

# Juniper JNCIP-DC: Data Center Professional (JN0-682)

This JNCIP-DC (JN0-682) training covers how to work with multichassis LAG, Layer 2 and 3 fabrics, VXLAN and Data Center Interconnect to manage a data center. This professional-level Juniper training is specially made to sharpen and enhance network engineers' data center skills. For anyone who uses Juniper products, this JNCIP-DC training can be used for JN0-682 exam prep to earn your JNCIP-DC: Data Center Professional certification.

[CBT Nuggets course material](#) →

## WEEK 1

### Advanced OSPF Foundations

152 min.

Introducing Advanced OSPF on the JNCIP	2
OSPF Design Considerations	10
A (not so) Basic OSPF Deployment	15
OSPF Packet Types and LSAs	19
Verify LSDB Contents and Protect the LSDB	15
SPF Tuning	6
Metric Tuning	10
Rotating Authentication Keys	7
Summarizing Advanced OSPF Foundations	1

### Advanced OSPF Configurations and Use Cases

Overview	1
Introducing Advanced OSPF Configurations	1
OSPF Area Types	10
Route Summarization	14
Route Filtering	6
Multi-Area Single Adjacency	7
Virtual Links	9
Route Redistribution	12
Summarizing Advanced OSPF Configuration	1

### Advanced IS-IS Foundations

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Introducing Advanced IS-IS Foundation	3

## WEEK 2

157 min.

Multi-Level IS-IS Refresher	18
IS-IS Packet Types	11
Basic Multi-Level IS-IS Deployment on JUNOS	14
LSPDU Contents and Common TLVs	9
PDU Flooding and Mesh Groups	6
Metric Tuning	7
Validating IS-IS Config and LSDB	8
Hierarchical Authentication	6
Summarizing Advanced IS-IS Foundations	1

### Advanced IS-IS Configurations

Overview	1
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How the SPF Algorithm Works	12
The Partial SPF Run	4
Wide Metrics	9
The Overload Bit	4
Route Redistribution	9
Leak Routes from Level 2 to Level 1	6
The Up/Down Bit	4
Route Summarization	6
Summarizing Advanced IS-IS Config	1

### Advanced BGP Foundations

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The Point of BGP (Refreshed)	15

## WEEK 3

154 min.

BGP Messages	11
BGP Advertisement Rules	12
Next Hop Solutions in iBGP	7
A Basic BGP Config on Junos	23
BGP Best Path Selection Crash Course	8
BGP Authentication	6
Summarizing BGP Foundations	1

### Advanced BGP Configurations and Policies

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Configure GTSM	9
Dynamic Neighbor Adjacencies	6
BGP Database Protection	6
BGP Attribute Types	6
Configure Local Preference Policies	8
AS PATH: Loops	8
AS Override	5
Remove Private ASs	6
AS PATH Prepend and Expand	6
Route Aggregation	6
Summarizing BGP Attributes	1

### Advanced BGP Attribute and Community Manipulation

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Introducing (more) Attribute Configurations	2
RegEx and AS Paths	11

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154 min.

Origin Code	6
MED (Multi-Exit Discriminator)	8
BGP Communities Fundamentals	6
No Advertise Community	6
No Export (Subconfed) Community	7
Custom Communities for Grouping NLRIs	6
Summarizing Advanced BGP Manipulations	1

### BGP Scaling Solutions

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The Point of Route Reflectors	9
Configuring Route Reflectors on Junos	10
Design: Full Mesh Core	6
Design: Redundant Route Reflectors Within a Cluster	8
Design: Hierarchical Route Reflectors	5
Design: Full Mesh Cluster with Redundant Route Reflectors	6
Design: Virtual Route Reflectors	6
Optimal Route Reflection (ORR)	8
Confederations	6
Summarizing BGP Scale	1

### Understand and Configure BGP FlowSpec

Overview	1
Introducing FlowSpec	2
The Point of BGP FlowSpec (and DDoS Attacks)	12

Prepare for BGP FlowSpec	12
CE: Configure Flow Specification	8
CE: Create and Export FlowSpec Policy	5
PE: Create a Community	4

## WEEK 5

153 min.

PE: Create an Import Policy	8
Validate FlowSpec	6
Generating FlowSpecs Internally for Clients	14
Summarizing FlowSpec	1

### Understand and Configure BGP Route Damping

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The Impact of Flapping Routes	14
Figures of Merit	11
Enable BGP Route Damping	5
Create Custom Damping Profiles	9
Create and Apply Damping Policies	8
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### Understand Multicast Routing Fundamentals

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Introducing Multicast Routing	3
The Point of Multicast	10
Multicast Key Terms	14
Multicast Addressing (Layer 3 and Layer 2)	11

IGMP	8
Dense Mode (and Source Trees)	6
Sparse Mode (and Shared Trees)	6
Unicast RPF Check	7

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**163 min.**

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### Deploy Advanced Multicast Configurations on Junos

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Deploy IGMP Snooping	7
Deploy PIM Dense Mode	10
Deploy PIM Sparse Mode	13
Deploy AutoRP	14
Deploy Bootstrap Router (BSR)	6
Source-Specific Multicast (SSM)	7
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### Understand Class of Service (CoS) Deployments on Junos

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How CoS Works	17
A Closer Look at DSCP and Queueing	6
Create a CoS Classifier	7
Classifying Based on IP Header Fields	7
A Closer Look at Schedulers	10
Re-Write Rules	5

Drop Profiles	7
Policers	10
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### Data Center Designs and Foundations

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What IS a Data Center, Anyway?	11
The Pros and Cons to the Traditional Design Model	14

## WEEK 7

**152 min.**

Never Forget the Servers	5
The Evolution of Data Center Designs and Technologies - MC-LAG	6
Virtual Chassis and VCF	7
Junos Fusion	5
Today's Data Center - The Spine-Leaf Architecture	8
A Brief Intro to EVPN-VXLAN	7
Summarizing Data Center Designs and Foundations	1

### Understand ZTP in the Data Center

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Introducing ZTP in the Data Center	1
The Problem with Manually Scaling a Data Center	7
The Point of ZTP (and Automation in general)	4
How ZTP Works	7
DHCP Options	9
Leveraging Junos Space with Network Director	7
Starting Over - Zeroize	7

ZTP and Automation Techniques	8
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### Design and Deploy a Layer 3 Underlay

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Introducing the Underlay Designs and Deployments	1
The Importance of the IP Fabric Underlay	9
IP Fabric Objectives	8
eBGP vs OSPF as an Underlay	10
OSPF Deployment	9
OSPF Validation	5
Enable Load Balancing on Junos	5
eBGP Deployment	11

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155 min.

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Hardware Options	7
Oversubscription Models	7
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### Data Center Hardware and Cabling Deployment Strategies

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Transceivers and Fiber	11
Fiber Standards	9
Fiber vs. Copper Cabling	9
Top of Rack Switches	4
The QFX5100-series Switch	10

The QFX-51xx Series Switches	8
The QFX-52xx Series Switches	4
The QFX-100xx Series Switches	5
Summarizing Juniper Data Center Hardware	1

### Juniper SDN and Automation Solutions for Data Center Management

Overview	1
Introducing Software in the Data Center	2
What is an API?	15
Software-Defined Networking and Automation	11
Apstra	5
Reserve an Apstra vLab	9
Exploring Apstra in vLabs	9
Contrail	7
Ansible	10

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154 min.

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### Understand Data Center Designs and Architectures

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Introducing Data Center Architectures	1
5 Factors for Data Center Planning	8
Where Spine-Leaf Fits In	7
Selecting an Underlay	7
Not Really Selecting an Overlay - EVPN	5

L3 Gateway Placement: Spine Gateways	8
L3 Gateway Placement: Edge Routed Gateways	5
L3 Gateway Placement: Servers?!?	4
Service Block Designs	7
Summarizing Data Center Architectures	1

### **Understand Juniper Virtual Chassis and VCF Concepts**

Overview	1
Introducing Virtual Chassis and VCFs	1
Virtual Chassis and VCFs are for Even More Scalability	10
RE and PFEs in VCs and VCFs	8
Virtual Chassis (and VCF) Deployment Methods	9
Where VCF Differs from VC	6
Member Numbers and Interface Names	5
Traffic Flows in VCFs	7
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### **Understand VXLAN Concepts**

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Introducing VXLAN	2
The Point of VXLAN	11
What About EVPN?	8
VXLAN Key Terms	8
VXLAN Designs in Spine-Leaf Architectures	7
Deciphering the VXLAN Packet	5

Layer 2 and Layer 3 Gateways	7
Controllerless VXLAN (aka Multicast VXLAN)	6
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### **Understand EVPN Concepts**

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Comparing EVPN to Multicast for a VXLAN Control Plane	9
EVPN Key Terms	6
EVPN Packet Types	14
The Type 2 NLRI	11
The Type 3 NLRI	5
The Type 4 NLRI	7
The Type 1 ESI NLRI	6
The Type 1 EVI NLRI	5
Summarizing EVPN	1

### **Deploy EVPN-VXLAN in Spine-Leaf Architecture**

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Introducing EVPN-VXLAN Deployment on Junos	2
The Plan of Attack	11
Setting Up Some Global Parameters	10
Configure the Underlay (eBGP)	10
Configure the Overlay (iBGP)	8
Create VLANs and VNIs	5
Create the Anycast Gateway	7
Configure EVPN	4
Configure VXLAN	7
Verify EVPN-VXLAN	4

## WEEK 11

155 min.

Summarizing EVPN-VXLAN Configuration on Junos 1

### Troubleshoot EVPN-VXLAN

Overview 1

Introducing EVPN-VXLAN Validation and Troubleshooting 2

Explore the Route Tables 14

The Type 2 NLRI 10

The Type 3 NLRI 4

The Type 4 NLRI 6

The Type 1 ESI NLRI 5

The Type 1 EVI NLRI 4

Validating Layer 3 Details 7

Validating Participating Interface Details 6

Validating VXLAN 6

Summarizing EVPN-VXLAN Validation and Troubleshooting 1

### Supporting Multicast Traffic in an EVPN Data Center

Overview 1

Introducing EVPN Multicast Strategies 1

Multicast and EVPN Refresher 8

The Role IGMP Plays in EVPN 5

The Multicast NLRIs 8

The Type 6 NLRI 4

The Type 7 NLRI 8

The Type 8 NLRI 4

Designated Router Challenges 4

EVPN Multicast Configuration 9

Summarizing EVPN Multicast 1

### Configure MC-LAG in the Data Center

Overview 1

Introducing MC-LAG in the Data Center 1

The Plan of Attack 9

Deploy the Server-Side LAGG 7

Deploy the ICL 7

Deploy ICCP 7

## WEEK 12

151 min.

Deploy Active-Standby MC-LAG 9

Validate the Configuration 4

Deploy Active-Active MC-LAG 5

Integrate with EVPN-VXLAN 4

Summarizing MC-LAG in the Data Center 1

### Understand Data Center Interconnect Concepts

Overview 1

Introducing DCI Concepts 1

The Point of DCI 6

Layer 2 Stretching 4

The Layer 3 DCI over IP WAN 8

Layer 2 and Layer 3 Across an IP WAN 8

Layer 3 DCI Across MPLS L3VPN 7

Layer 2 & 3 DCI Across VPLS or EVPN 7

Point-to-Point DCIs 5

A Closer Look at Handoff Options in P2P DCIs	6
Summarizing DCI Concepts	1

### **Deploy a Data Center Interconnect (DCI) Fabric on Junos**

Overview	1
Introducing DCI Deployment on Junos	2
Understanding the Lab Strategy and Setup	16
The eBGP Relationships	13
The iBGP Relationships	6
A Careful Examination of VRFs - the Layer 3 VRF	10
The Layer 2 Routing Instance	10
Validating the Configuration	6
The Type-5-Only DCI	5
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### **Digging Deeper Into DCI Designs and Architectures**

Overview	1
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## **WEEK 13**

**63 min.**

Introducing DCI Traffic Flow Design Considerations	1
DCI Traffic Flows in the Real World	8
Pods and Super Spines	9
Refreshing the Service Block Designs	5
Intra-VRF Traffic Flows	9
Inter-VRF Traffic Flows	8
Internet-Bound Traffic Flows	5
Summarizing DCI Traffic Flow Designs	1

### **Implement Datacenter Traffic Isolation on Junos**

Overview	1
Introduction	1
Multitenancy Overview	1
Exploring Private VLANs	1
Demonstrating Private VLANs	1
Exploring Routing Instances	1
Demonstrating Routing Instances	1

### **Apply Data Plane Firewall Filters in Junos-Based Datacenters**

Overview	1
Introduction	1
Filtering Traffic: Creating the Filter	1
Filtering Traffic: Applying the Filter	1
Filter-Based Forwarding: Planning the Deployment	1
Filter-Based Forwarding: Configuring Routing Instances	1
Filter-Based Forwarding: Directing Traffic	1