Oracle SBC (OCI) Advanced Config Ed 3 LVC

Oracle Communications

DURATION	MODULES	COURSE CODE
5 Days	5 Lectures	—

Course Overview

Learn How To: Configure the SBC for smart business trunking Deal with special media handling Use advanced routing based on DNS, ENUM, routing tables and more Maximize the use of those powerful HMRs

What You Will Learn

Oracle SBC Advanced Configuration

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

Advanced Header Manipulation Rules

- Objectives
- The Concept of Header Manipulation Rules
- HMR Capabilities and Benefits (1 of 2)
- HMR Capabilities and Benefits (2 of 2)
- HMR Terminology Used in This Lesson
- Example: Header Rule and Element Rule
- HMRs on the SBC (Static)
- HMRs on the SBC (Dynamic)
- Ruleset Guidelines
- Logical Processing Path for New Requests
- Basic Header Manipulation Rules
- sip-manipulation Element
- name Parameter
- header-rule sub-element
- header-rules Guidelines

- header-name Parameter
- The action Parameter – header-rule (1 of 2)
- The action Parameter – header-rule (2 of 2)
- The comparison-type Parameter – header-rule
- The msg-type Parameter – header-rule
- msg-type – out-of-dialog (in-manipulation)
- msg-type – out-of-dialog (out-manipulation)
- The methods Parameter – header-rule
- The match-value Parameter – header-rule
- The new-value Parameter – header-rule
- element-rule sub-element
- element-rules Guidelines
- Referencing “Types” in a Header
- The name Parameter – element-rule
- The parameter-name Parameter – element-rule
- The type Parameter Value: header-value (1 of 12)
- The type Parameter Value: header-param (2 of 12)
- The type Parameter Value: header-param-name (3 of 12)
- The type Parameter Value: uri-user (4 of 12)
- The type Parameter Value: uri-user-only (5 of 12)
- The type Parameter Value: uri-phone-number-only (6 of 12)
- The type Parameter Value: uri-host (7 of 12)
- The type Parameter Value: uri-display (8 of 12)
- The type Parameter Value: uri-param (9 of 12)
- The type Parameter Value: uri-user-param (10 of 12)
- The type Parameter Value: status-code (11 of 12)
- The type Parameter Value: reason-phrase (12 of 12)
- The action Parameter – element-rule (1 of 2)
- The action Parameter – header-rule (2 of 2)
- Built-In Variables (1 of 5)
- Built-In Variables (5 of 5)
- Configuring One HMR per Peer or per Customer (1 of 2)
- Configuring One HMR per Peer or per Customer (2 of 2)
- Example: Deleting a Header
- Example: Change a Contact User uri-param
- Example: Modifying a SIP Response
- Applying Rulesets
- test-sip-manipulation
- test-sip-manipulation – load-sip-message
- test-sip-manipulation – refresh-manipulations
- test-sip-manipulation – sip-manipulation
- test-sip-manipulation – execute
- move Command
- Built-In Ruleset
- Practices
- Introduction to Regular Expressions

- What Are Regular Expressions?
- Literals and Meta Characters
- Meet the Meta Characters!
- Meta Character Types
- Examples
- Useful Classes
- Quantifiers
- Example: Grouping and Quantifiers
- Using the | Meta Character
- Using Anchors
- Beware! Regex Engines Are Greedy! (1 of 2)
- Beware! Regex Engines Are Greedy! (2 of 2)
- Addressing The Greed (1 of 2)
- Addressing The Greed (2 of 2)
- Constructing a Useful Regex
- Capturing Matches
- test-pattern-rule
- Testing Regular Expressions – test-pattern-rule
- Practice
- Advanced Header Manipulation Rules
- Introduction to Regex HMR
- Example: Simple Regex
- comparison-type & match value Regex Parameters
- Regex – String Grouping
- Boolean Operators
- Equality Operators
- Examples
- Boolean Results (1 of 2)
- Boolean Results (2 of 2)
- Boolean Results – Example
- Regex – Duplicate Headers (route / via)
- store and match-value Regex Parameter
- Example – store and copy Regex
- Example – False Boolean Regex
- MIME Support – Message Body
- find-replace-all action – Modifying the Message Body
- Escaped Characters – MIME Manipulation
- Subgroups [[:n:]]
- $CRLF – Built-in-Variable
- mime-sdp-rules – SDP Manipulation
- mime-sdp-rules – sub-elements
- sdp-session-rule
- sdp-media-rule
- sdp-line-rule – sub-element
- A Few Tips…
- Manipulating SDP Example

- HMR for XML
- HMR Development Considerations and Tips
- HMR Development Considerations (1 of 2)
- HMR Development Considerations (2 of 2)
- HMR Development Tips (1 of 2)
- HMR Development Tips (2 of 2)
- Practices
- HMR for SIP-ISUP
- HMR for SIP-ISUP: Overview
- HMR for SIP-ISUP – Example1
- HMR for SIP-ISUP Example2
- HMR for SIP-ISUP – Example3
- HMR for SIP-ISUP – Example4
- ISUP Encode/Decode Formats
- Summary

Routing

- Objectives
- SBC Logical Packet Processing and Routing Options
- Operating System Functions and Services
- Logical Processing Path for New Requests
- The SBC Routing Options (1 of 2)
- The SBC Routing Options (2 of 2)
- Routing – local-policy
- local-policy element
- Lookup Keys (1 of 2)
- Lookup Keys (2 of 2)
- Determining the Ingress Realm
- policy-priority Parameter
- policy-attribute Sub-element
- How Does the SBC Choose an Egress Realm?
- cost Attribute – Routing by Cost
- Routing by Cost – Example
- media-profile Attribute – Routing by CODEC
- Routing by CODEC – Example
- Routing by Time of Day and Day of Week
- Routing by Time of Day / Day of Week – Example (1 of 2)
- Routing by Time of Day / Day of Week – Example (2 of 2)
- Recursion in Local Policies
- test-policy Command – Routing
- Practices
- session-agent Element
- session-agent
- session-agent – Constraints
- session-agent – Timers

- session-agent Constraints – Example
- session-groups (SAG) – Load Balancing
- session-group / session-agent – recursion
- rate-constraints sub-element – Method Throttling (1 of 3)
- rate-constraints sub-element – Method Throttling (2 of 3)
- rate-constraints sub-element – Method Throttling (3 of 3)
- session-agent – Monitoring Health
- Practices
- Additional Route Handling
- redirect-action maddr Resolution (1 of 2)
- redirect-action maddr Resolution (2 of 2)
- redirect-action Parameter
- redirect-action Values
- redirect-action = proxy – Example
- redirect-action = recurse – Example
- redirect-action = recurse-305-only – Example
- Embedded Routes in Redirect Responses (1 of 2)
- Embedded Routes in Redirect Responses (2 of 2)
- Static Flows
- How Static Flows Work
- static-flow Configuration
- Summary

Dynamic Routing

- Objectives
- Configuring DNS
- DNS – Basic Example
- DNS Queries – NAPTR, SRV, and A / AAAA
- NAPTR
- SRV
- A / AAAA
- SIP DNS Query – Example
- DNS Query Procedure
- Configuring DNS on the SBC
- Default DNS Lookup
- Increasing Flexibility – DNS Lookup
- dns-realm Configuration
- DNS Application Layer Gateway (ALG)
- dns-config Element
- DNS-SRV Session-Agent Recursion Error Handling
- Configuring ENUM
- ENUM – E.164 NUmber Mapping
- ENUM – with the SBC and Session Router
- Translating the Telephone Number
- enum-config Element

- Triggering ENUM Lookup – local-policy Element
- ENUM Lookup Keys
- NAPTR Records
- How ENUM Works on the SBC
- More ENUM Supports on the SBC (1 of 2)
- More ENUM Support on the SBC (2 of 2)
- sip-config Parameters
- show enum rate Command
- show enum Command
- Configuring Local Routing Tables (LRT)
- What Are Local Routing Tables (LRTs)?
- LRT Performance
- How Does LRT Work? (1 of 2)
- How Does LRT Work? (2 of 2)
- Example: LRT File
- Example: LRT File Using Ranges
- Multi-Tiered LRT Route Selection
- Example: Multi-Tiered LRT File
- Configuring LRT on the SBC
- local-routing-config Element
- local-routing-config match-mode all Parameter
- Triggering LRT Lookup in local-policy Element
- Compound Key LRT Lookup
- local-routing-config string-lookup Parameter
- LRT – Redirected Egress Realm
- LRT – Embedded Route Header
- Practice
- Topic: Multistage Routing
- Multistage Routing
- Enabling Multistage Routing
- Global local-policy Termination – Multistage Routing
- next-key Parameter
- Configuring local-policies for Multistage Routing
- Example: Multistage Routing
- Practice
- Summary

Advanced Media Handling

- Objectives
- Media Concepts
- Media NAT/Relay Function
- Enabling Media Processing on the SBC
- Media Processing
- MiddleBox Control Daemon (MBCD): Overview
- MBCD Terminology
- Call Flow – MIBOCO Transactions

- SIP Message and MIBOCO Transaction – example
- How Does MBCD Process a Request?
- Building the NAT Entries in the Lookup Table
- Lookup Table – show nat info
- Lookup Table Entries – show nat in-tabular (1/3)
- Lookup Table Entries – show nat by-addr (2/3)
- Lookup Table Entries – show nat by-index (3/3)
- Call On-Hold Methods
- Practices
- Anchoring and Releasing Media
- When Does the SBC Anchor or Release Media?
- Configuring the Manage Media Parameters for Media Handling
- Example – mm-in-system
- Example: mm-in-network
- Example: mm-in-realm
- Example: mm-same-ip
- delayed-media-update Parameter – realm-config Element (1 of 2)
- delayed-media-update Parameter – realm-config Element (2 of 2)
- Practice
- Media Latching
- Latching
- Latching Flows
- Restricted Latching
- Symmetric Latching
- Symmetric Latching – Behind NAT FW (1 of 2)
- Symmetric Latching – Behind NAT FW (2 of 2)
- Scenario: Symmetric Latching
- Scenario: Symmetric Latching (1 of 2)
- Scenario: Symmetric Latching (2 of 2)
- Client and NAT Requirements for Hosted NAT Traversal (HNT)
- Early Media Suppression (1 of 2)
- Early Media Suppression (2 of 2)
- Practice
- Call Admission Control (CAC) on Media
- User-Based Call Admission Control (CAC)
- Session-Based Call Admission Control (CAC)
- Steering Pools
- Configuring steering-pool Element
- Bandwidth-Based CAC
- Nested Realms
- Nested Realm Types
- Nested Realm Group
- Bandwidth-Based CAC on the Nested Realm Groups
- Guidelines for Nested Realms
- Bandwidth CAC for Media Release bw-cac-non-mm Parameter
- Viewing MBCD Per-Realm Statistics

- Media Profiles
- Call Admission Control & Policing
- Media Traffic Shaping (Logical View)
- Configuring Media Profiles
- Default Media Profiles
- Configuring Media Profiles with Media Subtype
- Configuration Restrictions – media-profile subtype
- subname Syntax with Wildcard Character
- Practices
- Quality of Service (QoS) and Codec Policies
- QoS Measurements
- TOS Byte
- DiffServ Byte (1 of 2)
- DiffServ Byte (2 of 2)
- Configuring Media Policy on the SBC
- Accounting – Using RADIUS
- Call Detail Records (CDRs)
- Acronyms in CDRs
- Attributes in SBC CDRs
- VSA ID Range Selection
- Configuring Specific Attributes for CDR Inclusion
- CDRs Customized Values by HMRs
- Codec Policies and Conditional Codec Policies
- codec-policy Element
- Conditional Codec Policies
- Conditional Codec Operators
- Practices
- Summary