

# Data Center Fabric with EVPN and VXLAN (ADCX)

## COURSE OVERVIEW

This five-day course provides in-depth instruction on IP fabric and EVPN-VXLAN data center design and configuration. Additionally, the course covers other data center concepts, including basic and advanced data center design options including collapsed spine and super spine architectures, Data Center Interconnect (DCI), EVPN multicast enhancements, and seamless EVPN-VXLAN stitching. Through demonstrations and hands-on labs, students will gain experience with these features. This content is based on vQFXs running Junos OS Release 21.R1.9.

### COURSE LEVEL

Advanced-level

### AUDIENCE

The primary audiences for this course include:

- Data center implementation engineers
- Data center design engineers

### PREREQUISITES

The prerequisites for this course include:

- Understanding of the OSI model
- *Junos Enterprise Switching (JEX)* course, or equivalent intermediate switching knowledge
- *Advanced Junos Enterprise Routing (AJER)* course, or equivalent advanced routing knowledge is strongly recommended
- Intermediate-level to advanced-level Junos CLI experience

### RELATED JUNIPER PRODUCTS

- EX Series
- Junos OS
- MX Series
- QFX Series

### RELATED CERTIFICATION EXAM

[JNCIP-DC](#)

## OBJECTIVES

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

- Describe and configure an IP fabric.
- Describe and configure an EVPN-VXLAN data center.
- Describe and configure enhanced loop protection.
- Describe and configure centrally-routed bridging (CRB) EVPN-VXLAN.
- Describe and configure edge-routed bridging (ERB) EVPN-VXLAN.
- Describe and configure filter-based forwarding.
- Describe and configure seamless EVPN-VXLAN stitching.
- Describe basic and advanced data center design concepts.
- Describe and configure Data Center Interconnect (DCI).
- Describe enhancements to multicast functionality in an EVPN-VXLAN.

## COURSE CONTENTS

### DAY 1

#### 1 Course Introduction

#### 2 Modern Architectures

- Traditional Multitier Architecture Challenges
- Next-Generation Data Center Fabrics

#### 3 IP Fabric Underlay Routing

- IP Fabric Overview
- IP Fabric Routing

#### 4 IP Fabric Underlay Scaling

- Properly Scaling an IP Fabric

#### 5 IP Fabric Underlay Configuration

- OSPF-Based Underlay Configuration
- EBGP-Based Underlay Configuration

Lab 1: IP Fabric

#### 6 VXLAN Overview

- Layer 2 Connectivity Over a Layer 3 Network
- VXLAN Fundamentals

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## YOUR REGIONAL EDUCATION SERVICES TEAM

- Americas: [training-amer@juniper.net](mailto:training-amer@juniper.net)
- Europe, Middle East, Africa: [training-emea@juniper.net](mailto:training-emea@juniper.net)
- Asia-Pacific: [training-apac@juniper.net](mailto:training-apac@juniper.net)

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## COURSE CONTENTS

### DAY 2

<b>7</b>	<b>Controller-Less VXLAN Overview</b> <ul style="list-style-type: none"> <li>Control Plane and Data Plane of VXLAN in a Controller-Less Overlay</li> </ul>
<b>8</b>	<b>VXLAN Gateways</b> <ul style="list-style-type: none"> <li>Purpose and Function of VXLAN Gateways</li> </ul>
<b>9</b>	<b>EVPN Overview</b> <ul style="list-style-type: none"> <li>EVPN Functionality</li> <li>EVPN Control in a VXLAN Deployment</li> </ul>
<b>10</b>	<b>EVPN Protocol</b> <ul style="list-style-type: none"> <li>EVPN Routing and Bridging</li> </ul>
<b>11</b>	<b>Configuring EVPN-VXLAN</b> <ul style="list-style-type: none"> <li>EVPN-Controlled VXLAN Configuration</li> </ul> <b>Lab 2: Configure EVPN-VXLAN</b>

### DAY 3

<b>12</b>	<b>Enhanced Loop Protection</b> <ul style="list-style-type: none"> <li>Loop Potential</li> <li>Loop-Detect Protocol Configuration</li> </ul>
<b>13</b>	<b>MAC VRF Overview</b> <ul style="list-style-type: none"> <li>The Benefits of Deploying MAC VRFs</li> <li>Data Center Architectures Available for MAC VRFs</li> <li>MAC VRF Design Options</li> </ul>
<b>14</b>	<b>MAC-VRF Configuration</b> <ul style="list-style-type: none"> <li>MAC-VRF Deployment Requirements</li> <li>MAC-VRF Use Case</li> <li>Common Parameters</li> <li>VLAN-Based MAC-VRF Configuration</li> <li>VLAN-Aware MAC-VRF Configuration</li> <li>VLAN-Bundle MAC-VRF Configuration</li> </ul> <b>Lab 3: Configure VLAN-Based MAC VRF</b>
<b>15</b>	<b>Basic Data Center Architectures</b> <ul style="list-style-type: none"> <li>Basic Data Center Architectures and Deployment Scenarios</li> </ul>

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### DAY 3 (contd.)

<b>16</b>	<b>Configuring Centrally Routed Bridging</b> <ul style="list-style-type: none"> <li>Centrally Routed Bridging</li> <li>Centrally Routed Bridging Configuration</li> </ul> <b>Lab 4 : Configure CRB</b>
<b>17</b>	<b>Configuring Edge Routed Bridging</b> <ul style="list-style-type: none"> <li>EVPN-VXLAN Reference Architectures Overview</li> <li>ERB Configuration</li> <li>ERB Verification</li> </ul> <b>Lab 5: Configure ERB</b>

### DAY 4

<b>18</b>	<b>Configuring a Collapsed Fabric</b> <ul style="list-style-type: none"> <li>Collapsed Spine Architecture</li> <li>Collapsed Spine Configuration and Implementation</li> </ul>
<b>19</b>	<b>Filter-Based Forwarding</b> <ul style="list-style-type: none"> <li>Filter-Based Forwarding Overview</li> <li>Filter-Based Forwarding Configuration</li> <li>Filter-Based Forwarding Verification</li> </ul> <b>Lab 6: Implementing Filter-Based Forwarding</b>
<b>20</b>	<b>Super Spine Configuration</b> <ul style="list-style-type: none"> <li>Super Spine Architecture</li> <li>Super Spine Configuration</li> </ul>
<b>21</b>	<b>EVPN Multicast Extensions</b> <ul style="list-style-type: none"> <li>Multicast Extensions to EVPN</li> </ul>
<b>22</b>	<b>EVPN Multicast Configuration</b> <ul style="list-style-type: none"> <li>EVPN Multicast Configuration</li> </ul>
<b>23</b>	<b>EVPN Multicast Assisted Replication</b> <ul style="list-style-type: none"> <li>The Potential Problem with EVPN Multicast</li> <li>EVPN Multicast Use Case</li> <li>Assisted Replication Overview</li> <li>Assisted Replication Configuration</li> <li>Assisted Replication with SMET</li> </ul>

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# Data Center Fabric with EVPN and VXLAN (ADCX)

## COURSE CONTENTS

### DAY 5

#### 24 DCI Overview

- The Purpose of DCI

#### 25 DCI EVPN-VXLAN

- DCI with EVPN-VXLAN

#### 26 Configuring DCI

- DCI Configuration on Spine Devices
- DCI Configuration on Leaf Devices
- DCI Operations Verification

**Lab 7: Data Center Interconnect**

#### 27 Seamless EVPN-VXLAN Stitching

- Seamless EVPN VXLAN Stitching Overview
- Design Options
- Packet Walkthrough

#### 28 Configuring Seamless EVPN-VXLAN Stitching

- Seamless EVPN-VXLAN Stitching Configuration
- Seamless EVPN-VXLAN Stitching Verification

**Lab 8: Implementing Seamless EVPN-VXLAN Stitching**

#### A Appendix: Virtual Chassis Fabric

- VCF Key Concepts and Components
- VCF Control Plane and Forwarding Plane

#### B Appendix: Virtual Chassis Fabric Management

- VCF Management Using the CLI
- Dynamic Provision of a VCF
- VCF Preprovisioning and Autoprovisioning
- Software Requirements and Upgrades

#### C Appendix: Zero-Touch Provisioning

- ZTP Overview
- QFX5100 Series Switch Configuration Using ZTP

#### D Appendix: Troubleshooting Basics

#### E Appendix: Data Center Devices

- Fixed Format Platforms
- Modular Platforms
- Virtual Platforms