Network Automation in the Data Center

Duration: 3 Days   Course Code: NA-DC   Version: 3.a

Overview:

This three-day course is designed to provide students with the knowledge required to automate SDN/NFV solutions in their data centers. Students will build on their knowledge of data center networking and learn how to use Ansible to automate building scalable IP fabrics. Students will also augment their knowledge of different L2 and L3 protocols to automate data center services that use virtual machines, containers, and bare metal servers using Contrail Cloud. This course is based on Contrail Release 3.2.0 and OpenStack Liberty.

Target Audience:

This course benefits individuals responsible for working with software-defined networking solutions in their data center.
Network Automation in the Data Center is an advanced-level course.

Objectives:

- **After successfully completing this course, you should be able to:**

- 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 how IP fabrics that use Virtual Extensible LAN (VXLAN) and Ethernet VPN (EVPN) for Data Center Interconnect (DCI) operate.

- Analyze IP fabric DCI configurations.

- 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 MD5 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.

Prerequisites:

The prerequisites for this course are as follows:

- 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++).

Testing and Certification

- **This course is recommended training for the Juniper Networks Certified Professional SDN and Automation (JNCIP-SDNA) exam**

Content:

Chapter 1: Course Introduction

Chapter 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

Chapter 3: Automating the Underlay

- The Evolution of Data Center Fabrics
- IP Clos Routing and IP Clos Configuration Review
- utomating IP Clos Fabric Creation using Ansible
- Use Case: Configuring an IP Clos Fabric using Ansible
- Lab 1: Automating the Underlay Using Ansible

Chapter 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 2: Automating the Overlay

Chapter 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

Chapter 6: Automating Service Creation

- High Availability in Contrail and OpenStack
- Configuring DNS Services
- Deploying Load Balancing as a Service (LBaaS)
- onfiguring Service Chains
- Lab 3: Automating Service Creation

Chapter 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

Chapter 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

Further Information:

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

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