COURSE LEVEL

Network Automation in the Data Center is an advanced-level course.

AUDIENCE

This course benefits individuals responsible for working with software-defined networking solutions in their data center.

PREREQUISITES

- General understanding of data center virtualization;
- Completion of the Advanced Data Center Switching (ADCX) course;
- Completion of the Network Automation Using Contrail Cloud (NACC) course;
- Experience with programming or scripting is recommended (Python, Ruby, Perl, C, or C++)

OBJECTIVES

- Identify how automation and Network functions Virtualization (NFV) can help data centers.
- Implement automation in an underlay and overlay network.
- Implement Contrail services, security, and analytics.
- Explain the possibilities for extending automation through orchestration.
- Configure Contrail overlay protocols.
- Describe Contrail service nodes and gateways.
- Use Contrail to configure connections to TOR switches using TSM modules.
- Explain the steps for configuring high availability in Contrail.
- Configure the services necessary to support service chains.
- Deploy multidevice service chains commonly seen in data centers.
- Explain the unique security risks and opportunities of a virtualized data center.
- Configure multitenancy in Contrail for increased security.
- Configure security groups in OpenStack.
- Configure MDS authentication of Contrail BGP sessions.
- Identify what must be monitored for appropriate data center visibility.
- Configure Contrail analytics and monitoring to support data center needs.
- Configure Contrail Ceilometer.

RELEVANT JUNIPER PRODUCT

- Automation
- Data Center
- SDN
- Contrail
- MX Series
- QFX Series

CONTACT INFORMATION

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

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COURSE CONTENT

Day 1

1. COURSE INTRODUCTION

2. Automation in the Data Center Overview
   - Market Drivers for Automation in the Data Center
   - Understanding the Underlay and Overlay Network
   - Automating Services, Security, and Analytics
   - Service Orchestration and OSS/BSS Systems

4. Automating the Overlay Network
   - Data Plane Protocols
   - Control Plane Protocols
   - Contrail Services Using Containers
   - Extending Contrail to the Physical Network
   - Contrail Storage
   - IPv6 Support in Contrail

LAB 1: Automating the Underlay Using Ansible

LAB 2: Automating the Overlay

3. Automating the Underlay
   - The Evolution of Data Center Fabrics
   - IP Clos Routing and IP Clos Configuration Review
   - Automating IP Clos Fabric Creation using Ansible
   - Use Case: Configuring an IP Clos Fabric using Ansible

LAB 1: Automating the Underlay Using Ansible

Day 2

5. Creating a Data Center Interconnect Overlay Network
   - Review of DCI Methods
   - Challenges with DCI Overlay Networks
   - IP Fabric DCI using EVPN and VXLAN
   - IP Fabric DCI Overlay Use Cases
   - IP Fabric DCI Configurations

6. Automating Service Creation
   - High Availability in Contrail and OpenStack
   - Configuring DNS Services
   - Deploying Load Balancing as a Service (LBaaS)
   - Configuring Service Chains

LAB 3: Automating Service Creation

Day 3

7. Automation and Security
   - Security Opportunities and Risks in the Virtualized Data Center
   - Security Inherent in Using vRouters
   - Configuring Multitenancy
   - Security Groups in OpenStack
   - Configuring MD5 Authentication of Contrail BGP Sessions

LAB 4: Configuring Security in Contrail

8. Monitoring and Analytics
   - Methods of Analyzing using the Analytics Engine
   - Bottom Up Approach to Analyzing
   - Top Down Approach to Analyzing
   - Advanced Analytics: Ceilometer and Heat Autoscaling

LAB 5: Using Contrail Ceilometer