Data Center Automation Using Juniper Apstra

Revision 25B

Course overview

This five-day, intermediate-level course teaches the basics of using the Juniper Apstra™ software to manage data center networks. This course offers attendees the knowledge to operate and manage Juniper Apstra. It also provides a comprehensive overview of modern data center design and intent-based networking concepts.

The course covers the Juniper Apstra architecture and its data center reference architecture including the designing, building, deploying, and automation of both a collapsed IP fabric and a three-stage IP fabric using a Virtual Extensible LAN (VXLAN) overlay. The course also covers the navigation of the Juniper Apstra UI including creating resources, designs, templates, and instantiating blueprints (a running network). After teaching the students to use Juniper Apstra to build a running data center, the course reviews the operational tools for managing a system with Juniper Apstra including performing basic troubleshooting, performing global and blueprint UI walkthroughs, enabling role-based access control, setting drain mode, adding and removing nodes from a fabric, rolling back an entire network (Time Voyager), creating on-box and off-box agents, configuring security policies, creating connectivity templates, querying the graph database, and performing intent-based analytics (IBA).

Students will learn to configure and monitor Juniper Apstra's data center through demonstrations and hands-on labs. This course is based on Juniper Apstra Release 5.1.

Course level

Data Center Automation Using Juniper Apstra is an intermediate-level course.

Audience

The primary audiences for this course include:

- Networking architects and operators, System Engineers, and DevOps and IT professionals.
- People who set up, maintain, and troubleshoot big and small data centers using different vendor products.

Prerequisites

- Basic knowledge of networking and data center designs.
- Understanding Clos IP fabric.
- Overlay and underlay routing designs.
- Basic automation design and workflows.
- Understanding of network device configuration through the CLI.
- Knowledge of BGP.
- Completion of the *Introduction to Juniper Data Center Networking* course.

Related products

Juniper virtual EX Series devices, Juniper Apstra, Junos OS, Juniper Apstra Cloud Services, Juniper Apstra Edge

Related certification

JNCIS-DC

JNCIE-DC

JNCIP-DC

Recommended next courses

- *Implementing Data Center Fabric with EVPN and VXLAN*
- *Advanced Data Center Automation using Juniper Apstra*

Objectives

- Describe what is meant by intent-based networking.

- Describe the Juniper Apstra architecture.
- Navigate the global Apstra UI.
- Describe the basic device abstractions used by Juniper Apstra.
- Create and use system agents to manage devices.
- Describe an IP fabric architecture.
- Explain VXLAN functions and operations.
- Describe Ethernet VPN (EVPN) routing and bridging.
- Describe the Juniper Apstra reference designs.
- Create resources.
- Create tags.
- Configure a rack type.
- Configure templates.
- Build and deploy blueprints.
- Navigate the blueprint UI.
- Perform basic fabric device operations and troubleshooting.
- Configure role-based access control.
- Configure and apply property sets and configlets.
- Configure connectivity templates.
- Describe the multitenancy capabilities of Juniper Apstra.
- Add a spine and a rack to an existing blueprint.
- Add a generic system and links to an existing blueprint.
- Use the Graph Explorer to traverse the graph datastore.
- Describe the function of an IBA probe.
- Create an IBA probe.
- Describe the purpose of root cause identification.
- Create and manage security policies.
- Create a logical device.
- Create an interface map.
- Configure logging to a remote syslog server.
- Manage the Juniper Apstra Server.
- Describe how Juniper Apstra can enable a Data Center Interconnect (DCI).
- Create a device profile.
- Describe how you can automate the Juniper Apstra server.
- Implement Juniper Apstra Cloud Services.
- Describe the features of Juniper Apstra Cloud Services.
- Describe the features of Apstra Flow.

Course contents

Day 1

Module 01: Intent-Based Networking

- Describe what is meant by intent-based networking

Module 02: Juniper Apstra—Overview

- Describe the role of the Juniper Apstra server
- Describe the role of the Juniper Apstra device agents

Module 03: Juniper Apstra UI Walkthrough

- Navigate the global Apstra UI

Lab 01: Apstra UI Walkthrough

Module 04: Logical Devices, Device Profiles, and Interface Maps

- Describe logical devices
- Describe device profiles
- Describe interface maps

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Lab 02: Network Interfaces and Logical Units

Module 05: Device Management

- Create and use system agents to manage devices

Lab 03: Managing Devices

Module 06: IP Fabric Architecture

- Describe an IP fabric architecture

Day 2

Module 07: VXLAN Overview

- Describe VXLAN functions and operations

Module 08: EVPN Protocol

- Describe EVPN routing and bridging

Module 09: Apstra Reference Designs

- Describe IP fabric usage in the data center reference design
- Describe host connectivity in the data center reference design
- Describe the overall life-cycle management of devices
- Describe the Juniper Apstra Freeform reference design

Module 10: Resources

- Create resources

Module 11: Tags

- Create tags

Lab 04: Creating Resources and Tags

Module 12: Design—Racks

- Configure a rack type

Module 13: Design—Templates

- Configure Templates

Lab 05: Designing the Network

Day 3

Module 14: Building and Deploying a Blueprint

- Build and deploy a blueprint

Lab 06: Building and Deploying a Blueprint

Module 15: Navigating the Blueprint UI

- Navigate the blueprint UI

Module 16: Basic Blueprint Operations

- Perform basic fabric device operations and troubleshooting

Lab 07: Navigating and Operating a Blueprint

Module 17: Role-Based Access Control

- Configure local authentication
- Configure remote authentication

Lab 08: Configuring RBAC

Module 18: Property Sets and Configlets

- Configure and apply property sets and configlets

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Module 19: Connectivity Templates

- Configure connectivity templates

Module 20: Virtual Networks

- Describe how to create virtual networks
- Describe how to set routing zone constraints

Lab 09: Configuring Configlets, Connectivity Templates, and Virtual Networks

Day 4

Module 21: Post-Deployment—Adding a Spine and a Rack

- Add a spine node and a rack to an existing blueprint

Module 22: Post-Deployment—Managing Links and Generic Systems

- Add a generic system and links to an existing blueprint

Lab 10: Working with Spines, Racks, and Generic Systems

Module 23: Graph Explorer

- Use the Graph Explorer to traverse the graph datastore

Module 24: Intent-Based Analytics—Overview

- Describe the function of an IBA probe

Module 25: Creating an IBA Probe

- Create an IBA probe

Lab 11: Creating IBA Probes

Module 26: Root Cause Identification

- Describe the purpose of root cause identification

Module 27: Security Policies

- Describe the security policy functionality and terminology
- Describe the security policy workflow
- Describe the security policy conflict resolution
- Describe the management of security policies

Lab 12: Configuring Root Cause Identification and Security Policies

Day 5

Module 28: Creating Logical Devices

- Create a logical device

Module 29: Creating Interface Maps

- Create an interface map

Lab 13: Creating a Collapsed IP Fabric

Module 30: Syslog

- Configure logging to a remote syslog server

Module 31: Managing the Apstra Server

- Manage the Apstra server

Lab 14: Configuring Syslog and Managing the Apstra Server

Module 32: Data Center Interconnect

- Describe how Apstra can enable a DCI

Lab 15: Configuring a DCI

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Self-study modules

Module 33: Creating Device Profiles

- Create a device profile

Module 34: Introduction to REST API and Terraform

- Describe the basic REST API functionality
- Describe basic Terraform usage

Module 35: Juniper Apstra Cloud Services—Overview

- Describe Juniper Apstra Cloud Services
- Describe the administration of Juniper Apstra Cloud Services
- Describe the Dashboard feature
- Describe the Monitor feature
- Describe Marvis Virtual Network Assistant
- Describe the Service Aware feature
- Describe the Impact Analysis feature
- Describe the DC Edges view
- Describe the DC Switches view
- Describe the requirements of Juniper Apstra Cloud Services

Module 36: Implementing Juniper Apstra Cloud Services

- Configure Juniper Apstra Cloud Services
- Install Juniper Apstra Edge

Module 37: Apstra Flow Overview

- Describe Apstra Flow
- Describe Apstra Flow requirements
- Describe the supported information elements
- Configure Apstra Flow
- Connect a blueprint to Apstra Flow
- Describe Apstra Flow dashboards

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Resources

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Key contacts

Americas: networking.training.ams@hpe.com

Europe, Middle East, Africa: networking.training.emea@hpe.com

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