

# Contrail Networking for Service Providers (CNSP)

## COURSE OVERVIEW

This five-day course shows students how to create virtual networks, route data between networks, create service chains, configure SDN gateways, configure network services, verify Contrail operation, and configure Contrail Networking tag-based application security features. The CNSP course also shows students how to use Contrail's built-in analytics, alarms, and traffic flow monitoring capabilities. CNSP does not include coverage of Contrail Networking fabric management capabilities. This course is based on Contrail Release 2011.132 and RHOSP 16.3.

### COURSE LEVEL

Advanced

### AUDIENCE

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

### PREREQUISITES

- Basic TCP/IP skills
- General understanding of data center virtualization
- Basic understanding of the Junos operating system
- Completion of the *Red Hat, OpenShift, Kubernetes, Docker In Juniper Cloud Deployments (ROKD)* course or equivalent knowledge before attending this class
- Recommended: Basic understanding of object-oriented programming and Python scripting

### ASSOCIATED CERTIFICATION

JNCIA-Cloud

### RELEVANT JUNIPER PRODUCT

- Juniper Contrail

### CONTACT INFORMATION

Contact your regional Education Services team:

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## COURSE CONTENTS & OBJECTIVES

### DAY 1

1

#### Course Introduction

2

#### Contrail Overview

- Describe Contrail function and features
- List contrail family of products
- List Contrail supported orchestrators

3

#### Contrail Architecture Basics

- Identify the function of each of the main components of a Contrail cluster
- Describe the protocols used for control, data, and analytics traffic
- Explain how Contrail routes traffic using route targets

4

#### Tungsten Fabric UI

- Log in to the Tungsten Fabric UI
- Acknowledge Alerts
- Navigate the Monitor, Configure, and Settings workspaces

5

#### Contrail Command UI

- Demonstrate the basic functions of Contrail Command

6

#### Verifying the Contrail Installation

- Describe the Contrail Cluster Overview
- Use the Contrail Web UI to view the cluster status
- Use the command line to view the cluster status
- View Contrail log files
- Describe the Contrail Container Model
- Start and Stop Contrail containers

*Continued on the next page.*

COURSE CONTENTS & OBJECTIVES (contd.)

DAY 2

- 7**
- Configure Contrail IPAM and DNS**
  - Configure Contrail IPAM
  - Configure Contrail DNS services
- 8**
- Configuring Contrail Virtual Networks**
  - Describe how a virtual network is implemented in Contrail
  - Describe the difference between an L2 and a routed virtual network
  - Describe how subnets are implemented in Contrail
  - Create a virtual network in Contrail
  - Describe the purpose of specifying host routes
  - Enable internetwork traffic
  - Describe how to implement distributed Source NAT for a virtual network
  - Configure virtual networks in a hub-and-spoke topology
  - Automate the creation of virtual networks
  - Verify functionality and troubleshoot virtual networks
- 9**
- Creating Network Policies**
  - Implement network policies and security groups
- 10**
- Describing VM to BMS Bridging**
  - Describe Contrail VM to BMS bridging
  - Implement a server instance
  - Implement virtual port groups
- 11**
- Configuring a Contrail Fabric Gateway**
  - Configure a physical gateway with Contrail Command

*Continued in the next column.*

DAY 3

- 12**
- Connecting to an External Router**
  - Explain how virtual and physical networks can be connected
  - Use physical gateway devices with Contrail
  - Use simple virtual gateway
- 13**
- Configuring Floating IP Addresses**
  - Describe the purpose of a floating IP
  - Describe how Contrail implements a floating IP
  - Floating IP case study
  - Verify floating IP configuration function properly
  - Troubleshoot floating IPs
- 14**
- Implement Contrail Network Services**
  - Use BGP as a Service feature
  - Understand Graceful Restart Capabilities
  - Describe QoS support in Contrail
  - Understand Load Balancing as a Service
- 15**
- Configure Contrail Service Chains**
  - Describe service chaining within Contrail
  - Configure in-network service chains
  - Configure transparent service chains
  - Automate service deployment using Heat templates

DAY 4

- 16**
- Configuring Network Address Translation**
  - Configure Source NAT
  - Configure Distributed Source NAT
- 17**
- Describe Service Chain Virtual Network Routing**
  - Describe service chain virtual network routing
- 18**
- Implementing Advanced Service Chains**
  - Describe service chains with Docker containers
  - Describe physical network function integration
  - NFV for ISP Case Study
- 19**
- Troubleshooting Service Chains**
  - Describe service instance health checks
  - Troubleshooting service chains

*Continued on the next page.*

COURSE CONTENTS & OBJECTIVES (contd.)

DAY 5

20

**Implementing Contrail Security**

- Describe the need for Contrail security
- Apply tags and labels to Contrail objects
- Create and apply Contrail security policies
- Visualize Contrail security traffic patterns with Contrail Insights

21

**Describing Contrail Insights**

- Describe the capabilities and architecture of Contrail Insights
- Describe Contrail Insights API

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**Using Contrail Insights**

- Dashboard and Settings
- Charts and Heat Maps
- Plans and Reports

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**Implementing Contrail Insights Alarms**

- Implement alarms
- Implement composite alarms

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