

Implementing Data Center Fabric with EVPN and VXLAN

COURSE OVERVIEW

This five-day course provides in-depth instructions on IP fabric and Ethernet VPN–Virtual Extensible LAN (EVPN-VXLAN) data center design and configuration. The course covers other data center concepts, including basic and advanced data center design options that include 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 vEX9214s running Junos OS Release 23.4R1.10.

Note: This course does not cover Juniper Apstra. For Juniper Apstra coverage, see [Data Center Automation Using Juniper Apstra](#)

COURSE LEVEL

Advanced

AUDIENCE

Individuals responsible for this course includes data center implementation engineers and data center design engineers

PREREQUISITES

- Understanding of the OSI model
- Advanced routing knowledge—the [Advanced Junos Enterprise Routing \(AJER\)](#) course or equivalent knowledge strongly recommended
- Intermediate switching knowledge—the [Junos Enterprise Switching Using Enhanced Layer 2 Software \(JEX\)](#) or equivalent knowledge
- Intermediate to advanced Junos CLI experience

RELATED JUNIPER PRODUCTS

- ACX Series
- EX Series
- Juniper Apstra
- Junos OS
- MX Series
- Network Design
- PTX Series
- QFX Series
- SRX Series

RELATED CERTIFICATION

[JNCIE-DC](#), [JNCIP-DC](#)

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OBJECTIVES

- Describe basic and advanced data center design concepts.
- 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 symmetric EVPN Type 2 routing.
- Describe and configure DCI.
- Describe and configure seamless EVPN-VXLAN stitching.
- Describe and configure filter-based forwarding.
- Describe enhancements to multicast functionality in an EVPN-VXLAN.

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COURSE CONTENTS

DAY 1

1	Modern Architectures <ul style="list-style-type: none">Describe traditional multitier architecture challengesExplain next-generation data center architectures
2	IP Fabric Underlay Routing <ul style="list-style-type: none">Describe what an IP fabric isExplain routing in an IP fabric
3	IP Fabric Underlay Scaling <ul style="list-style-type: none">Explain how to properly scale an IP fabric
4	IP Fabric Underlay Configuration <ul style="list-style-type: none">Explain how to configure an OSPF-based IP fabric underlay networkDescribe how to configure an EBGp-based IP fabric underlay network Lab 1: IP Fabric
5	VXLAN Overview <ul style="list-style-type: none">Explain Layer 2 connectivity over a Layer 3 networkDescribe VXLAN Fundamentals
6	VXLAN Gateways <ul style="list-style-type: none">Describe the purpose and function of VXLAN gateways
7	EVPN Overview <ul style="list-style-type: none">Describe EVPN functionalityDescribe EVPN control in a VXLAN deployment

DAY 2

8	EVPN Protocol <ul style="list-style-type: none">Describe EVPN routing and bridging
9	Configuring EVPN-VXLAN Networks <ul style="list-style-type: none">Discuss how to configure EVPN-controlled VXLAN Lab 2: Configuring EVPN-VXLAN Networks
10	Enhanced Ethernet Segment Loop Protection <ul style="list-style-type: none">Describe the loop potentialDescribe and configure the ES loop-detect protocol
11	Basic Data Center Architectures <ul style="list-style-type: none">Describe basic architectures and deployment scenarios
12	Configuring a Collapsed Spine <ul style="list-style-type: none">Describe a collapsed spine architectureConfigure an underlay networkConfigure an overlay networkConfigure Layer 2 to Layer 3 gatewaysVerify the VXLAN communications
13	Super Spine Configuration <ul style="list-style-type: none">Describe a super spine architectureConfigure a super spine

DAY 3

14	Configuring Centrally Routed Bridging <ul style="list-style-type: none">Describe EVPN-VXLAN reference architecturesDescribe centrally routed and bridgingConfigure centrally routed and bridging Lab 3: Configure Centrally Routed Bridging
15	Configuring Edge-Routed Bridging <ul style="list-style-type: none">Describe edge-routed bridgingExplain how to configure edge-routed bridgingExplain how to verify edge-routed bridging operations Lab 4: Configuring Edge-Routed Bridging

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COURSE CONTENTS (continued)

DAY 3

16 MAC-VRF Overview

- Describe the benefits of deploying MAC-VRFs
- Identify data center architectures for MAC-VRF use
- Describe the MAC-VRF design options

17 MAC-VRF Configuration

- Describe the requirements of deploying MAC-VRFs
- Describe the MAC-VRF use case
- Configure common parameters
- Configure a VLAN-based MAC-VRF
- Configure a VLAN-aware MAC-VRF
- Configure a VLAN-bundle MAC-VRF

Lab 5: MAC-VRF Configuration

18 Symmetric Routing Using Type 2 EVPN

- Describe asymmetric routing
- Describe symmetric routing
- Implement symmetric routing

Lab 6: Symmetric Routing Configuration

DAY 4

19 DCI with EVPN-VXLAN Network

- Discuss DCI with EVPN-VXLAN Network

20 Configuring DCI

- Discuss how to configure DCI in the data center

Lab 7: Data Center Interconnect

21 Seamless EVPN-VXLAN Stitching

- Explain the purpose of seamless EVPN-VXLAN stitching
- Discuss seamless EVPN-VXLAN design options
- Describe a packet walkthrough for seamless EVPN-VXLAN stitching

22 Configuring Seamless EVPN-VXLAN Stitching

- Explain how to configure seamless EVPN-VXLAN stitching
- Describe how to verify EVPN-VXLAN stitching operations

Lab 8: Implementing Seamless EVPN-VXLAN Stitching

DAY 5

23 Filter-Based Forwarding

- Discuss the purpose of filter-based forwarding in a data center
- Explain how to configure filter-based forwarding in a data center
- Describe how to verify filter-based forwarding in a data center

Lab 9: Implementing Filter-Based Forwarding

24 EVPN Multicast Extensions

- Describe the multicast extensions to EVPN

25 EVPN Multicast Configuration

- Explain how to configure EVPN multicast

26 EVPN Multicast Assisted Replication

- Describe the potential problem with EVPN multicast
- Illustrate a use case
- Describe assisted replication
- Configure assisted replication
- Describe assisted replication with SMET

SELF-STUDY MODULES

27 VXLAN Group-Based Policy—Introduction

- Describe an overview of VXLAN group-based policies
- Describe the benefits of VXLAN group-based policies
- Configure a VXLAN group-based policy filter

28 Zero-Touch Provisioning

- Explain zero-touch provisioning
- Configure a QFX5100 Series switch using ZTP

29 Troubleshooting Basics

- Describe troubleshooting tools
- Explain a basic troubleshooting approach

30 Data Center Devices

- Describe fixed format platforms
- Describe modular platforms
- Describe virtual platforms

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