ORACLE®

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

Technical Application Note

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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.
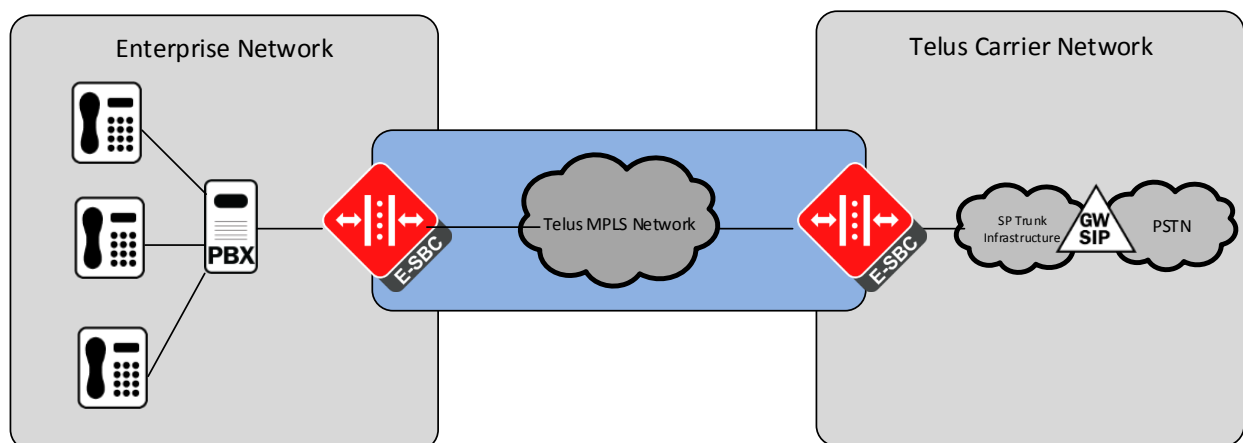
Lab Configuration

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
SBC interfaces				
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				
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
boot device         : eth0
processor number    : 0
host name           : acmesystem
file name           : /code/images/nnECZ720p2.64.bz --- >location
where the software is loaded on the SBC
inet on ethernet (e)   : 192.168.1.22:ffffff80 --- > This is the ip
address of the management interface of the SBC, type the IP address and
mask in hex
inet on backplane (b)  :
host inet (h)          :
gateway inet (g)       : 192.168.1.1 -> gateway address here
user (u)               : vxftp
ftp password (pw) (blank = use rsh)     :
vxftp flags (f)        :
target name (tn)       : TLAB-ACME-SBC1 -> ACLI prompt name & HA peer name
startup script (s)     :
other (o)              :
```

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
        name                            wancom1
        sub-port-id                     0
        description                     HA HEARTBEAT1
        hostname
        ip-address
        pri-utility-addr                169.254.1.1
        sec-utility-addr                169.254.1.2
        netmask                         255.255.255.252
        gateway
        sec-gateway
        gw-heartbeat
                state                           disabled
                heartbeat                       0
                retry-count                     0
                retry-timeout                   1
                health-score                    0
        dns-ip-primary
        dns-ip-backup1
        dns-ip-backup2
        dns-domain
        dns-timeout                     11
        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
                state                           disabled
                heartbeat                       0
                retry-count                     0
                retry-timeout                   1
```

```
            health-score                      0
      dns-ip-primary
      dns-ip-backup1
      dns-ip-backup2
      dns-domain
      dns-timeout                       11
      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
                  address                     169.254.1.1:9090
                  network-interface           wancom1:0
            destination
                  address                     169.254.2.1:9090
                  network-interface           wancom2:0
      peer
            name                        TLAB-ACME-SBC2
            type                        Secondary
            destination
                  address                     169.254.1.2:9090
                  network-interface           wancom1:0
            destination
                  address                     169.254.2.2:9090
                  network-interface           wancom2:0
```

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

```
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                     172.16.153.1
      sec-gateway
      gw-heartbeat
            state                       disabled
            heartbeat                   0
            retry-count                 0
            retry-timeout               1
            health-score                0
      dns-ip-primary
      dns-ip-backup1
      dns-ip-backup2
```

```
        dns-domain
        dns-timeout                         11
        signaling-mtu                       0
        hip-ip-list
        ftp-address
        icmp-address
        snmp-address
        telnet-address
        ssh-address
network-interface
        name                                s1p0
        sub-port-id                         0
        description                         Inside/Trusted
        hostname
        ip-address                          172.16.154.25
        pri-utility-addr                    172.16.154.2
        sec-utility-addr                    172.16.154.3
        netmask                             255.255.255.0
        gateway                             172.16.154.1
        sec-gateway
        gw-heartbeat
                state                       disabled
                heartbeat                   0
                retry-count                 0
                retry-timeout               1
                health-score                0
        dns-ip-primary
        dns-ip-backup1
        dns-ip-backup2
        dns-domain
        dns-timeout                         11
        signaling-mtu                       0
        hip-ip-list
        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
        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
        register-contact-user              user123456
        password                           pass123456
        register-expires                   3600
        replace-contact                    disabled
        options                            auth-info=refresh
                                           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
```

Reg-cache on the IPPBX sip-interface

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

IP-PBX session-agent configuration

```
session-agent
        hostname                        172.16.149.38
        ip-address                      172.16.149.38
        port                            5060
        state                           enabled
        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
        state                           enabled
        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                            0
                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
                next-hop                                172.16.149.38
                realm                                   peer
                action                                  none
                terminate-recursion                     disabled
                carrier
                start-time                              0000
                end-time                                2400
                days-of-week                            U-S
                cost                                    0
                state                                   enabled
                app-protocol                            SIP
                methods
                media-profiles
                lookup                                  single
                next-key
                eloc-str-lkup                           disabled
                eloc-str-match
```

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
            name                            manipRURI
            header-name                     request-uri
            action                          manipulate
            comparison-type                 case-sensitive
            msg-type                        any
            methods                         INVITE
            match-value
            new-value
            element-rule
                    name                            modRURI
                    parameter-name
                    type                            uri-host
                    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
                        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                     To
        action                          manipulate
        comparison-type                 case-sensitive
        msg-type                        any
        methods
        match-value
        new-value
        element-rule
                name                            To
                parameter-name
                type                            uri-host
                action                          replace
                match-val-type                  any
                comparison-type                 case-sensitive
                match-value
                new-value                       $REMOTE IP
    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                            chqDisplay
                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
                name                                    StrPAIURIUsr
                header-name                             P-Asserted-Identity
                action                                  store
                comparison-type                         case-sensitive
                msg-type                                any
                methods
                match-value
                new-value
                element-rule
                        name                                    StrPAIURIUsr
                        parameter-name
                        type                                    uri-user
                        action                                  store
                        match-val-type                          any
                        comparison-type                         case-sensitive
                        match-value
                        new-value
        header-rule
                name                                    UpdtContact
                header-name                             Contact
                action                                  manipulate
                comparison-type                         case-sensitive
                msg-type                                any
                methods
                match-value
                new-value
                element-rule
                        name                                    UpdtCtactHost
                        parameter-name
                        type                                    uri-host
                        action                                  replace
                        match-val-type                          any
                        comparison-type                         case-sensitive
                        match-value
                        new-value                               $LOCAL IP
                element-rule
                        name                                    UpdtCtactUsr
                        parameter-name
                        type                                    uri-user
                        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-rule
                name                            DelAlrtInfo
                header-name                     Alert-Info
                action                          delete
                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
                name                            DelPChg
                header-name                     P-Charging-Vector
                action                          delete
                comparison-type                 case-sensitive
                msg-type                        any
                methods
                match-value
                new-value
        header-rule
                name                            DelPLocation
                header-name                     P-Location
                action                          delete
                comparison-type                 case-sensitive
                msg-type                        any
                methods
                match-value
                new-value
        header-rule
                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
……………
        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.

CPE outbound to SP Offnet gateway(PSTN) (G.729 is offered first)		
	Call ringback	pass
	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
SP offnet gateway (PSTN) inbound to CPE (G.729 offered first)		
	Call ringback	pass
	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 offered first)		
	Call ringback	pass
	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 Calling number privacy		
	Pass calling number: IP PBX to Offnet Mark 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
CPE Calling Name Delivery		
	IP PBX to IP PBX: pass display name	pass
CPE offnet Call Conference	Offnet1 to IP PBX phone 1, IP PBX phone1 conferences Offnet2	pass
	IP PBX phone1 to Offnet1, IP PBX phone1 conferences Offnet2	pass
CPE Intra-Site Attended Call Transfer	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
	Phone1 to Phone2. Phone1 transfers to Offnet PSTN	pass
	Phone1 to Offnet PSTN. Phone 1 transfers to Phone2	pass
	Offnet PSTN to Phone1. Phone1 transfers to Phone2	pass
CPE Intra-Site Unattended Call Transfer	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
	Phone1 to Phone2. Phone1 transfers to Phone3 at 2nd IP PBX site	pass
	Phone1 to Phone2. Phone1 transfers to Offnet PSTN	pass
	Phone1 to Offnet PSTN. Phone 1 transfers to Phone2	pass
	Offnet PSTN to Phone1. Phone1 transfers to Phone2	pass

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 phone (Vz or at&t) voicemail)	IP PBX to Offnet (mobile VM): leave voice mail	pass
CPE Find Me (Call Forward Unconditionally	Offnet to IP PBX call invokes to find me feature	pass
	IP PBX to IP PBX call invokes to find me feature	pass
	Offnet to IP PBX phone1 call invokes find me feature to offnet	pass
	IP PBX to IP PBX phone1 call invokes find me feature to offnet	pass
Simultaneous Calls (Minimum 2)	CPE to PSTN Offnet gateway	pass
	Offnet gateway inbound to CPE	pass
CPE Auto Attendant	Offnet to IP PBX: call auto attendant	pass
	Offnet to IP PBX: connect to extension via auto attendant	
CPE to PSTN Offnet gateway international call	Call ringback	pass
	Voice cut through on connect	pass
	ringback terminated on caller disconnect	pass
CPE Find Me (Call Forward On Busy)	Offnet to IP PBX phone1 call invokes find me feature to phone2	pass
	Offnet to IP PBX phone1 call invokes find me feature to offnet	pass
	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
CPE Find Me (Call Forward Don't Answer)	Offnet to IP PBX phone1 call invokes find me feature to phone2	pass
	Offnet to IP PBX phone1 call invokes find me feature to offnet	pass
	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 200OK)) - call 800-864-8331 - United Airlines	IP PBX phone1 call 800 number, phone user navigates through AA to reach correct menu 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.
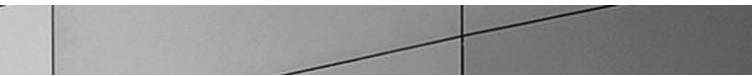
At the E-SBC Console:

```
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 http://docs.oracle.com/cd/E56581_01/index.htm

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

```
              lookup                          single
              next-key
              eloc-str-lkup                   disabled
              eloc-str-match
media-manager
        state                         enabled
        latching                      enabled
        flow-time-limit               86400
        initial-guard-timer           300
        subsq-guard-timer             300
        tcp-flow-time-limit           86400
        tcp-initial-guard-timer       300
        tcp-subsq-guard-timer         300
        tcp-number-of-ports-per-flow  2
        hnt-rtcp                      disabled
        algd-log-level                NOTICE
        mbcd-log-level                NOTICE
        options
        red-flow-port                 1985
        red-mgcp-port                 1986
        red-max-trans                 10000
        red-sync-start-time           5000
        red-sync-comp-time            1000
        media-policing                enabled
        max-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-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                          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                       172.16.153.1
        sec-gateway
        gw-heartbeat
```

```
            state                        disabled
            heartbeat                    0
            retry-count                  0
            retry-timeout                1
            health-score                 0
      dns-ip-primary
      dns-ip-backup1
      dns-ip-backup2
      dns-domain
      dns-timeout                  11
      signaling-mtu                0
      hip-ip-list
      ftp-address
      icmp-address
      snmp-address
      telnet-address
      ssh-address
network-interface
      name                         S1P0
      sub-port-id                  0
      description                  Inside/Trusted
      hostname
      ip-address                   172.16.154.25
      pri-utility-addr             172.16.154.2
      sec-utility-addr             172.16.154.3
      netmask                      255.255.255.0
      gateway                      172.16.154.1
      sec-gateway
      gw-heartbeat
            state                        disabled
            heartbeat                    0
            retry-count                  0
            retry-timeout                1
            health-score                 0
      dns-ip-primary
      dns-ip-backup1
      dns-ip-backup2
      dns-domain
      dns-timeout                  11
      signaling-mtu                0
      hip-ip-list
      ftp-address
      icmp-address
      snmp-address
      telnet-address
      ssh-address
network-interface
      name                         wancom1
      sub-port-id                  0
      description                  HA HEARTBEAT1
      hostname
      ip-address
      pri-utility-addr             169.254.1.1
      sec-utility-addr             169.254.1.2
      netmask                      255.255.255.252
```

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

```
        auto-negotiation                    enabled
        duplex-mode                         FULL
        speed                               100
        wancom-health-score                 50
        overload-protection                 disabled
phy-interface
        name                                s1p0
        operation-type                      Media
        port                                0
        slot                                1
        virtual-mac
        admin-state                         enabled
        auto-negotiation                    enabled
        duplex-mode                         FULL
        speed                               100
        wancom-health-score                 50
        overload-protection                 disabled
realm-config
        identifier                          core
        description
        addr-prefix                         0.0.0.0
        network-interfaces                  s0p0:0
        mm-in-realm                         enabled
        mm-in-network                       enabled
        mm-same-ip                          enabled
        mm-in-system                        enabled
        bw-cac-non-mm                       disabled
        msm-release                         disabled
        qos-enable                          enabled
        max-bandwidth                       0
        fallback-bandwidth                  0
        max-priority-bandwidth              0
        max-latency                         0
        max-jitter                          0
        max-packet-loss                     0
        observ-window-size                  0
        parent-realm
        dns-realm
        media-policy
        class-profile
        in-translationid
        out-translationid
        in-manipulationid
        out-manipulationid
        average-rate-limit                  0
        access-control-trust-level          none
        invalid-signal-threshold            0
        maximum-signal-threshold            0
        untrusted-signal-threshold          0
        nat-trust-threshold                 0
        max-endpoints-per-nat               0
        nat-invalid-message-threshold       0
        wait-time-for-invalid-register      0
        deny-period                         30
        cac-failure-threshold               0
```

```
        untrust-cac-failure-threshold         0
        ext-policy-svr
        diam-e2-address-realm
        subscription-id-type                  END USER NONE
        symmetric-latching                    disabled
        pai-strip                             disabled
        trunk-context
        device-id
        early-media-allow
        enforcement-profile
        additional-prefixes
        restricted-latching                   none
        restriction-mask                      32
        user-cac-mode                         none
        user-cac-bandwidth                    0
        user-cac-sessions                     0
        icmp-detect-multiplier                0
        icmp-advertisement-interval           0
        icmp-target-ip
        monthly-minutes                       0
        options
        spl-options
        accounting-enable                     enabled
        net-management-control                disabled
        delay-media-update                    disabled
        refer-call-transfer                   disabled
        refer-notify-provisional              none
        dyn-refer-term                        disabled
        codec-policy
        codec-manip-in-realm                  disabled
        codec-manip-in-network                disabled
        rtcp-policy
        constraint-name
        session-recording-server
        session-recording-required            disabled
        manipulation-string
        manipulation-pattern
        stun-enable                           disabled
        stun-server-ip                        0.0.0.0
        stun-server-port                      3478
        stun-changed-ip                       0.0.0.0
        stun-changed-port                     3479
        sip-profile
        sip-isup-profile
        match-media-profiles
        qos-constraint
        block-rtcp                            disabled
        hide-egress-media-update              disabled
        tcp-media-profile
        monitoring-filters
        node-functionality
        default-location-string
        alt-family-realm
        pref-addr-type                        none
realm-config
```

```
identifier                         peer
description
addr-prefix                        0.0.0.0
network-interfaces                 s1p0:0
mm-in-realm                        disabled
mm-in-network                      enabled
mm-same-ip                         enabled
mm-in-system                       enabled
bw-cac-non-mm                      disabled
msm-release                        disabled
qos-enable                         enabled
max-bandwidth                      0
fallback-bandwidth                 0
max-priority-bandwidth             0
max-latency                        0
max-jitter                         0
max-packet-loss                    0
observ-window-size                 0
parent-realm
dns-realm
media-policy
class-profile
in-translationid
out-translationid
in-manipulationid
out-manipulationid
average-rate-limit                 0
access-control-trust-level         none
invalid-signal-threshold           0
maximum-signal-threshold           0
untrusted-signal-threshold         0
nat-trust-threshold                0
max-endpoints-per-nat              0
nat-invalid-message-threshold      0
wait-time-for-invalid-register     0
deny-period                        30
cac-failure-threshold              0
untrust-cac-failure-threshold      0
ext-policy-svr
diam-e2-address-realm
subscription-id-type               END USER NONE
symmetric-latching                 disabled
pai-strip                          disabled
trunk-context
device-id
early-media-allow
enforcement-profile
additional-prefixes
restricted-latching                none
restriction-mask                   32
user-cac-mode                      none
user-cac-bandwidth                 0
user-cac-sessions                  0
icmp-detect-multiplier             0
icmp-advertisement-interval        0
```

```
        icmp-target-ip
        monthly-minutes                      0
        options
        spl-options
        accounting-enable                    enabled
        net-management-control               disabled
        delay-media-update                   disabled
        refer-call-transfer                  disabled
        refer-notify-provisional             none
        dyn-refer-term                       disabled
        codec-policy
        codec-manip-in-realm                 disabled
        codec-manip-in-network               disabled
        rtcp-policy
        constraint-name
        session-recording-server
        session-recording-required           disabled
        manipulation-string
        manipulation-pattern
        stun-enable                          disabled
        stun-server-ip                       0.0.0.0
        stun-server-port                     3478
        stun-changed-ip                      0.0.0.0
        stun-changed-port                    3479
        sip-profile
        sip-isup-profile
        match-media-profiles
        qos-constraint
        block-rtcp                           disabled
        hide-egress-media-update             disabled
        tcp-media-profile
        monitoring-filters
        node-functionality
        default-location-string
        alt-family-realm
        pref-addr-type                       none
redundancy-config
        becoming-standby-time                360000
        peer
                name                              TLAB-ACME-SBC1
                type                              Primary
                destination
                        address                          169.254.1.1:9090
                        network-interface                wancom1:0
                destination
                        address                          169.254.2.1:9090
                        network-interface                wancom2:0
        peer
                name                              TLAB-ACME-SBC2
                type                              Secondary
                destination
                        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
        description                     CM Trunk
        carriers
        allow-next-hop-lp               enabled
        constraints                     disabled
        max-sessions                    0
        max-inbound-sessions            0
        max-outbound-sessions           0
        max-burst-rate                  0
        max-inbound-burst-rate          0
        max-outbound-burst-rate         0
        max-sustain-rate                0
        max-inbound-sustain-rate        0
        max-outbound-sustain-rate       0
        min-seizures                    5
        min-asr                         0
        time-to-resume                  0
        ttr-no-response                 0
        in-service-period               0
        burst-rate-window               0
        sustain-rate-window             0
        req-uri-carrier-mode            None
        proxy-mode
        redirect-action
        loose-routing                   enabled
        send-media-session              enabled
        response-map
        ping-method
        ping-interval                   30
        ping-send-mode                  keep-alive
        ping-all-addresses              disabled
        ping-in-service-response-codes
        out-service-response-codes
        load-balance-dns-query          hunt
        options
        spl-options
        media-profiles
        in-translationid
        out-translationid
        trust-me                        disabled
        request-uri-headers
        stop-recurse
        local-response-map
        ping-to-user-part
        ping-from-user-part
        in-manipulationid
```

```
        out-manipulationid
        manipulation-string
        manipulation-pattern
        p-asserted-id
        trunk-group
        max-register-sustain-rate           0
        early-media-allow
        invalidate-registrations            disabled
        rfc2833-mode                        none
        rfc2833-payload                     0
        codec-policy
        enforcement-profile
        refer-call-transfer                 disabled
        refer-notify-provisional            none
        reuse-connections                   NONE
        tcp-keepalive                       none
        tcp-reconn-interval                 0
        max-register-burst-rate             0
        register-burst-window               0
        sip-profile
        sip-isup-profile
        kpml-interworking                   inherit
        monitoring-filters
        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
        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
        carriers
        allow-next-hop-lp               enabled
        constraints                     disabled
        max-sessions                    0
        max-inbound-sessions            0
        max-outbound-sessions           0
        max-burst-rate                  0
        max-inbound-burst-rate          0
        max-outbound-burst-rate         0
        max-sustain-rate                0
        max-inbound-sustain-rate        0
        max-outbound-sustain-rate       0
        min-seizures                    5
```

```
min-asr                             0
time-to-resume                      0
ttr-no-response                     0
in-service-period                   0
burst-rate-window                   0
sustain-rate-window                 0
req-uri-carrier-mode                None
proxy-mode
redirect-action
loose-routing                       enabled
send-media-session                  enabled
response-map
ping-method                         OPTIONS;hops=0
ping-interval                       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                   TELUStoCM
out-manipulationid                  CMtoTELUS
manipulation-string
manipulation-pattern
p-asserted-id
trunk-group
max-register-sustain-rate           0
early-media-allow
invalidate-registrations            disabled
rfc2833-mode                        none
rfc2833-payload                     0
codec-policy
enforcement-profile
refer-call-transfer                 disabled
refer-notify-provisional            none
reuse-connections                   NONE
tcp-keepalive                       none
tcp-reconn-interval                 0
max-register-burst-rate             0
register-burst-window               0
sip-profile
sip-isup-profile
kpml-interworking                   inherit
monitoring-filters
session-recording-server
```

```
        session-recording-required      disabled
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
        node-functionality                  P-CSCF
sip-interface
        state                               enabled
        realm-id                            core
        description
        sip-port
                address                             172.16.153.34
                port                                5060
                transport-protocol                  UDP
                tls-profile
                allow-anonymous                     all
                multi-home-addrs
                ims-aka-profile
        carriers
        trans-expire                        0
        initial-inv-trans-expire            0
        invite-expire                       0
        max-redirect-contacts               0
        proxy-mode
        redirect-action
        contact-mode                        none
        nat-traversal                       none
        nat-interval                        30
        tcp-nat-interval                    90
        registration-caching                enabled
        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                      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
                address                             172.16.154.35
                port                                5060
                transport-protocol                  UDP
                tls-profile
                allow-anonymous                     all
                multi-home-addrs
                ims-aka-profile
        carriers
        trans-expire                        0
        initial-inv-trans-expire            0
        invite-expire                       0
        max-redirect-contacts               0
        proxy-mode
        redirect-action
```

```
contact-mode                        none
nat-traversal                       none
nat-interval                        30
tcp-nat-interval                    90
registration-caching                disabled
min-reg-expire                      300
registration-interval               3600
route-to-registrar                  disabled
secured-network                     disabled
teluri-scheme                       disabled
uri-fqdn-domain
options
spl-options
trust-mode                          all
max-nat-interval                    3600
nat-int-increment                   10
nat-test-increment                  30
sip-dynamic-hnt                     disabled
stop-recurse                        401,407
port-map-start                      0
port-map-end                        0
in-manipulationid
out-manipulationid
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
        name                                    CMtoTELUS
        description                             Calls to SIP PSTN
        split-headers
        join-headers
        header-rule
                name                                    manipRURI
                header-name                             request-uri
                action                                  manipulate
                comparison-type                         case-sensitive
                msg-type                                any
                methods                                 INVITE
                match-value
                new-value
                element-rule
                        name                                    modRURI
                        parameter-name
                        type                                    uri-host
                        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
                        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
```

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```
              name                           manipTo
              header-name                    To
              action                         manipulate
              comparison-type                case-sensitive
              msg-type                       any
              methods
              match-value
              new-value
              element-rule
                      name                           To
                      parameter-name
                      type                           uri-host
                      action                         replace
                      match-val-type                 any
                      comparison-type                case-sensitive
                      match-value
                      new-value                      $REMOTE IP
      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
      header-rule
              name                           StrPAIURIUsr
              header-name                    P-Asserted-Identity
              action                         store
              comparison-type                case-sensitive
              msg-type                       any
              methods
              match-value
              new-value
              element-rule
                      name                           StrPAIURIUsr
                      parameter-name
                      type                           uri-user
                      action                         store
                      match-val-type                 any
                      comparison-type                case-sensitive
                      match-value
                      new-value
      header-rule
              name                           UpdtContact
```

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

```
                header-name                          P-Location
                action                               delete
                comparison-type                      case-sensitive
                msg-type                             any
                methods
                match-value
                new-value
        header-rule
                name                                 DelPAV
                header-name                          P-AV-Message-Id
                action                               delete
                comparison-type                      case-sensitive
                msg-type                             any
                methods
                match-value
                new-value

sip-manipulation
        name                            TELUStoCM
        description
        split-headers
        join-headers
        header-rule
                name                                 modRURI
                header-name                          request-uri
                action                               manipulate
                comparison-type                      case-sensitive
                msg-type                             any
                methods
                match-value
                new-value
                element-rule
                        name                                 modRURI
                        parameter-name
                        type                                 uri-host
                        action                               replace
                        match-val-type                       any
                        comparison-type                      case-sensitive
                        match-value
                        new-value
mlabs.teluslabs.net
sip-monitoring
        match-any-filter                disabled
        state                           enabled
        short-session-duration          0
        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
```

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```
        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
        register-contact-user             user123456
        password                          pass123456
        register-expires                  3600
        replace-contact                   disabled
        options                           auth-info=refresh
                                          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
        hostname                          TLAB-ACME-SBC1
        description                       TLAB ACME SBC
        location                          Voice Lab
        mib-system-contact
        mib-system-name
        mib-system-location
        snmp-enabled                      enabled
        enable-snmp-auth-traps            disabled
        enable-snmp-syslog-notify         disabled
        enable-snmp-monitor-traps         disabled
        enable-env-monitor-traps          disabled
        snmp-syslog-his-table-length      1
        snmp-syslog-level                 WARNING
        system-log-level                  WARNING
        process-log-level                 NOTICE
        process-log-ip-address            0.0.0.0
        process-log-port                  0
        collect
                sample-interval                   5
```

```
              push-interval                     15
              boot-state                        disabled
              start-time                        now
              end-time                          never
              red-collect-state                 disabled
              red-max-trans                     1000
              red-sync-start-time               5000
              red-sync-comp-time                1000
              push-success-trap-state           disabled
        comm-monitor
              state                             disabled
              sbc-grp-id                        0
              tls-profile
              qos-enable                        enabled
        call-trace                        disabled
        internal-trace                    disabled
        log-filter                        all
        default-gateway                   0.0.0.0
        restart                           enabled
        exceptions
        telnet-timeout                    3600
        console-timeout                   1800
        remote-control                    enabled
        cli-audit-trail                   enabled
        link-redundancy-state             disabled
        source-routing                    disabled
        cli-more                          disabled
        terminal-height                   24
        debug-timeout                     0
        trap-event-lifetime               0
        ids-syslog-facility               -1
        options
        default-v6-gateway                ::
        ipv6-signaling-mtu                1500
        ipv4-signaling-mtu                1500
        cleanup-time-of-day               00:00
        snmp-engine-id-suffix
        snmp-agent-mode                   v1v2
web-server-config
        state                             enabled
        inactivity-timeout                5
        http-state                        enabled
        http-port                         80
        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.
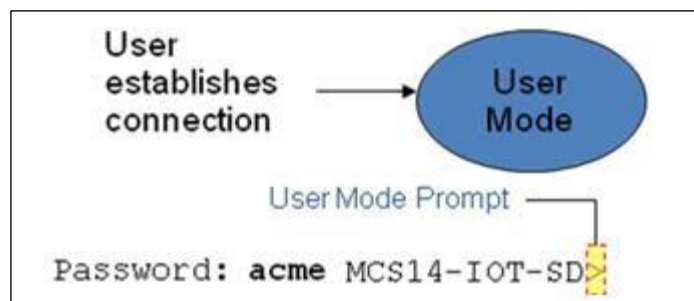
The Superuser mode allows for access to all system commands for operation, maintenance, and administration. This mode is identified by the pound sign (#) in the prompt after the target name. To enter the Superuser mode, issue the enable command in the User mode.
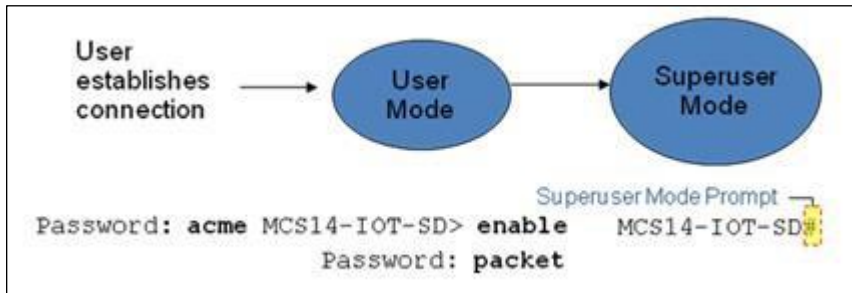
From the Superuser mode, you can perform monitoring and administrative tasks; however you cannot configure any elements. To return to User mode, issue the exit command.

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.
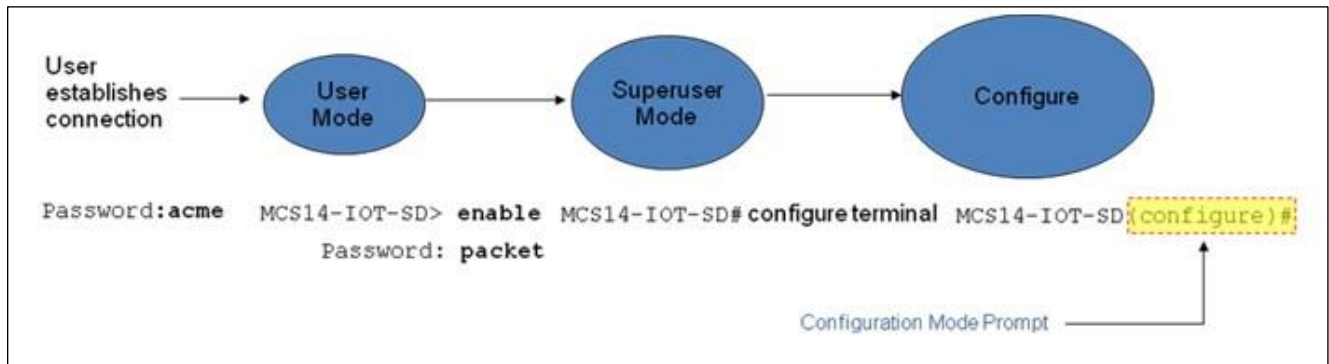
In the configuration mode, there are six configuration branches:

- bootparam;
- ntp-sync;
- media-manager;
- session-router;
- system; and
- security.
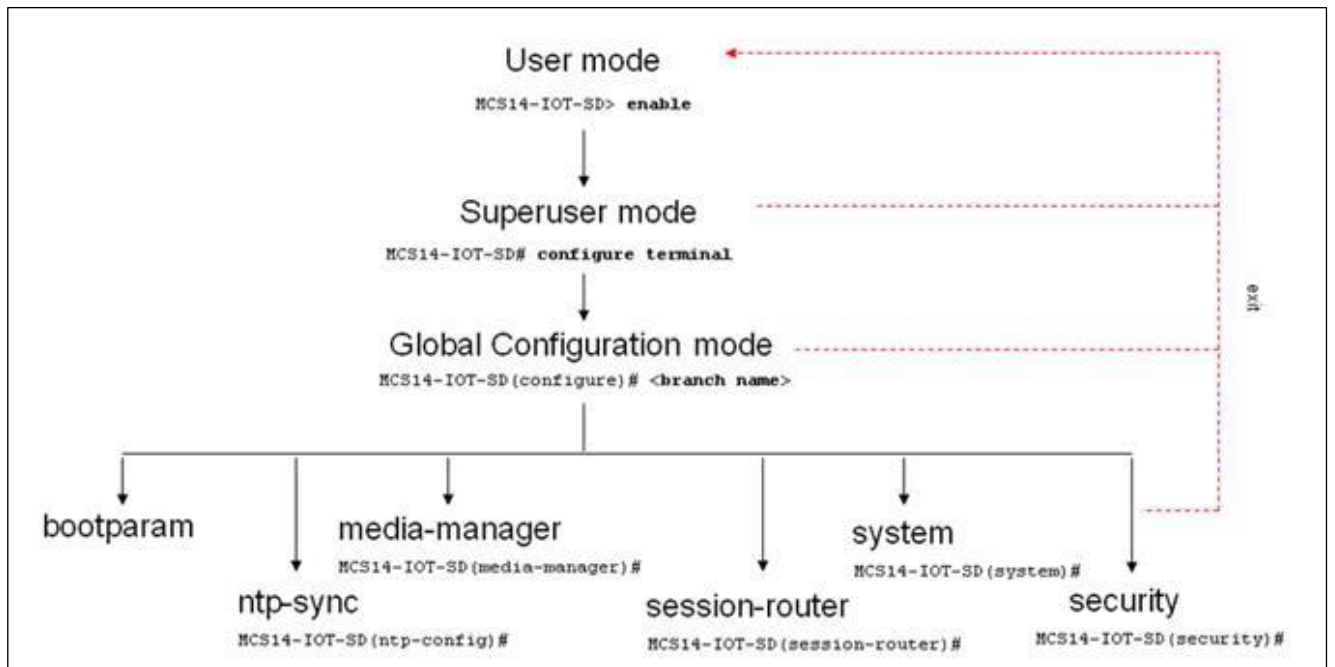
The ntp-sync and bootparams branches are flat branches (i.e., they do not have elements inside the branches). The rest of the branches have several elements under each of the branches.

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        : 0
host name               :
file name               : /tffs0/nnSCX620.gz
inet on ethernet (e)    : 10.0.3.11:ffff0000
inet on backplane (b)   :
host inet (h)           : 10.0.3.100
gateway inet (g)        : 10.0.0.1
user (u)                : anonymous
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

1. To create a single-instance element, you go to the appropriate level in the ACLI path and enter its parameters. There is no need to specify a unique identifier property because a single-instance element is a global element and there is only one instance of this element.

2. When creating a multiple-instance element, you must specify a unique identifier for each instance of the element.

3. It is important to check the parameters of the element you are configuring before committing the changes. You do this by issuing the `show` command before issuing the `done` command. The parameters that you did not configure are filled with either default values or left empty.

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

5. Issue the `exit` command to exit the selected element.

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

2. Select the element that you will edit, and view it before editing it.
   The **select** command loads the element to the volatile memory for editing. The **show** command allows you to view the element to ensure that it is the right one that you want to edit.

3. Once you are sure that the element you selected is the right one for editing, edit the parameter one by one. The new value you provide will overwrite the old value.

4. It is important to check the properties of the element you are configuring before committing it to the volatile memory. You do this by issuing the **show** command before issuing the **done** command.

5. On completion, you must issue the **done** command.

6. Issue the **exit** command to exit the selected element.

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

2. Issue the **exit** command.

To delete a multiple-instance element,

1. Enter the **no** command from within the path for that particular element.
   The key field prompt, such as <name>:<sub-port-id>, appears.

2. Use the <Enter> key to display a list of the existing configured elements.

3. Enter the number corresponding to the element you wish to delete.

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

Note that the configuration changes at this point are not permanently saved yet. If the 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 or not
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#
```