer	4000
trans-expire	32
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	disabled
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
                                                 P-CSCF
        node-functionality
sip-interface
        state
                                                 enabled
        realm-id
                                                 core
        description
        sip-port
                                                         172.16.153.34
                address
                port
                                                         5060
                transport-protocol
                                                         UDP
                tls-profile
                allow-anonymous
                                                         all
                multi-home-addrs
                ims-aka-profile
        carriers
        trans-expire
                                                 0
        initial-inv-trans-expire
        invite-expire
        max-redirect-contacts
                                                 0
        proxy-mode
        redirect-action
        contact-mode
                                                 none
        nat-traversal
                                                 none
        nat-interval
                                                 30
        tcp-nat-interval
                                                 90
        registration-caching
                                                 enabled
                                                 300
        min-reg-expire
        registration-interval
                                                 3600
        route-to-registrar
                                                 disabled
        secured-network
                                                 disabled
        teluri-scheme
                                                 disabled
        uri-fqdn-domain
        options
        spl-options
                                                 all
        trust-mode
        max-nat-interval
                                                 3600
        nat-int-increment
                                                 10
        nat-test-increment
                                                 30
        sip-dynamic-hnt
                                                 disabled
                                                 401,407
        stop-recurse
        port-map-start
        port-map-end
                                                 0
        in-manipulationid
        out-manipulationid
        sip-ims-feature
                                                 disabled
        sip-atcf-feature
                                                 disabled
        subscribe-reg-event
                                                 disabled
        operator-identifier
        anonymous-priority
                                                 none
                                                 0
        max-incoming-conns
        per-src-ip-max-incoming-conns
                                                 0
                                                 0
        inactive-conn-timeout
        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
                                                disabled
        ims-aka-feature
        enforcement-profile
        route-unauthorized-calls
        tcp-keepalive
                                                none
        add-sdp-invite
                                                reinvite
        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
sip-interface
       state
                                                enabled
        realm-id
                                                peer
        description
        sip-port
                                                        172.16.154.35
               address
                                                         5060
               port
                                                        UDP
                transport-protocol
                tls-profile
                allow-anonymous
                                                        all
                multi-home-addrs
               ims-aka-profile
        carriers
        trans-expire
        initial-inv-trans-expire
                                                0
                                                0
        invite-expire
        max-redirect-contacts
        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	
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
sip-manipulation
                                                 CMtoTELUS
        name
                                                 Calls to SIP PSTN
        description
        split-headers
        join-headers
        header-rule
                                                         manipRURI
                name
                                                         request-uri
                header-name
                action
                                                         manipulate
                comparison-type
                                                         case-sensitive
                msg-type
                                                         any
                                                         INVITE
                methods
                match-value
                new-value
                element-rule
                                                                 modRURI
                        name
                        parameter-name
                                                                 uri-host
                        type
                        action
                                                                 replace
                        match-val-type
                                                                 any
                        comparison-type
                                                                 case-sensitive
                        match-value
                        new-value
                                                                 ipnet4.com
        header-rule
                name
                                                         manipFrom
                header-name
                                                         From
                action
                                                         manipulate
                comparison-type
                                                         case-sensitive
                msg-type
                                                         any
                methods
                match-value
                new-value
                element-rule
                                                                 From
                        name
                        parameter-name
                                                                 uri-host
                        type
                        action
                                                                 replace
                        match-val-type
                        comparison-type
                                                                 case-sensitive
                        match-value
                                                                 ipnet4.com
                        new-value
        header-rule
```

name manipTo header-name То action manipulate comparison-type case-sensitive msg-type any methods match-value new-value element-rule То name parameter-name uri-host type action replace match-val-type any comparison-type case-sensitive match-value \$REMOTE IP new-value header-rule maniPassert name header-name P-Asserted-Identity action manipulate comparison-type case-sensitive msg-type any methods match-value new-value element-rule chgDisplay name parameter-name uri-host type action replace match-val-type any comparison-type case-sensitive match-value new-value ipnet4.com header-rule StrPAIURIUsr name header-name P-Asserted-Identity action store comparison-type case-sensitive msg-type any methods match-value new-value element-rule StrPAIURIUsr name parameter-name uri-user type action store match-val-type any comparison-type case-sensitive match-value new-value header-rule UpdtContact name

header-name Contact action manipulate comparison-type case-sensitive msg-type any methods match-value new-value element-rule UpdtCtactHost name parameter-name type uri-host action replace match-val-type any comparison-type case-sensitive match-value \$LOCAL IP new-value element-rule name UpdtCtactUsr parameter-name uri-user type action replace match-val-type any case-sensitive comparison-type match-value new-value \$StrPAIUriHost.\$StrPAI header-rule DelAlrtInfo name header-name Alert-Info delete action comparison-type case-sensitive msg-type any methods match-value new-value header-rule name DelHstInfo header-name History-Info action delete comparison-type case-sensitive msg-type any methods match-value new-value header-rule DelPChg header-name P-Charging-Vector action delete comparison-type case-sensitive msg-type any methods match-value new-value header-rule DelPLocation name

```
header-name
                                                         P-Location
                action
                                                         delete
                comparison-type
                                                         case-sensitive
                msg-type
                                                         any
                methods
                match-value
                new-value
        header-rule
                                                         DelPAV
                name
                                                         P-AV-Message-Id
                header-name
                action
                                                         delete
                comparison-type
                                                         case-sensitive
                msg-type
                                                         any
                methods
                match-value
                new-value
sip-manipulation
                                                 TELUStoCM
        name
        description
        split-headers
        join-headers
        header-rule
                                                         modRURI
                name
                header-name
                                                         request-uri
                action
                                                         manipulate
                comparison-type
                                                         case-sensitive
                msg-type
                                                         any
                methods
                match-value
                new-value
                element-rule
                                                                 modRURI
                        name
                        parameter-name
                                                                 uri-host
                        type
                        action
                                                                 replace
                        match-val-type
                                                                 any
                        comparison-type
                                                                case-sensitive
                        match-value
                        new-value
mlabs.teluslabs.net
sip-monitoring
       match-any-filter
                                                 disabled
                                                 enabled
        state
        short-session-duration
        monitoring-filters
        trigger-window
                                                30
snmp-community
        community-name
                                                 sbc
        access-mode
                                                READ-ONLY
        ip-addresses
                                                 192.168.1.1
                                                192.168.2.1
                                                192.168.3.1
                                                 192.168.4.1
steering-pool
```

ip-address	172.16.153.34
start-port	65000
end-port	65535
realm-id	core
network-interface	
steering-pool	
ip-address	172.16.154.35
start-port	65000
end-port	65535
realm-id	peer
network-interface	
surrogate-agent	
register-host	ipinet4.com
register-user	user123456
description	
realm-id	core
state	enabled
customer-host	172.16.154.35
customer-next-hop	10.27.56.7
register-contact-host	ipinet4.com user123456
register-contact-user	pass123456
<pre>password register-expires</pre>	3600
replace-contact	disabled
options	auth-info=refresh
op 020115	auth-
method="INVITE, CANCEL, ACK, BYE"	
route-to-registrar	enabled
aor-count	1
auth-user	user123456
max-register-attempts	10
register-retry-time	300
count-start	1
register-mode	automatic
triggered-inactivity-interval	30
triggered-oos-response	503
system-config	TIAD AGME ODG1
hostname	TLAB-ACME-SBC1
description	TLAB ACME SBC
location	Voice Lab
mib-system-contact	
mib-system-name	
mib-system-location	anahlad
<pre>snmp-enabled enable-snmp-auth-traps</pre>	enabled disabled
enable-snmp-syslog-notify	disabled
enable-snmp-monitor-traps	disabled
enable-env-monitor-traps	disabled
snmp-syslog-his-table-length	arsablea 1
snmp-syslog-level	WARNING
snmp-sysiog-level system-log-level	WARNING WARNING
system-log-level process-log-level	WARNING NOTICE
process-log-level process-log-ip-address	0.0.0
process-log-ip-address process-log-port	0.0.0.0
collect	V
sample-interval	5
pambie_titret.ngi	J

```
push-interval
                                                        15
                boot-state
                                                        disabled
                start-time
                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
               tls-profile
                                                        enabled
               qos-enable
        call-trace
                                                disabled
        internal-trace
                                                disabled
                                                all
       log-filter
        default-gateway
                                                0.0.0.0
                                                enabled
        restart
        exceptions
                                                3600
        telnet-timeout
                                                1800
        console-timeout
        remote-control
                                                enabled
        cli-audit-trail
                                                enabled
                                                disabled
       link-redundancy-state
        source-routing
                                                disabled
        cli-more
                                                disabled
        terminal-height
                                                24
        debug-timeout
        trap-event-lifetime
        ids-syslog-facility
                                                -1
        options
        default-v6-gateway
                                                ::
        ipv6-signaling-mtu
                                                1500
        ipv4-signaling-mtu
                                                1500
                                                00:00
        cleanup-time-of-day
       snmp-engine-id-suffix
       snmp-agent-mode
                                                v1v2
web-server-config
        state
                                                enabled
       inactivity-timeout
                                                5
       http-state
                                                enabled
       http-port
       https-state
                                                disabled
       https-port
                                                443
        tls-profile
```

# **Appendix B**

## **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.

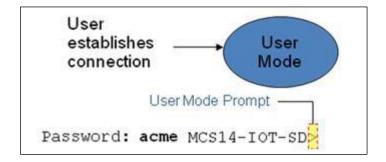
Initial connectivity will be through the serial console port. At a minimum, this is how to configure the management (eth0) interface on the E-SBC.

#### **ACLI Basics**

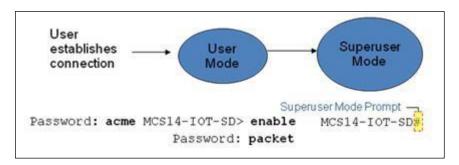
There are two password protected modes of operation within the ACLI, User mode and Superuser mode.

When you establish a connection to the E-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.



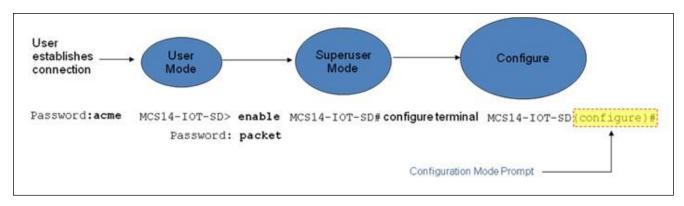
The Superuser mode allows for access to all system commands for operation, maintenance, and administration. This mode is identified by the pound sign (#) in the prompt after the target name. To enter the Superuser mode, issue the enable command in the User mode.



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.

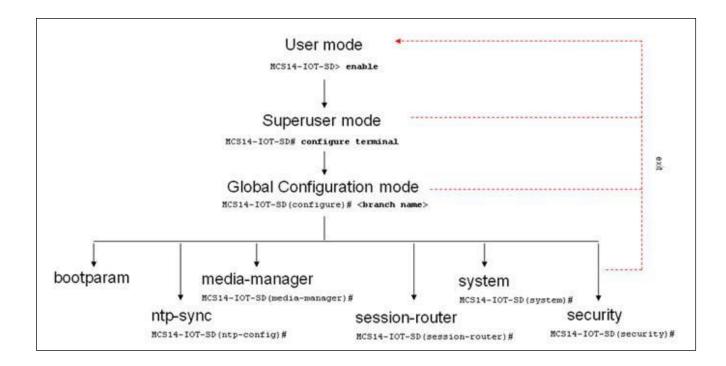
You must enter the Configuration mode to configure elements. For example, you can access the configuration branches and configuration elements for signaling and media configurations. To enter the Configuration mode, issue the configure terminal command in the Superuser mode.

Configuration mode is identified by the word configure in parenthesis followed by the pound sign (#) in the prompt after the target name, for example, **TLAB-ACME-SBC1** (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 E-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.

```
'.' = clear field; '-' = go to previous field; q = quit
boot device
                       : eth0
processor number
host name
file name : /tffs0/nnSCX620.gz
inet on ethernet (e) : 10.0.3.11:ffff0000
inet on backplane (b) :
                       : 10.0.3.100
host inet (h)
gateway inet (g)
                       : 10.0.0.1
                       : anonymous
user (u)
ftp password (pw) (blank = rsh)
                                   : anonymous
flags (f)
                      : 0x8
target name (tn)
                      : MCS14-IOT-SD
startup script (s)
                       :
other (o)
```

The ntp-sync branch provides access to ntp server configuration commands for synchronizing the E-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**

- 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.
- Issue the exit command to exit the selected element.

Note that the configurations at this point are not permanently saved yet. If the E-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.

- 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 E-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
- 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 E-SBC reboots, your configurations will be lost.

## **Configuration Versions**

At any time, three versions of the configuration can exist on the E-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 E-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 E-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 E-SBC displays a reminder on screen stating that you must use the **activate-config** command if you want the configurations to be updated.

```
TLAB-ACME-SBC1 # 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'.
TLAB-ACME-SBC1
```

### **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 E-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

to continue with applying these changes immediately or to apply them at a later time.

TLAB-ACME-SBC1# activate-config Activate-Config received, processing. waiting 120000 for request to finish Request to 'ACTIVATE-CONFIG' has Finished, Activate Complete TLAB-ACME-SBC1#



**Oracle Corporation** World Headquarters 500 Oracle Parkway Redwood Shores, CA 94065 U.S.A.

Worldwide Inquiries: Phone: +1.650.506.7000 Fax: +1.650.506.7200

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