Cloud Automation Using Contrail (CAC)

COURSE OVERVIEW

This five-day course is designed to provide students with the knowledge required to work with the Juniper Contrail Enterprise Multicloud (CEM) solution. Students will gain in-depth knowledge of how to use the Contrail Command user interface, Contrail Networking, Contrail's fabric management and administration features, Contrail Security, and the analytics features of Contrail Insights. Students will also learn to use APIs and the CLI to perform the Contrail configuration tasks. Through demonstrations and hands-on labs, students will gain experience with the features of Contrail and Insights. This course is based on Contrail Release 2005.62.

COURSE LEVEL

Intermediate

AUDIENCE

This course benefits individuals responsible for working with software-defined networking solutions in data center, service provider, and enterprise network environments.

PREREQUISITES

- Basic TCP/IP skills
- General understanding of data center virtualization
- Basic understanding of the Junos operating system
- Completion of the *Junos Cloud Fundamentals* (JCF) course or equivalent knowledge
- Recommended: Completion of the *Data Center Fabric with EVPN and VXLAN* (ADCX) course or equivalent knowledge
- Recommended: Basic knowledge of object-oriented programming and Python scripting

ASSOCIATED CERTIFICATION

JNCIS-Cloud

RELEVANT JUNIPER PRODUCT

- Automation
- SDN
- Software
- Contrail

RECOMMENDED NEXT COURSE

Enterprise Multicloud Automation and Orchestration Using Contrail (EMCC)

CONTACT INFORMATION

training@juniper.net

OBJECTIVES

- Explain the role of Contrail SDN Controller.
- List available Contrail solutions.
- Describe the purpose of an orchestrator.
- Describe the basics of Kubernetes.
- Describe the basics of VMware vCenter
- Identify the function of each of the main OpenStack Projects.
- Describe the purpose of Contrail.
- Explain how the versions of Contrail differ.
- Discuss Contrail related solutions.
- Describe the functions of the Contrail vRouter and Contrail Controller.
- Explain the role of the control, configuration, and analytic nodes.
- Understand how to monitor the Contrail cluster health.
- Configure and deploy virtual DNS and IPAMs.
- Create virtual networks.
- Create network policies to control the flow of traffic.
- Explain the routing behavior of an IP Fabric.
- Describe the steps to onboard a Greenfield IP Fabric.
- Describe the steps to onboard a Brownfield IP Fabric.
- Describe the steps to add a device to an existing fabric.
- Describe the various commands to troubleshoot the onboarding of an IP Fabric.
- Explain the benefits of VXLAN in the data center.
- Describe EVPN signaling for VXLAN.
- Describe how CEM can bridge between a VM and a BMS.
- Implement bridging between VMs and BMSs using VXLAN and EVPN signaling.
- Describe EVPN signaling for VXLAN routing in the Spine.
- Describe how to enable central routing using CEM.
- Describe EVPN signaling for DCI.
- Describe how to enable DCI using CEM.
- Create physical gateways.
- Connect to a third-party physical device.
- Implement fabric administration operations.
- Describe architecture and capabilities of Contrail Security.
- Configure main Contrail Security Tags.
- Configure Contrail Security Policies and Policy Sets.

Course content subject to change. See www.juniper.net/courses for the latest details.

OBJECTIVES (contd.)

- Explain the benefits of Contrail Insights.
- Explain the operation and use of Contrail Insights.
- Explain the purpose and use of the different Insights features.
- Configure Contrail Insights alarms and composite alarms.
- Describe how to use the Contrail Insights dashboard to examine the state of the network.
- Use Contrail Insights Charts to monitor Contrail and OpenStack workloads.
- Explain the benefits of Contrail Insights capacity planning.
- Explain how to use Contrail Insights heat maps.
- Create Contrail Insights reports and service monitoring functionalities.
- Create Contrail Insights alarms and Composite alarms.
- Explain the purpose of JTI.
- Discuss native JTI sensors.
- Explain OpenConfig and gRPC sensors.
- Configure native JTI and OpenConfig sensors to work with Contrail Insights.

COURSE CONTENT

DAY 1

1 — **Course Introduction**

2 — **SDN and Contrail**
- Review of SDN
- Contrail Basics
- Contrail Advantages, Capabilities, and Features
- Contrail Products and Solutions
- Contrail Use Cases
- Contrail Command

LAB 1: Contrail Command Walkthrough

3 — **Orchestration Fundamentals**
- Orchestrator Overview
- Kubernetes Orchestrator
- VMware vCenter Orchestrator
- OpenStack Orchestrator

LAB 2: Instantiating Virtual Workloads

DAY 2

4 — **Contrail Architecture Fundamentals**
- Contrail Architecture Overview
- Contrail Management and Analytics
- Contrail Control Plane Communications
- Contrail Data Plane Communications
- Basic Contrail Troubleshooting

LAB 3: Exploring and Troubleshooting the Contrail vRouter and SDN Controller

5 — **Contrail Configuration**
- Contrail Configuration Methods
- Configuring DNS and IPAM
- Configuring the Metadata Service
- Configuring Virtual Networks
- Configuring Network Policies and Security Groups
- Contrail Configuration API

LAB 4: Configuring Virtual Networks and Policies

6 — **IP Fabric Automation**
- IP Fabric Review
- Greenfield Fabric Automation
- Brownfield Fabric Automation
- Modifying Existing Fabrics
- Troubleshooting Fabric Automation

LAB 5: IP Fabric Automation

Course content subject to change. See www.juniper.net/courses for the latest details.

2

COURSE CONTENT (contd.)

DAY 3

7	**VM to BMS Bridging**

- VXLAN Review
- EVPN Signaling for BMS to BMS VXLAN Forwarding
- Contrail VM to BMS Bridging
- Server/Instance Example
- Virtual Port Groups

LAB 6: VM to BMS Bridging

8	**VXLAN Routing**

- EVPN Signaling for Central Routing
- Central Routing Example
- EVPN Signaling for Edge Routing
- Edge Routing Example

LAB 7: VXLAN Routing

9	**Data Center Interconnect**

- DCI Overview
- DCI Options for a VXLAN Overlay using Contrail Automation
- DCI Example using Contrail Automation

Lab 8: Data Center Interconnect

DAY 4

10	**Interacting with External Networks**

- DC Gateway Use Case
- Implementing a DC Gateway
- Third-Party Devices Use Case Overview
- Connecting to a Third-Party Device Use Case

Lab 9: DC Gateway

11	**Fabric Administration**

- Generic Device Operations
- Return Material Authorization
- Maintenance Mode
- Hitless Fabric Upgrade

Lab 10: Fabric Administration

12	**Contrail Security**

- The Need for Contrail Security
- Contrail Security Configuration

Lab 11: Contrail Security

DAY 5

13	**Contrail Insights**

- Contrail Insights Overview
- Dashboard and Settings
- Charts
- Heat Map
- Reports
- Plan
- Contrail Insights API

14	**Contrail Insights Alarms**

- Alarms
- Composite Alarms

LAB 12: Implementing Insights Features

15	**Junos Telemetry Interface**

- JTI Overview
- OpenConfig and gRPC Sensors for JTI
- Native Sensors for JTI

LAB 13: Implementing JTI with Insights

CAC07202020

Course content subject to change. See www.juniper.net/courses for the latest details.

3