Advanced Data Center Switching (ADCX)

COURSE OVERVIEW

This five-day course provides a comprehensive focus on Juniper Networks data center switching technologies. The first three days are designed to introduce the data center features including multichassis link aggregation (MC-LAG), IP Fabric, Virtual eXtensible Local Area Network (VXLAN), Ethernet VPN (EVPN) signaling, Data Center Interconnect (DCI), and Zero Touch Provisioning (ZTP). The last two days of the course is designed to implement these technologies in the design of a data center environment in a comprehensive lab. Students will learn to configure and monitor these features on the Junos operating system running on the vQFX and vMX platforms. Through demonstrations and hands-on labs, students will gain experience configuring, monitoring, troubleshooting, and analyzing the mentioned features of the Junos OS. This content is based on Junos OS Release 17.4R1 and 18.2R1-S3.

AUDIENCE

This course benefits individuals responsible for configuring, monitoring, and troubleshooting data center features that exist on the Junos OS running on data center-oriented platforms such as EX Series, QFX Series, MX Series, and vMX Series devices. This includes individuals in professional services, sales and support organizations, and the end users.

PREREQUISITES

- Understanding of the OSI model;
- Advanced routing knowledge—the Advanced Junos Enterprise Routing (AJER) course or equivalent knowledge; and
- Intermediate switching knowledge—the Junos Enterprise Switching (JEX) or equivalent.

OBJECTIVES

- Identify current challenges in today's data center environments and explain how the QFX Series solves some of those challenges.
- List the various models of QFX Series switches.
- List some data center architecture options.
- Explain the purpose and value of ZTP.
- Describe the components and operations of ZTP.
- Deploy a QFX5100 Series switch using ZTP.
- Explain the purpose and value of ISSU.
- Describe the components and operations of ISSU.
- Upgrade a QFX5100 Series switch using ISSU.
- Explain the purpose and value of MC-LAG.
- Describe the components and operations of MC-LAG.
- Implement an MC-LAG on QFX5100 Series switches.
- Describe key concepts and components of a mixed Virtual Chassis.
- Explain the operational details of a mixed Virtual Chassis.
- Implement a mixed Virtual Chassis and verify its operations.
- Describe key concepts and components of a Virtual Chassis Fabric.
- Describe the control and forwarding plane of a Virtual Chassis Fabric.
- Describe how to use the CLI to configure and monitor a Virtual Chassis Fabric.
- Describe how to provision a Virtual Chassis Fabric using nonprovisioning, preprovisioning, and autoprovisioning.
- Describe the software requirements and upgrade procedure of Virtual Chassis Fabric.

ASSOCIATED CERTIFICATION

JNCIP-DC

RELEVANT JUNIPER PRODUCT

- Automation
- Data Center
- Switching
- EX Series
- Junos OS
- MX Series
- QFX Series
- Data Center track

RECOMMENDED NEXT COURSE

CONTACT INFORMATION

training@juniper.net

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OBJECTIVES (continued)

- Describe how to manage a Virtual Chassis Fabric with Junos Space.
- Explain a basic troubleshooting approach.
- List and use available troubleshooting tools.
- Describe the expected state and operation.
- Describe key processes and components.
- Identify potential issues with MC LAG.
- Resolve basic issues with MC LAG.
- Describe the expected state and operation.
- Describe key processes and components.
- Identify potential issues with Virtual Chassis.
- Resolve basic issues with Virtual Chassis.
- Explain the expected state and operation.
- Describe key processes and components.
- Identify potential issues with VCF.
- Resolve basic issues with VCF.
- Describe the benefits and challenges of the traditional multitier architecture.
- Describe the new networking requirements in a data center.
- Describe the various data center fabric architectures.
- Explain routing in an IP Fabric.
- Describe how to scale an IP Fabric.
- Configure an EBGP-based IP Fabric.
- Explain why you would use VXLAN in your data center.
- Describe the control and data plane of VXLAN in a controller-less overlay.
- Describe how to configure and monitor VXLAN when using multicast signaling.
- Describe the benefits of using EVPN signaling for VXLAN.
- Describe the operation of the EVPN protocol.
- Configure and monitor EVPN signaling for VXLAN.
- Define the term Data Center Interconnect.
- Describe Data Center Interconnect using MPLS VPN.
- Describe Data Center Interconnect using VXLAN using EVPN signaling.
- Describe the components and functionality of Juniper Cloud Connector.
- Configure Data Center Interconnect between two sites using MPLS VPN.
- Describe the control and data plane of an MPLS VPN.
- Describe the DCI options when using a VXLAN overlay with EVPN signaling.
- Describe Junos Fusion Data Center components.
- Describe Junos Fusion Data Center control plane functions.
- Describe Junos Fusion Data Center data plane functions.
- Configure Junos Fusion Data Center aggregation devices.
- Configure Junos Fusion Data Center satellite devices.
- Describe how to configure redundancy in Junos Fusion using EVPN signaling.
- Describe data center security concepts.
- Describe how to secure Layer 2 traffic in a data center.
- Describe how to secure Layer 3 traffic in a data center.
- Describe how to secure data center interconnects.
- Configure Cloud Connector between two data center sites.
## COURSE CONTENT

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#### System Overview
- Traditional Multitier Architecture Challenges
- Next Generation data Center Fabrics
- QFX5100 Series Switches
- Additional Features

#### Zero Touch Provisioning
- Understanding Zero Touch Provisioning
- ZTP in Action: A Working Example

#### In-Service Software Upgrade
- Understanding ISSU on QFX5100 Series Switches
- ISSU in Action: A Working Example

#### MC-LAG
- MC-LAG Overview
- MC-LAG Operations
- Deploying MC-LAGs

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#### Troubleshooting Multichassis LAG
- MC-LAG: An Operational Review
- Connections and Communications
- Troubleshooting Example

#### Mixed Virtual Chassis
- Overview of Mixed Virtual Chassis
- Provisioning a Mixed Virtual Chassis
- Software Requirements and Upgrades
- Configuring and Monitoring a mixed Virtual Chassis

#### Virtual Chassis Fabric
- Overview of Virtual Chassis Fabric
- VCF Control and Forwarding Plane

#### Virtual Chassis Fabric Management
- Managing a Virtual Chassis Fabric using the CLI
- Dynamically Provisioning a Virtual Chassis Fabric
- Preprovisioning and Autoprovisioning a Virtual Chassis Fabric
- Software Requirements and Upgrades
- Managing a Virtual Chassis Fabric with Space

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### Day 3

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#### Troubleshooting Virtual Chassis Technologies
- Virtual Chassis Technology Review
- Processing and Components
- Troubleshooting Case Study

#### IP Fabric
- IP Fabric Overview
- IP Fabric Routing
- IP Fabric Scaling
- Configure an IP Fabric

#### VXLAN
- Layer 2 Connectivity over a Layer 3 Network
- VXLAN Using Multicast Control Plane
- VXLAN Configuration

#### EVPN
- The Benefits of EVPN
- VXLAN using EVPN Control Plane
- EVPN/VXLAN Configuration

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**LAB 6: DCI using MPLS VPN**

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