



Oracle Communications Acme Packet 1100 Session Boarder Controller with BroadCloud R21

Technical Application Note



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Intended Audience

This is a technical document intended for use by Oracle Systems Engineers, third party Systems Integrators, Oracle Enterprise customers and partners and end users of Oracle Enterprise Session Border Controller (E-SBC) as well as service provider based session border controller. It assumes that the reader is familiar with basic operations of Oracle Session Border Controller AP1100, 3800/4000 and 6000 series platforms.

Document Overview

This Oracle technical application note outlines the recommended configurations for the Oracle Session Border Controller AP1100 series for connecting Broadcloud R21 customers. The solution contained within this document has been certified on Oracle's Acme Packet OS ECZ750P3.BZ.

Broadcloud platform delivers a broad range of unified communications services including video, voice, hosted call center, conferencing, messaging and mobility, for businesses and consumers worldwide. This application note has been prepared as a means of ensuring that Broadcloud and Oracle AP1100 E-SBC are configured in the optimal manner.

Introduction

Audience

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

Prior to reading this Quick Guide, read the BroadCloud SIP Trunking Service Definition document, available from BroadCloud's knowledgebase at xchange.broadsoft.com. The document describes how to provision SIP Trunk Groups, SIP Trunk Users and SIP Trunk Mobility Users. All BroadCloud configuration notion will be in noted <...>

Requirements

- Fully functioning Broadcloud R.21
- Oracle Enterprise Session Border Controller AP 1100 or any Oracle ESBC appliance or VM edition running Net-Net OS ECZ750p3.bz. Note: the configuration running on the SBC is backward/forward compatible with any release in the 7.5.0 stream.

Lab Configuration

The following diagram illustrates the lab environment created to facilitate certification testing (IP addressing/Port below is only a reference; they can change per your network specifications).



Phone A, B and C register to Broadcloud through the E-SBC

Broadcloud UC One Communicator

Configuring the Oracle E-SBC

In this section we describe the steps for configuring a Net-Net E-SBC for use with Broadcloud.

In Scope

The following Step-by-Step guide configuring the Net-Net E-SBC assumes that this is a newly deployed device dedicated to a single customer.

Note that Oracle Communications offers several products and solutions that can interface with Broadcloud. This document covers the setup for the Net-Net E-SBC platforms software ECZ750P3.BZ or later. A Net-Net 1100-series (AP1100) platform was used as the platform for developing this guide. If instructions are needed for other Oracle Communications products, please contact your Oracle Communications representative.

Out of Scope

• Configuration of Network management including SNMP and RADIUS

What you will need

- Serial Console cross over cable with RJ-45 connector
- Terminal emulation application such as PuTTYor HyperTerm
- Passwords for the User and Superuser modes on the Net-Net E-SBC
- Signaling IP address and port of Broadcloud
- Signaling and media IP addresses and ports to be used on the Net-Net E-SBC facing Endpoints and Broadcloud
- IP address of the enterprise DNS server

SBC getting started

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



Plug the INT (slot 0 port 0) interface into your endpoints facing network and the EXT (slot 1 port 0) interface into your Broadcloud (server-facing) network as shown in the diagram above. Once connected, you are ready to power on and perform the following steps.

All commands are in bold, such as **configure terminal**; parameters in bold red such as **1100-BSFT-1** are parameters which are specific to an individual deployment.

Note: The ACLI is case sensitive.

1. Establish the serial connection to the Net-Net SBC.

Confirm the Net-Net SD is powered off and connect the serial console cable to the Net-Net SD to a workstation running a terminal emulator application such as PuTTy. Start the terminal emulation application using the following settings:

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

Start the Net-Net SD and confirm that you see the following output from the bootup sequence.

🚱 COMB - PuTTY 🔄 💿 📼
Starting tEbmd
Starting tSipd
Starting tLrtd
Starting tH323d
Starting tH248d
Starting tBgfd
Starting tSecured
Starting tAuthd
Starting tCertd
Starting tIked
Starting tauditd
Starting tauditpusher
Starting tSnmpd
Start platform alarm
Initializing /ramdrv Cleaner
Starting tLogCleaner task
Bringing up shell
password secure mode is enabled
Admin Security is disabled
Starting SSH
SSH Cli init: allocated memory for 5 connections
acli: max telnet sessions: 5
Password: 0x21a059c8 (tAlarm): eth0: Link is up (1000Mb/s full duplex)

2. Login to the Net-Net SD and enter the configuration mode

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

Password: acme 1100-BSFT-1> enable Password: packet 1100-BSFT-1# configure terminal 1100-BSFT-1 (configure)#

You are now in the Global Configuration mode.

P 172.18.255.134 - PuTTY	3
1100-BSFT-1#	
1100-BSFT-1#	=
1100-BSFT-1#	-
1100-BSFT-1# conf t	
1100-BSFT-1(configure)#	Ŧ

3. Initial Configuration – Assign the management Interface an IP address

To assign an IP address, one has to configure the bootparams on the Net-Net SD, by going to 1100-BSFT-1#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

1100-BSFT-1#(configure)bootparam

```
'.' = clear field; '-' = go to previous
field; q = quit
boot device : eth0
processor number: 0
host name : acmesystem
```

file name : /boot/nnECZ750p3.bz--- >location where the software is loaded on the SBC inet on ethernet (e) : 172.18.255.134:ffff0000 --- > This is the ip address of the management interface of the SBC, type the IP address and mask in hex inet on backplane (b) : host inet (h) : gateway inet (g) : 172.18.0.1 --- > gateway address here user (u) : vxftp ftp password (pw) (blank = use rsh) : vxftp flags (f) : target name (tn) : 1100-BSFT-1

SBC configuration key elements

The following section walks you through specific elements which require change for the Oracle Enterprise SBC to work with Broadcloud:

- **static-flow**: When a Broadcloud client registers to the Broadcloud server through the E-SBC, it downloads the config file from the server. Hence, static-flow is enabled on the E-SBC to allow the HTTP and HTTPS requests and responses from the client to pass through to the server.
- media-manager -* options: dont-terminate-assoc-legs: When hairpinned calls are ended because of signaling failures on one call leg, the Oracle E-SBC deletes both legs' media flows simultaneously by default. In addition, when the first hairpinned call leg is torn down, the second call leg is gracefully released immediately. When dont-terminate-assoc-legs is configured, the orphaned call leg in the hairpin scenario will be torn down after the initial guard timer expires.
- survivability: The survivability feature is enabled on the E-SBC by configuring this element. This
 feature is the Oracle E-SBC's ability of a Remote Office/Branch Office to detect the loss of
 communication over SIP-based telephony to Broadcloud. When loss of communication is detected
 over the SIP service, the Oracle E-SBC dynamically switches into Survivable Mode, locally handling call
 processing and providing limited additional server functionality.
- service-health: When Survivability Mode is enabled on the E-SBC, the system is able to detect any
 loss of connection (and subsequent re-connection) to the Broadcloud server based on a health score.
 For the purpose of health monitoring, a sip-interface and one or more attached session agents are
 logically grouped together by configuring a "service-tag" parameter to indicate the name of the
 session agent group. The service health score of the group is based upon the health status of the
 session agents within the group ; in this case the SA for Broadcloud AS1 is included.
- **session-agent** ·* **auth-attribute:** This element is configured for digest authentication. The attributes listed in the auth-attribute are used by the E-SBC to send the authentication information when challenged by Broadcloud.
- **surrogate-agent:** A surrogate agent is needed to register the E-SBC to the Broadcloud server on behalf of the phone. Surrogate registration requires registration-caching to be set to enabled on the sip-interface of Broadcloud realm.
- SIP manipulations:
 - Add100rel: This is configured to add the Require: 100rel header as Broadcloud supports early
 - media.
 - AllowEvents: This is added as an out-manipulation on the sip-interface facing the Broadcloud
 - server.
 - Broadcloud: This header-rule adds the Allow-eventsBroadcloudSubscriberData header to all the REGISTER requests going out of the E-SBC
 - AddOTG: Broadcloud requires the use of otg header param in the From header, and this HMR adds it to the From header.
 - add_iptel: This sip-manipulation adds the tgrp and trunkContext to the Contact header which Broadcloud mandates.

SBC Configuration

filter-config name all local-policy from-address to-address 8325624170 source-realm sip-trunk policy-attribute next-hop realm towards-ep local-policy from-address * to-address source-realm towards-ep policy-attribute next-hop realm sip-trunk app-protocol SIP local-policy from-address * 978 to-address source-realm towards-ep disabled state policy-attribute next-hop realm media-manager hnt-rtcp enabled options network-interface name s0p0 ip-address 192.168.3.78 netmask 255.255.255.0 192.168.3.150 gateway hip-ip-list 192.168.3.78 192.168.3.78 ftp-address icmp-address 192.168.3.78 ssh-address 192.168.3.78 dns-domain lync2013.com network-interface name s0p1 155.212.214.171 ip-address 155.212.214.172 pri-utility-addr sec-utility-addr 155.212.214.173 netmask 255.255.255.0 155.212.214.1 gateway dns-ip-primary 8.8.8.8 dns-domain <REGISTER DOMAIN> hip-ip-list 155.212.214.171 icmp-address 155.212.214.171 phy-interface s0p0 name operation-type Media 00:08:25:06:c1:2e virtual-mac phy-interface s0p1 name Media operation-type

medpool.lync2013.com <OUTBOUND PROXY> 10.0.210.75 towards-ep dont-terminate-assoc-legs

port	1
virtual-mac	00.08.25:06:c1:2f
realm-config	
identifier	ain-trunk
network-interiaces	SUP1:0
mm-in-realm	enabled
realm-config	
identifier	towards-ep
network-interfaces	s0p0:0
mm-in-realm	enabled
service-health	
service-tag	
service-tag-string	test-surv
sa-health-profile	
session-agent-hostname	as.iop1.broadworks.net
session-agent	
hostname	COLITEOLIND PROXYS
nort	
port	oin truph
ping-method	OPTIONS
ping-interval	30
out-translationid	removePlus
refer-call-transfer	enabled
session-agent	
hostname	medpool.lync2013.com
port	5068
transport-method	StaticTCP
realm-id	towards-ep
ping-method	OPTIONS
ping-interval	30
ping-all-addresses	enabled
out-translationid	AddPlus
refer-call-transfer	enabled
	enabled
autif-attributes	Duccostrates
auch-realm	Broadworks
username	<sip user=""></sip>
password	* * * * * * *
sip-config	1
registrar-domain registrar-bost	*
registrar-port	5060
trans-expire	30
options	max-udp-length=0
	register-grace-timer=20
sin-message-len	65535
evtra-method-stats	enabled
	enabled

sip-feature	eventlict
name	eventlist
require-mode-cutbound	Pass
sin-interface	1035
realm-id	sip-trupk
sip-port	bip cram
address	155.212.214.171
allow-anonymous	agents-only
redirect-action	Proxy
min-reg-expire	7200
registration-interval	7200
route-to-registrar	enabled
uri-fqdn-domain	<register domain=""></register>
spl-options	broadsoftSurvivability
out-manipulationid	AllowEvents
rfc2833-payload	127
rfc2833-mode	preferred
service-tag	test-surv
sip-interface	
realm-id	towards-ep
sip-port	
address	192.168.3.78
sip-port	
address	192.168.3.78
port	5068
transport-protocol	TCP
redirect-action	Proxy
nat-traversal	always
min-reg-ounire	
registration-interval	7200
route-to-registrar	enabled
options	reuse-connections
out-manipulationid	NAT IP
rfc2833-pavload	127
rfc2833-mode	preferred
sip-manipulation	-
name	Add100rel
header-rule	
name	AddRequired
header-name	Required
action	add
methods	INVITE
new-value	100rel
sip-manipulation	
name	AllowEvents
header-rule	
name	BroadWorks
header-name	Allow-Events
action	add
comparison-type	boolean
msg-type	request

methods	REGISTER
new-value	BroadWorksSubscriberData
sip-manipulation	
name	addOTG
header-rule	
name	addOTG From
header-name	From
action	maninulate
	request
methods	TNUTTE
element-rule	
	otaTrom
name	
parameter-name	olg
суре	neader-param
action	add
new-value	oracletrunkgroup
sip-manipulation	
name	add_iptel
header-rule	
name	contact
header-name	Contact
action	manipulate
msg-type	request
methods	INVITE
element-rule	
name	tarp
parameter-name	tgrp
type	uri-user-param
action	add
new-value	
	+
groCroupl element-rule	C .
	trunkContoxt
name	
parameter-name	trunkcontext
type	uri-user-param
action	add
new-value	"172.19.193.15"
header-rule	
name	BroadWorks
header-name	Allow-Events
action	add
comparison-type	boolean
msg-type	request
methods	REGISTER
new-value	BroadWorksSubscriberData sip-
monitoring	
match-any-filter	enabled
monitoring-filters	all
spl-config	
spl-options	broadsoftSurvivability
plugins	4
name	BroadsoftSurvivability.1.0.spl

steering-pool ip-address start-port end-port realm-id steering-pool ip-address start-port end-port realm-id surrogate-agent register-host register-user realm-id customer-next-hop register-contact-host register-contact-user password register-expires route-to-registrar auth-user max-register-attempts register-retry-time survivability state service-tag reg-expires prefix-length system-config hostname location process-log-level comm-monitor state monitor-collector address default-gateway source-routing web-server-config

192.168.3.78 10000 20000 towards-ep 155.212.214.171 25000 35000 sip-trunk <OUTBOUND PROXY> <SIP USER> towards-ep <OUTBOUND PROXY> 155.212.214.171 <SIP USER> <SIP PASSWORD> 60 disabled <SIP USER> 0 30 enabled test-surv 7600 10 BSFT-ISR-1100 lab DEBUG enabled

172.18.255.71 172.18.0.1 enabled

Configuring the Broadcloud Server

This section identifies Broadcloud lab requirements and configuration required as a prerequisite for executing this test plan.

2.1.1 Broadcloud Lab Requirements

This test plan requires a standard redundant Broadcloud lab installation. Components required for a standard redundant lab installation include:

- Application Server (primary)
- Application Server (secondary)
- Media Server
- Network Server (1)
- Network Server (2)
- POP3/IMAP4/SMTP Server

2.1.2 Broadcloud Configuration

This section identifies configuration requirements to enable Broadcloud for SIP requests from the SBC.

2.1.3 Broadcloud Configuration for Premise-based SBCs

Customer premise-based SBCs, including ALGs, Edge Gateways, and similar devices are deployed at the customer site. Typically, servicing a limited number of users in the same enterprise and are hosted by a single pair of Broadcloud Application Servers. There is no Broadcloud configuration required for this model.

However, if the premise-based SBC typically fronts multiple enterprises and/or is also frequently deployed as a hosted/carrier-based SBC, then complete the configuration for Hosted SBCs.

2.1.4 Broadcloud Configuration for Hosted SBCs

Hosted (or carrier-based) SBCs sit in the service provider network. They may service many enterprises across diverse locations and may front multiple Application Server clusters. Hosted SBCs must direct SIP requests to the Broadcloud Network Server to determine the hosting Application Server for the user.

Access redirect eliminates the need for the SBC to configure static mapping of access devices to Application Server clusters. The SBC sends all out-of-dialog requests to the Broadcloud Network Server, which responds with a *302 Redirect* containing an ordered list of the Application Servers to be contacted.

The Broadcloud Network Server must be configured with an Origination Redirect policy to enable it to respond correctly to SIP requests from the SBC. This eliminates the need to configure the SBC with static mapping of access equipment to Application Server clusters. The SBC sends all out-of-dialog requests to the Broadcloud Network Server, which responds with a *302 Redirect* containing an ordered list of the Application Servers to be contacted.

2.1.4.1 Enable Line/Port Synchronization

For the Network Server to associate a request from the SBC to a specific Application Server cluster, line/port synchronization must be enabled.

Enable synchronization via the Application Server CLI.

AS_CLI/Interface/NetServSync> set syncLinePorts true AS_CLI/Interface/NetServSync> set syncTrunkGroups true Restart the Application Server after enabling synchronization.

If there are Broadcloud users already configured on the system, then existing line/ports must be dumped to file on the Application Server and uploaded to the Network Server as described in the Network Server and Application Server Synchronization section of the Broadcloud Maintenance Guide [8].

2.1.4.2 Configure Origination Redirect Policy

Complete the following steps to enable the Network Server to perform Origination Redirect for requests from the SBC.

1. Create a new OrigRedirect policy instance. Note that this step does not need to be repeated for additional SBCs or SBC addresses.

NS_CLI/Policy/OrigRedirect> add <policy instance name> true CallTypes ALL redirectOnLinePortInsteadOfDN true

2. Create a new routing profile in the Network Server. . Note that this step does not need to be repeated for additional SBCs or SBC addresses.

NS_CLI/Policy/Profile> add <routing profile name, e.g. sbcprof> OrigRedirect <policy instance name>

3. Create a new Routing NE for the SBC.

NS_CLI/System/Device/RoutingNE> add <Routing NE name, e.g. sbc1> "" 1 50 <routing profile name, e.g. sbcprof> false OnLine InboundOnly accessRoutingNE

4. Associate address with SBC Routing NE. The address provisioned here must match the address in the first (VIA entry in a message from the SBC).

NS_CLI/System/Device/RoutingNE/Address> add <Routing NE name> <address> 1 50

Configuring the Oracle Enterprise Operations Monitor

In this section we describe the steps for configuring Oracle Enterprise Operations Monitor (EOM) for use with the Oracle Enterprise SBCs to monitor SIP signaling traffic on the network.

In Scope

The following guide for configuring the Oracle EOM assumes that this is a newly deployed device dedicated to a single customer. Please see the Oracle Communications Session Monitor Installation Guide on http://docs.oracle.com/cd/E60864 01/index.htm for a better understanding of the basic installation.

Out of Scope

- Basic installation as this is covered in Chapters 2 and 3 of the Oracle Communications Session Monitor Installation Guide.
- High availability.

What will you need

- Console access to the EOM server or virtual machine (VM).
- Browser-based HTTPS access to the EOM server after the initial configuration is complete.
- Administrator password for the EOM to be used.
- IP address to be assigned to EOM.

EOM – Getting Started

Ensure that the server or VM specifications meet those outlined in Chapter 1 of the Oracle Communications Session Monitor Installation Guide. Install the EOM software and configure the network parameters as outlined in Chapter 2 of the same guide. Chapter 3 details the subsequent browser-based installation. When prompted to select the "Machine Type", select the "Communications Operations Monitor" checkbox.

Configuring EOM to Display All Legs of a Call in a Single Report

This allows all call legs on both sides of the E-SBC to be displayed in a single report, making analysis and troubleshooting easier.

Cloud Communications	x Oracle Communications x	That we have a second se		de la companya de la
← → C ☆ ▲ No	t secure 1475://172.18.255.101/me/#main			☆ 🖬 :
HAPPS D TWTR D ac	:me mail 🕡 sony tv reset 😗 Google 📓 School Closings	= C8: 🧕 Games M 🜆 IBM Rational ClearQ:: 🔳 NASDAQ:OF	RCL: 31.52 💼 Seethamma Vakitlo 5 🛛 🛐 (598 unread) - sri_ram 🛛 💼 ManaTeluguMovies	I 🖞 www.paolschoolplus.c 🔹 »
	unications Operations Monitor			€EN-US + admin +
Dashboard Alerts Traces Apps	Active cals	• (X)	Registered users 4	* X
Operations KPJ / Netrics Calls Voice Quality Residuations	a islae islae islae 	30500 20500 21500	3 2 1 0 stitus 11900 1950 3000 30 - Registered uses (mode see age)	156 2156
User Devices Trunks / Prefixes		0.		0.
Devices	Pacent calls	× ×	User Device Distribution	* X
Customens User Tracking IP Tracking Link Quality	Coller Collee 2404/05/2012 2404/07/201 2404/05/201 2404/07/201 2404/05/201	Call time Segm_ State Media 2721* 4 Established No 107* 4 Fasihol No	User devices (0 registrations on 0 devices)	
	Registrations	- X		0.
Trade_1099.pdf	↑ Strade-1099.pdf	101×1		Show all

1. Click on the user (admin in this example) in the top right corner, then click on Settings.

2. Under System Management select System Settings and search for "merge". Double click on "Merge globally by Call-ID".

https://	172.18.255.101/me/#main&device=device	-18-selected=		C	Q, Search	☆ É ♥ ♣ 希	4 0 9
ront 🔝 Ma	ast Visited - 📋 Key Shortcuts 🧿 Regtro	eck 📌 Sharepoint 🖸 Ct	FTP Dechive Workspac	🔁 Aome Docs 🛞 Aome Soft	ware 🔄 New CQ 🏓 Bi	0 C AP New Solutions C Employee MOS	
ACL	Settings					× ×	admin
Dashboar Alerts	General Settings	System Settings	×			default value 📕 custom value	• ×
Traces	REST API	Name			Value		15.48.14
Apps	Probes	Merge globally by Cal	HD				E
rations	Imper Determination Sources						
KP1 / Metr	Caller ID Callee ID						E
Calls	🖃 😋 Platform						
/oice Qua	Platform Devices						
Registratio	Devices Monitoring						
Jser Devi	Prefix Tags						125.4
runks / F	🗃 😋 Realms						Contraction
Devices	Realms						* ×
omers	Sale Horgenet						19 19 25
her Track	Cracie SBC Confo Licitat						
D Trachie	Language Settings						
P Trackin	🗐 😋 External Devices						
Jink Quali	RADIUS Authentication						
	SNMP Options						
	FTP Server						
	VQ Collector						
	Construction Savepoints						
	User Management						0.

3. Click on the Enabled check box and click Update.



4. Under Platform select Platform Devices. Click Add (or Edit if you've already added a device).

• •• fp	Drade Communications Op							
0 hrtPs://1	2.18.255.1011meittmain			e	e Q. Scar		V -S• *	C) 9
soffront m	ost Visited Key snort Recare	ck ve Sharepoint C CSFTP {	3 Beehive VVorkspac	Acme Docs 🛞 Acros	Software j New CO	BUG CI AP New Solution	ons Employee MOS Lai	b Reservations
OPACI								
UNACLIS	ettings							adman
	1 General Settings	Platform Devices						
	Status							x
ashboai	in Actions	Add Edit			[Import] [Expo	rt e [Diagram Order	Toggle external) (Realms	
Traces	E REST API	USAU V	Call Matching	IP Addresses	Point Codes	Visibilty	External?	191323.
Apps	11 Probes	A SSC/ B2BUA devices						
	LL Mediation Engine Connector	SBC DMZ	Using generic algorithm	192.168.65.79			internal	
Operations	e, Number Determination Sources	CUCM	Using generic algorithm	10.232.50.89			internal	
KPI / Metr.	E Caller ID	SBC Gore	Using generic algorithm	10.232.50.11			internal	
Calla								
Voice Oua	= Platform Device							
Deviatori	Devices Monitoring							
Registrati	sIP Ta ₉ s							
User Devi,	Prefix Tags							
Trunks /	A Realms							0.
Devices	0 Realm Patterns							Ua
	Pa System Management							t3i2 29
Customers	M System Settings							
User Iraci	MI Oracle SBC Config Upload							
IP Jrackin	External Devices							
Link Quali	IM RADIUS Authentication							
	slimp Options							
	71 FTP Server							
	M Configuration Savepoints							I
	3 User Management							
	MI User Management							

5. Select the SBC/B2BUA radio button regardless of the type of device you're adding, then click Next.

• <u>S</u> Or	acle Communications Op G	racie Piece, Setae Appi				
 https. 	172.18.255.104, ne lamaingiclevice, d	evice -1 &selected		C 'r. Searc	ch	· · · 4 @
Soffront (jj m	ost Visited • N Key Shorts ₍₂ 0 lise	etreck st Shareet.it	CSFTP	Beehive Workseto, Q Acme no. rt Acme So	t jį New co ، BUG CAP Nan Soluti	ons Ernoleyet MOS
C:IRACL.	Settings					
• Dashboai Alerts Traces A.P.P.	A j General Settings Status Tic Actions REST API A Hedvork J Mediation Engine Connect	Edit platform device Device Ty, Select the device ty	ipe you would like to add		n Order	i Toggle external Rears
	Number Determination Sour		d SEIC/13213UA <u>a</u>			internal
KP1 / Mater	n Q ₪ ^{Caller ID}		Pro	xy 0		
Voice Quo User Devi, Trunk, / raj Devices User Tract IP Trackin Link Quals	Platform Devices Devices Monitoring D Prefix Tags Prefix Tags L Realms Patterne A, System Management E SWAM Settings & Ore. SECGargle Upload Language Settings External Devices Ctill RADIUS Authenfoation SKIMP Options ETP Senser	Non-Recani-Route Proxy Gateway 0 Trunk 0 L2 Balancer O SW O SGW 0	• 0	'Memel ir	temal	۰x
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6. Click on the "Use generic Palladion algorithm (recommended)" radio button, then click Next.



7. Enter the device's IP address in both fields, then click Next.

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8. Enter a name for the device and click Finish.

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- 9. Repeat for all other devices in the call flow. Enter each side of the SBC (inside and outside) separately. You don't necessarily need to define the access client's information.
- 10. On the Dashboard, under Recent Calls, make sure the Auto Refresh is set to something other than Off.
- 11. Make a call. After the call is finished, the call will show up under Recent Calls with 2 or more segments if the call only traverses the SBC once, or with 4 or more segments if the call traverses the SBC twice. Double click on the call.
- 12. The call will show up with all segments. Click on the PDF button to generate a report.
- 13. Click on the Create button.
- 14. Choose to either save the file or open it.
- 15. View the Call Report in Acrobat Reader or another program. The report will show all segments of the call.

Test Summary

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

Broadcloud Session Border Controller Interoperability Test Plan Support Table			
Test Plan Package	Test Plan Package Items	Supported	Comments
	Call Origination	Yes	
Basic	Call Termination	Yes	
	Session Audit	Yes	
	Session Timer	Yes	
	Ringback	Yes	
	Forked Dialog	Yes	
	181 Call Being Forwarded	Yes	
	DTMF – Inband	Yes	
	DTMF – RFC 2833	Yes	
	DTMF – DTMF Relay	Yes	
	Third-Party Call Control – Basic	Yes	
Broadcloud Services	Third-Party Call Control – Advanced	Yes	
	Diversion Header	Yes	
	History-Info Header	Yes	
	Call Waiting	Yes	
Access Device	Call Hold	Yes	
Services	Call Transfer	Yes	
	Local Conference	Yes	
	Call Forwarding	Yes	
Access Davies	Registration – Register Authentication	Yes	
Services – Registration	Registration – Maximum Registration	Yes	
and Authentication	Registration – Minimum Registration	Yes	
	Authentication – Invite Authentication	Yes	
	Authentication – Re-Invite or Update Authentication	Yes	
	Authentication – Refer Authentication	Yes	
	Authentication – Access Device Authenticating Broadcloud	Yes	
	SIP Trunk GIN Registration – Call to PBX User	Yes	
	SIP Trunk GIN Registration – Call from PBX User	Yes	
	SIP Trunk Pilot Registration – Pilot Register	Yes	
	SIP Trunk Pilot Registration – Call to PBX User	Yes	
	SIP Trunk Pilot Registration – Call from PBX User	Yes	
	Surrogate Registration – Pilot Register	Yes	
	Surrogate Registration – Call to PBX User	Yes	

Broadcloud Session Border Controller Interoperability Test Plan Support Table			
Test Plan Package	Test Plan Package Items	Supported	Comments
	Surrogate Registration – Call from PBX User	Yes	
	Maximum Monitored Users	Yes	
Redundancy	DNS SRV Lookup	Yes	
Redundancy	Register Failover/Failback	Yes	
	Invite Failover/Failback	Yes	
	Bye Failover	Yes	
Remote Survivability	Register	Yes	
Remote our vivability	Local Calls – Without Subscriber Data	Yes	Except extension calling
	PSTN Calls – Without Subscriber Data	Yes	

Software Versions Used

The following are the software versions used in this testing.

Component	Version
E-SBC	ECZ7.5.0 P3
Oracle Operations Monitor	3.3.90.0.0
Broadcloud	R21.sp1
Polycom Phones	VVX 600

Troubleshooting Tools

If you find that you are not able to complete calls or have problems with the test cases, there are a few tools available for Oracle E-SBC like logging and tracing which may be of assistance. In this section we will provide a list of tools which you can use to aid in troubleshooting any issues you may encounter.

Wireshark

Wireshark is a network protocol analyzer which is freely downloadable from

www.wireshark.org.

On the Oracle E-SBC

The Oracle SBC provide a rich set of statistical counters available from the CLI, 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

console:

oraclesbc1# reset sipd	
oraclesbc1# notify sipd debug	
oraclesbc1#	
enabled SIP Debugging	
oraclesbc1# notify all rotate-logs	
	-

Examining the log files

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

C:\Documents and Settings\user>ftp 192.168.5.24
Connected to 192.168.85.55.
220 oraclesbc1FTP server (VxWorks 6.4) ready.
User (192.168.85.55:(none)): user
331 Password required for user.
Password: acme
230 User user logged in.
ftp> cd /ramdrv/logs
250 CWD command successful.
ftp> get sipmsg.log
200 PORT command successful.
150 Opening ASCII mode data connection for '/ramdrv/logs/sipmsg.log' (3353
bytes).
226 Transfer complete.
ftp: 3447 bytes received in 0.00Seconds 3447000.00Kbytes/sec.
ftp> get log.sipd
200 PORT command successful.

150 Opening ASCII mode data connection for '/ramdrv/logs/log.sipd' (204681 bytes). 226 Transfer complete. ftp: 206823 bytes received in 0.11Seconds 1897.46Kbytes/sec. ftp> bye 221 Goodbye.

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

Through the Web GUI

You can also check the display results of filtered SIP session data from the Oracle E-SBC and ESBC, and provide traces in a common log format for local viewing or for exporting to your PC. Please check the "Monitor and Trace SIP Messages" section (page 140) of the E-SBC Web GUI User Guide available at <u>http://docs.oracle.com/cd/E56581_01/index.htm</u>. For the ESBC, see the "Monitor and Trace" section (page 95) of the User's Guide available at <u>http://docs.oracle.com/cd/E55725_01/index.htm</u>.

Telnet

Since we are working within an architecture which uses bound TCP listening ports for functionality, the simplest form of troubleshooting can be seeing if the devices are listening on a particular port, as well as confirming that the there is nothing blocking them such as firewalls. Ensure that you have a TELNET client available on a workstation.

BroadCloud Parameter	Description
<outbound proxy=""></outbound>	The BroadCloud Outbound Proxy value is found on the BroadCloud MySite Trunk Group configuration page under the 'Trunk Group Settings' section.
<sip user=""></sip>	The BroadCloud SIP User value is found on the BroadCloud MySite Trunk Group configuration page under the 'Device Settings for Authentication' section.
<sip password=""></sip>	The BroadCloud SIP Password is found on the BroadCloud My Trunk Group configuration page under the 'Device Settings for Authentication' section.
<register domain=""></register>	The BroadCloud Register Domain is found on the BroadCloud MySite Trunk Group configuration page under the 'Trunk Group Settings' section.
<sip user=""></sip>	The BroadCloud SIP User value is found on the BroadCloud MySite Trunk Group configuration page under the 'Device Settings for Authentication' section.
<sip password=""></sip>	The BroadCloud SIP Password is found on the BroadCloud My Trunk Group configuration page under the 'Device Settings for Authentication' section.

Appendix A

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.

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

ACLI Basics

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

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

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



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



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

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

Configuration mode is identified by the word configure in parenthesis followed by the pound sign (#) in the prompt after the target name, for example, oraclesbc1(configure)#. To return to the Superuser mode, issue the exit command.



In the configuration mode, there are six configuration branches:

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



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

The bootparam branch provides access to SBC boot parameters.

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

The security branch provides access to security configuration.

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

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

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

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

Configuration Elements

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

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

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

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

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

Creating an Element

- 1. To create a single-instance element, you go to the appropriate level in the ACLI path and enter its parameters. There is no need to specify a unique identifier property because a single-instance element is a global element and there is only one instance of this element.
- 2. When creating a multiple-instance element, you must specify a unique identifier for each instance of the element.
- 3. It is important to check the parameters of the element you are configuring before committing the changes. You do this by issuing the show command before issuing the done command. The parameters that you did not configure are filled with either default values or left empty.
- 4. On completion, you must issue the done command. The done command causes the configuration to be echoed to the screen and commits the changes to the volatile memory. It is a good idea to review this output to ensure that your configurations are correct.
- 5. Issue the exit command to exit the selected element.

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

Editing an Element

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

- 6. Enter the element that you will edit at the correct level of the ACLI path.
- 7. Select the element that you will edit, and view it before editing it.
- 8. The select command loads the element to the volatile memory for editing. The show command
- 9. allows you to view the element to ensure that it is the right one that you want to edit.
- 10. 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.
- 11. 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.
- 12. On completion, you must issue the done command.
- 13. Issue the exit command to exit the selected element.

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

Deleting an Element

The no command deletes an element from the configuration in editing. To delete a single-instance element,

- 14. Enter the no command from within the path for that specific element
- 15. Issue the exit command.

To delete a multiple-instance element,

- 16. Enter the no command from within the path for that particular element. The key field prompt, such as <name>:<sub-port-id>, appears.
- 17. Use the <Enter> key to display a list of the existing configured elements.
- 18. Enter the number corresponding to the element you wish to delete.
- 19. Issue the select command to view the list of elements to confirm that the element was removed.

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

Configuration Versions

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

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

Saving the Configuration

The save-config command stores the edited configuration persistently.

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

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

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

oraclesbc1 # 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'.
oraclesbc1 #

Activating the Configuration

On issuing the activate-config command, the saved configuration is copied from the non-volatile memory to the volatile memory. The saved configuration is activated and becomes the running configuration. Some configuration changes are service affecting when activated. For these configurations, the SBC warns that the change could have an impact on service with the configuration elements that will potentially be service affecting. You may decide whether or not to continue with applying these changes immediately or to apply them at a later time.

oraclesbc1# activate-config Activate-Config received, processing. waiting 120000 for request to finish Request to 'ACTIVATE-CONFIG' has Finished, Activate Complete oraclesbc1#



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