Introduction to Juniper Data Center Networking

COURSE OVERVIEW

This three-day course provides introductory instruction on data center switching using Juniper products. This course does not cover Ethernet VPN–Virtual Extensible LAN (EVPN-VXLAN) architecture, but lays the foundational knowledge necessary to understand a data center that is built upon an IP fabric. In addition, this course covers Ethernet switching, VLANs, Layer 2 security features, routing policies, link aggregation, load balancing, filter-based forwarding (FBF), routing instances, BGP, graceful restart, and bidirectional forwarding detection (BFD).

COURSE LEVEL

Introduction to Juniper Data Center Networking (IJDC) is an introductory-level course.

AUDIENCE

This course benefits individuals responsible for configuring and managing network equipment in data centers.

PREREQUISITES

The following are the prerequisites for this course:
- Knowledge of basic TCP/IP networking
- Understanding basic layer 2
- Familiarity with Data Center technologies
- Completion of the *Introduction to the Junos Operating System* (IJOS) course or equivalent Junos OS configuration experience

RELEVANT JUNIPER PRODUCT

- Juniper Apstra
- EX Series
- Junos OS
- QFX Series

RELATED JUNIPER CERTIFICATION

JNCIA-DC

CONTACT YOUR REGIONAL EDUCATION SERVICES TEAM

- Americas: training-amer@juniper.net
- Europe, Middle East, Africa: training-emea@juniper.net
- Asia-Pacific: training-apac@juniper.net

OBJECTIVES

- Identify and describe how to configure a typical data center layout, including spine and leaf placements.
- Describe an IP fabric architecture.
- Explain and configure basic Ethernet switching.
- Explain and configure virtual networks (VLANs).
- Describe layer 2 security.
- Implement link aggregation.
- Describe and implement protocol independent routing and routing instances with Junos OS.
- Configure load balancing within Junos OS.
- Implement FBF using Junos OS.
- Describe and deploy OSPF.
- Describe and deploy BGP.
- Implement graceful restart and BFD using Junos OS.

COURSE CONTENTS

DAY 1

1	**Course Introduction**

2	**Traditional Data Center Architectures** • Explain traditional multitier architecture, its benefits, and challenges • Describe a traditional data center-based scenario

3	**Juniper's Modern Data Center Architectures** • Describe an IP fabric environment • Explain routing in an IP fabric environment • Explain using Juniper Apstra as a turnkey solution

4	**Ethernet Switching Overview** • Explain the basics of Ethernet switching • Provide an overview of enterprise switching platforms

5	**Configuring Ethernet Switching** • Manage and interpret the Ethernet switching table **Lab 1: Implementing Ethernet Switching**

Continued in the next page.

ALL-ACCESS TRAINING PASS | ON-DEMAND TRAINING | LEARNING PATHS | CERTIFICATION RESOURCES

Juniper Public

COURSE CONTENTS

DAY 1 (contd.)

6	**Virtual Networks Overview**

- Describe access and trunk port modes
- Describe alternate VLAN and data VLAN concepts
- Explain native VLAN routing operations

7	**Configuring Virtual Networks**

- Configure and monitor VLANs
- Configure and monitor inter-VLAN routing

Lab 2: Implementing Virtual Networks

DAY 2

8	**Port Security**

- Identify MAC limiting
- Review the basics of persistent MAC learning
- Implement MACsec (QFX-centric)
- Review storm control operational parameters

Lab 3: Implement Port Security

9	**Link Aggregation**

- Describe and implement link aggregation
- Identify link aggregation groups
- Review graceful Routing Engine switchover
- Explain nonstop active routing
- Review nonstop bridging

Lab 4: Configuring and Monitoring Link Aggregation

10	**Protocol-Independent Routing**

- Describe and configure static routes
- Explain and configure aggregate routes
- Explain and configure generated routes

11	**Routing Instances**

- Describe routing instances
- Configure and share routes between routing instances

Lab 5: Configuring Protocol-Independent Routing and Routing Instances

12	**Load Balancing**

- Describe load-balancing concepts and operations
- Implement and monitor Layer 3 load balancing

Continued in the next column.

DAY 3

13	**Filter-Based Forwarding**

- Explain the benefits of filter-based forwarding
- Configure and monitor filter-based forwarding

Lab 6: Load Balancing and FBF

14	**Fundamentals of OSPF**

- Provide an overview of OSPF
- Explain OSPF scalability
- Describe adjacency formation and designated router election
- Configure and monitor OSPF
- Perform OSPF troubleshooting

Lab 7: Configuring OSPF (Optional)

15	**Fundamentals of BGP**

- Describe the basics of BGP
- Explain BGP attributes

16	**Deploying BGP**

- Compare IBGP versus EBGP
- Configure and monitor BGP

Lab 8: Deploying BGP

17	**Graceful Restart and Bidirectional Forwarding Detection**

- Configure graceful restart
- Configure bidirectional forwarding detection (BFD)

Lab 9: Configuring Graceful Restart and BFD

IJDC04012022