Network Automation using Contrail Cloud

Duration: 2 Days   Course Code: NACC   Version: 4.1

Overview:

This five-day course is designed to provide students with the knowledge required to work with the Juniper Contrail software-defined networking (SDN) solution. Students will gain in-depth knowledge of how to use the OpenStack and Contrail Web UIs, APIs and CLI to perform the required tasks. Through demonstrations and hands-on labs, students will gain experience with the features of Contrail. This course is based on Contrail Release 4.1.0.

Target Audience:

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

Objectives:

- Explain the definition and main principles of SDN
- Discuss the NFV framework.
- Explain the role of Contrail SDN Controller.
- List available Contrail solutions.
- Describe the purpose of OpenStack.
- Identify the function of each of the main OpenStack Projects.
- Use the OpenStack CLI.
- Describe OpenStack REST APIs and Python SDK.
- Use OpenStack Heat Orchestration Templates.
- Configure OpenStack using Horizon Web UI and Heat.
- Describe the main features of Contrail.
- Discuss different Contrail use cases.
- Describe Contrail related solutions.
- Describe the functions of the Contrail vRouter.
- Describe the functions of the Contrail SDN Controller.
- Understand containerized Contrail modules.
- Explain the role of different node types in Contrail.
- Use Contrail troubleshooting tools.
- Describe available Contrail configuration methods.
- Configure Contrail Virtual DNS services.
- Create virtual networks.
- Create policies to control the flow of traffic.

- Describe QoS support in Contrail.
- Understand Load Balancing as a Service.
- Describe vRouter support for DPDK, SR-IOV and SmartNICs.
- Understand Contrail Global Controller.
- Describe service chaining within Contrail.
- Understand service chains version 1 and version 2.
- Configure In-Network service chains.
- Configure Transparent service chains.
- Configure Source NAT.
- Use Heat to automate service deployment.
- Understand details of service chain routing.
- Use routing policies.
- Troubleshoot service chains.
- Explain the use of Docker containers in service chains.
- Describe Physical Network Function integration.
- Explain routing traffic from physical network via Contrail service chain.
- Explain the functions of Contrail Analytics.
- Describe how to work with the Monitor workspace.
- Discuss how to run flow queries and examine system logs.
- Use Contrail Analytics API.
- Work with Contrail Alarms.

- Use Contrail Configuration API.

- Explain how virtual and physical networks can be connected.

- Configure Floating IPs.

- Use physical gateway devices with Contrail.

- Configure physical devices with Device Manager.

- Use simple virtual gateway.

- Explain underlay connectivity without gateway.

- Explain Contrail integration with Kubernetes and OpenShift.

- Use BGP as a Service feature.

- Understand Graceful Restart Capabilities.

- Understand how to analyze live traffic with Contrail. •

- Describe Underlay Overlay mapping.

- Explain the need for Contrail Security.

- Discuss multidimensional firewall policy configuration.

- Use tags and labels.

- Discuss traffic visualization with Contrail Security.

- Explain pre-installation tasks and roles.

- Describe Server Manager and Server Manager Lite.

- Describe Contrail installation using Server Manager Lite.

- Describe additional settings and operations

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 prior to attending this class;
- Basic knowledge of object-oriented programming and Python scripting is recommended.

Content:

DAY 1 :

1. COURSE INTRODUCTION

2. SDN, NFV, and Contrail

- Review of SDN and NFV
- Contrail Solution Overview

3. OpenStack Fundamentals :

- OpenStack Overview
- OpenStack Projects
- Exploring OpenStack Installation and Using CLI

4. OpenStack Configuration:

- OpenStack Interface Options
- Using OpenStack Heat Templates
- OpenStack Configuration

Lab 2: Configuring OpenStack

Lab 1: Exploring OpenStack with the CLI

DAY 2:

- Contrail Use Cases
- Contrail Solution Overview
- Contrail Related Solutions

Contrail Architecture Fundamentals

- Contrail Architecture Overview
- Contrail Management and Analytics
- Contrail Control Plane
- Contrail Data Plane
- Basic Contrail Troubleshooting

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

- Contrail Configuration Methods
- vRouter Services
- Configuring Virtual Networks
- Configuring Network Policies and Security Groups
- Contrail API Python Library

Lab 4: Virtual Networks and Policies

DAY 3:

- Connecting Virtual and Physical Networks
- Floating IPs
- Using Device Manager
- Configuring Simple Virtual Gateway
- Underlay Connectivity without Gateway

Lab 5: Creating Floating IPs and Gateways

Contrail Network Services :

- Contrail and Container Networking
- BGP as a Service
- Graceful Restart Capabilities
- Implementing CoS
- Load Balancing as a Service Overview
- vRouter Support for DPDK and SR-IOV
- Contrail Global Controller Overview

Lab 6: Using Docker Containers with Contrail

DAY 4:

- Service Chaining Overview
- In-Network Service Chain and Configuration
- Transparent Service Chain and Configuration
- Configuring Source NAT
- Automating Service Chaining

Lab 7: Creating Contrail Service Chains

Advanced Service Chaining:

- Advanced Operation
- Service Instance Health Checks
- Troubleshooting Service Chains
- Service Chain with Docker Containers
- Physical Network Function Integration
- NFV for ISP Case Study

Lab 8: Advanced Service Chain Operation and Troubleshooting

DAY 5:

- Analytics Overview
- Monitor > Infrastructure Workspace
- Monitor > Networking Workspace
- Flow Queries, Logs, and Statistics
- Configuring Contrail Analytics
- Analytics API

Lab 9: Using Contrail Analytics

- Contrail Alarms
- Analyzing Live Traffic
- Underlay Overlay Mapping

Lab 10: Analyzing Traffic Flows with Contrail Analytics

Contrail Security :

- The Need for Contrail Security
- Contrail Security Configuration
- Monitoring and Visualization

- Pre-Installation and Roles
- Server Manager Overview
- Installation using Server Manager Lite
- Additional Settings and Operations

Lab 11: Installing Contrail

Further Information:

For More information, or to book your course, please call us on Head Office Tel.: +974 40316639

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