

Oracle SBC Troubleshooting, Operations and Maintenance (OCI) Ed 1 LVC

Oracle Communications

DURATION

5 Days

MODULES

7 Lectures

COURSE CODE

—

Course Overview

Oracle SBC Troubleshooting, Operations and Maintenance (OCI) Ed 1 LVC

What You Will Learn

Course Introduction

- About the Course
- Objectives
- Course
- Hands-On

Troubleshooting Hardware and the Network

- Objectives
- Lesson Topics
- Topic: Troubleshooting Boot Issues
- Boot Management
- Boot Management – Boot Loader
- Boot Management – Boot Parameters
- Boot Management – Boot Flags
- Boot Process
- SBC Boot Process: 1 (Loading Bootloader, Boot Parameters)
- SBC Boot Process: 2 (Loading the SBC Boot Image, Checking Disk)
- SBC Boot Process: 3 (Crash Kernel, Detecting Media, Boot Flag, & Platform)
- SBC Boot Process: 4 (Starting Media, Application & Configuration)
- SBC Boot Process: 5 (Enabling Features & Media Interfaces)
- SBC Boot Process: 6 (Starting More Daemon Processes / Tasks)
- SBC Boot Process: 7 (Completing)

- Interrupting the Boot Process
- [Acme Boot]Prompt Options (1 of 2)
- [Acme Boot]Prompt Options (2 of 2)
- Where to find the Diagnostic Image File – <http://support.oracle.com> (1 of 2)
- Where to find the Diagnostic Image File – <http://support.oracle.com> (2 of 2)
- Booting the SBC from the Diagnostic Image
- Executing Diagnostics Testing (1 of 2)
- Executing Diagnostics Testing (2 of 2)
- Diagnostic Shell Commands
- Key Points on Diagnostics Image File
- Boot Process Issues
- Solutions to the Boot Issues (1 of 5)
- Solution 1: Boot Locally from Another Boot File (2 of 5)
- Solution 2: Boot Externally from an FTP Server (3 of 5)
- Solution 3: Choose option l from the Acme Boot prompt* (4 of 5)
- Solution 4: Choose option d from the Acme Boot prompt* (5 of 5)
- Practice
- Topic: Troubleshooting Hardware and Network Issues
- What to Do with Hardware Failures?
- Hardware and Environmental Faults
- Hardware Temperature, Fan Speed & Environmental Sensor Alarm
- Power Supply Alarms
- Voltage Alarms
- Layer 2 Connectivity – ARP Functionality
- show arp
- arp-add / arp-delete
- Layer 3 – Network Layer
- Are There Layer 3 Issues?
- Enabling Management Protocols
- Enabling Management Protocols – GUI
- Interfaces Status Check – ACLI
- Interfaces Status Check – GUI
- How Is the Management Traffic Routed? (1 of 2)
- How Is the Management Traffic Routed? (2 of 2)
- show route-stats
- Practice
- Topic: Troubleshooting the SBC System Issues
- View the Basic Information About This SBC
- View the Basic Information About This SBC (1 of 3)
- View the Basic Information About This SBC (2 of 3)
- View the Basic Information About This SBC (3 of 3)
- View Features on the SBC
- System Fault Statistics
- show uptime
- show system-state
- What Is The Current CPU Usage?

- What Is The Current Memory Usage?
- Application Memory Usage Statistics
- Viewing Buffer Statistics
- License Capacity
- Performance Management
- System Time
- Configuring NTP
- Verifying NTP Server & Status
- Platform Information
- show platform
- show platform health-check
- show platform limits
- show platform health-check
- show platform cpu & show platform cpu-load
- show platform memory
- Viewing Active Processes
- Realtime CPU Usage
- Checking Remaining Diskspace
- Practice
- Summary

SBC Review

- Objectives
- Topics
- Topic: SBC Signaling Review
- What Is a Realm?
- Configuration Elements View
- Media Packets Path (Conceptual View)
- The sip-config Element
- SIP Edge Proxy Function
- Edge Proxy – sip-interface
- Configuring sip-interface Element
- Policy-Based Realm Bridging (PBRB) in Peering Environment
- Policy-Based Routing on the SBC
- Routing Decision
- local-policy Element Key Configuration
- Session Agent: General
- Example of session-agents
- Configuring The session-agent Element
- session-group (SAG)
- Configuring The session-group Element
- Topic: SBC Media Review
- Media Processing Requirements
- The media-manager-config Element
- Media Proxy Function

- The steering-pool Configuration Element
- Configuring steering-pool Element
- Media Establishment on the SBC
- Media Packets Path (Conceptual View)
- Topic: SBC Configuration Review
- Key Configuration Elements
- Relations of Configuration Elements
- Configuration Element
- Practice
- Summary

Troubleshooting Tools

- Objectives
- Topics
- Topic: Overview
- Management Architecture
- Data and Interfaces for Troubleshooting
- Troubleshooting Methodology
- What to Check Before Troubleshooting?
- Topic: Using the Alarm System and Syslog
- What Are Events on the SBC? (1 of 2)
- What Are Events on the SBC? (2 of 2)
- What Are Alarms in the SBC?
- The Alarm System in the SBC
- How Does the SBC Report Alarms?
- How to Clear the Alarms
- What Is the System Log on the SBC?
- System Log Events (Syslog Configuration)
- Example: acmelog Entries
- Practice
- Topic: Using SNMP
- Overview of SNMP on the SBC
- Enabling the SBC for SNMP v1 and v2
- Enabling the SBC for SNMP v3
- Enabling the SBC for SNMP v3 (GUI VIEW)
- Key Points on SNMP on the SBC
- How to Use the SNMP Data
- Common SNMP Traps
- Example: SNMP Traps in Wireshark
- Example: SNMP Traps in Trap Receiver
- SNMP Query for Monitoring
- Example: How Is the SBC Performance?
- Example: What Interfaces Are Available?
- Example: What Are the Session-Related Statistics?
- What If SNMP Queries Fail?

- What If SNMP Queries Still Fail?
- Problem Sending/Receiving SNMP Traps?
- Example: Troubleshooting with SNMP
- Practice
- Topic: Using the SBC Logging Functions and Log Files
- Logs on the SBC
- How to View Log Files
- Example: sipmsg.log
- How to Enable Logging
- How Much to Log in the Process Logs
- How to View Log Levels of a Process
- Example: log.sipd with Debug Log Level
- Example: log.sipd for Routing
- How to Start a New Log File
- How to Archive/Package Logs
- How to Stream Logs off the SBC
- Logging Versus System Performance
- Practice
- Topic: Packet Trace
- What Is Packet Trace on the SBC?
- How to Trace Packets Through the SBC (Remote)
- How to Start/Stop Packet Trace (Remote)
- How to Trace Packets on the SBC (Local)
- What to Look for in the Packet Trace
- SIP Monitor and Trace via E-SBC GUI
- Accessing SIP Monitor and Trace
- Enabling SIP Monitor and Trace
- Using Dynamic filters for Monitor and Trace
- Monitoring Notable Events
- Configuring Notable Events Monitoring
- Practice
- Topic: Using Call Detail Records (CDRs)
- Overview of CDRs on the SBC
- Enabling CDR on the SBC – Global Configuration
- Enabling CDR on the SBC – Storing CDRs on the SBC
- Enabling CDR on the SBC – Storing CDRs on a Hard Drive
- Enabling CDR on the SBC – Adding RADIUS Servers
- Enabling CDR on the SBC – FTP/SFTP Server Configuration
- Enabling CDR on the SBC – Realm Configuration
- Key Points on CDR Configurations
- CDR Output: RADIUS vs CSV
- How to Use the Data in CDRs
- Monitoring CDRs – Accounting Status
- Monitoring CDRs – Accounting Server Stats
- Monitoring CDRs – CDR Push Receiver Stats
- What to Consider When CDR Fails

- Example: Troubleshooting CDR Failures with Log Files
- Example: Troubleshooting Using CDRs
- Practice
- Topic: Using Historical Data Recording (HDR)
- Historical Data Recording (HDR)
- HDR Groups
- HDR – Things to Know
- Configuring HDR: Setting Global Collection
- Configuring HDR: Setting Push Receivers and Group Settings
- Sending HDRs to an SFTP Server
- ACLI Commands for HDR
- Example: HDR Information from SNMP Statistics
- Example: HDR Information from ACLI Statistics
- Troubleshooting HDR – 1 of 3
- Troubleshooting HDR – 2 of 3
- Troubleshooting HDR – 3 of 3
- Troubleshooting HDR – Example
- Practice
- Topic: What to include in a Support Ticket
- General SBC Troubleshooting Approach
- Opening a Support Ticket – What to Include
- My Oracle Support
- Emergency Response
- Collecting System Information with show support-info
- System Crash
- What else to include
- Summary

Troubleshooting Signaling

- Objectives
- Topics
- Topic: Monitoring and Troubleshooting Signaling Using Statistics
- The show and display Commands
- The Commands for Application Statistics
- Format of show sipd <method> Output
- Example: show sipd invite
- Format of the show sipd <non-method> Output
- The Measurement Window
- Format of the show mbcd <transaction> Output
- What SIP Interfaces Are There?
- Is the SIP Packet Sent to the SIPD task?
- What Is the Architecture Configured in the SBC?
- What Are the Statistics per Realm?
- How Are the INVITE Transactions on a Particular Realm?
- What Are the Active Session Statistics?

- What Are the Active SIP Session Statistics?
- Clearing Active SIP Session?
- monitor session – What Are the Runtime SIP Session Statistics?
- Are There Any sipd Errors or Events?
- Are There Dropped Packets – ACLI?
- Are There Dropped Packets – GUI?
- Are There Dropped Packets – ACLI?
- Are There Dropped Packets – GUI?
- Practice
- Topic: Troubleshooting Policy-Based Routing
- Routing Option: Routing Based on Time of Day?
- Routing Option: Routing Based on SIP Method?
- Routing Option: Routing Based on Cost?
- Routing Option: Routing Based on Codec?
- Routing Option: Routing Based on To Header or Request-URI?
- How Do You View Local Policy Statistics – ACLI?
- How Do You View Local Policy Statistics – GUI?
- Examples of Local-Policy Configuration Issues
- Examples of Routing Issues
- No Local Policy Match Found
- An Unintended Route Is Selected
- Retransmissions
- Topic: Troubleshooting Session Agents
- Session Agent Constraints
- Session Agent Constraints Configuration
- Constraints on a Specific SIP Method
- Key Points on the Rates
- Key Points on the Rate Calculations
- Key Points on the Rate Windows
- Example: Burst and Sustain Rate
- Monitoring Session Agent
- Troubleshooting the 503 Response
- Practice
- Topic: Troubleshooting Registration Issues (Access/Backbone Environment)
- ACLI Commands for Monitoring Registrations
- How Are the REGISTER Transactions on the Entire SBC?
- How Are the REGISTER Transactions on a Particular Realm?
- How Are SIP Registrations?
- Is Registration of an EP Cached in the SBC?
- How Do You Sort Registration Cache Entries?
- How Do You Clear Registration Cache?
- Common Registration Issues
- Issue: Registration Cache Priority for Routing
- Issue: EP Registered, but Can't Make Calls
- Issue: Registration Overload
- Example: Registration Overload

- Issue: CPU Overload
- Issue: CPU Overload – Data to Collect
- Example: Data to Collect
- Issue: CPU Overload – Cause and Solutions
- Practice
- Summary

Troubleshooting Media

- Objectives
- Topics
- Topic: Basic Media Concepts
- Media Flow (Conceptual View)
- Media Flow
- Media Timers
- Media Timers Configuration
- NAT Entries in the Lookup Table
- Example: NAT Entry
- Correlation of Media Timers
- What Does the init Timer Tell You?
- What Does the subsq Timer Tell You?
- What Does the max Timer Tell You?
- Timer Sweeps
- Example: Media Timers in the Lookup Table Call-on-Hold
- Example: Media Timers in the Lookup Table Call with Media Issues
- Practice
- Topic: How NAT Entries Are Built
- How Many Flows for a Single SIP Call?
- What NAT Entries Are in the Lookup Table?
- How Are the NAT Entries Filled?
- Summary of NAT Entries
- Practice
- Topic: Middle Box Control Daemon (MBCD)
- MBCD Overview
- MBCD Terminology
- Media Offer/Answer Process Flow
- Example: SIP INVITE and MIBOCO Transaction
- Viewing MBCD Transactions
- Viewing MBCD Errors
- Practice
- Topic: Troubleshooting Media Issues
- Challenges of Troubleshooting in Production Environments
- Questions to Ask When Media Problems Occur
- Information to Gather When Troubleshooting Media
- show mbcd realms
- monitor media command – Real Time Statistics

- Summaries of the show nat Command
- show nat flow-info by-addr
- Example: Troubleshooting One-Way Audio
- Example: Troubleshooting Call-on-Hold
- Practice
- Summary

Troubleshooting High Availability

- Objectives
- Topics
- Topic: HA Overview
- Virtual HA Addressing
- Physical HA Addressing
- High Availability Process
- BERPd Engine
- wancom Communications
- BERPd Advertisements
- Topic: Checkpointing
- HA Checkpointing
- State Checkpointing Operation – Journal Entries
- Configuration Checkpointing
- Configuring Checkpointing Parameters
- Example: Configuration Checkpointing
- Signaling Synchronization
- Example: Configuration Checkpointing
- Media Checkpointing
- Media Checkpointing Parameters
- Example: Media Checkpointing
- Topic: HA States and State Transitions
- BERPd Machine States
- Boot Actions of HA Peer
- Node State Transitions
- Topic: HA Operations
- Events Triggering Switchover
- Loss of Heartbeat Switchover
- Physical HA Addressing
- HA Media Interface Keep Alive
- Alarming Subsystem
- Alarm Reporting
- Process Watchdog
- Topic: HA Connectivity
- Media Interface Link Detection and Gateway Polling
- Expanded Gateway Polling
- HA Geographic Redundancy
- HA Parameter Adjustments
- Summary