Data Center Automation using Juniper Apstra (APSTRA)

COURSE OVERVIEW

This two-day course provides students with the foundational knowledge required to work with the Juniper Apstra System and to manage data center networks with Juniper Apstra software. This class will provide students with the knowledge to operate and manage Juniper Apstra. Students will be given a background on 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 a 3-stage IP fabric with VXLAN overlay. The course goes on to cover navigation of the Juniper Apstra user interface including creating resources, designs, templates, and instantiating blueprints (a running network). After teaching you to use Juniper Apstra to build a running data center, the course reviews the operational tools for managing a system with Juniper Apstra including basic troubleshooting, maintenance mode, adding and removing nodes from a fabric, rolling back an entire network (Time Voyager), creating off-box agents, configuring group-based policies, connectivity templates, and performing Intent-Based Analytics (IBA).

Through demonstrations and hands-on labs, students will gain experience in configuring and monitoring an IP fabric using Juniper Apstra. This course is based on Juniper Apstra Release 4.0.0-314.

COURSE LEVEL

Intermediate

AUDIENCE

- Networking architects and operators, system engineers, DevOps and IT professionals
- Individuals responsible for configuring, monitoring, and troubleshooting modern spine and leaf data centers of any size leveraging networking vendor hardware or operating system

PREREQUISITES

- Basic knowledge of networking and data center designs
- Understanding of Clos IP fabrics
- Routing protocol design, configuration, and performance
- Overlay/underlay routing designs
- Basic automation design and workflows
- An understanding of network device configuration via CLI
- BGP knowledge is recommended but not required

RELEVANT JUNIPER PRODUCT

- Juniper Apstra System
- Juniper Apstra Fabric Conductor

CONTACT YOUR REGIONAL EDUCATION SERVICES TEAM:

- Americas: training-amer@juniper.net
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OBJECTIVES

- Describe the Juniper Apstra architecture.
- Navigate the Juniper Apstra web user interface.
- Describe the build procedures.
- Create and use System Agents to manage devices.
- Configure Resources.
- Configure External Systems.
- Configure Racks (server to Leaf node connectivity).
- Configure Rack-based Templates (Rack to Spine node connectivity).
- Configure Blueprints.
- Configure Multitenancy.
- Enable Configlets.
- Create and use IBA probes.
- Perform root cause identification.
- Place a IP fabric device in and out of maintenance mode.
- Add and remove a device from an existing IP fabric.
- Revert uncommitted changes to the network.
- Use Time Voyager to restore a previous state of the IP fabric.
- Enable Group-Based Policies.
- Perform Juniper Apstra server administration (add users, configure syslog).

COURSE CONTENTS

DAY 1

1 Course Introduction

2 Intent-Based Networking

- What Do We Mean by Intent?
- Juniper Apstra Overview
- Where Is Apstra Fabric Conductor Positioned?

3 Juniper Apstra Overview

- Juniper Apstra Server
- Juniper Apstra Agents

Continued on the next page.

COURSE CONTENTS

DAY 1 (contd.)

4 DC Reference Design

- Clos in the Data Center
- 3-Stage Versus 5-Stage Fabrics
- EBGP in the Data Center
- Host Connectivity
- Lifecycle Management (Design, Build, Deploy, Validate)

5 Design Phase

- Resources
- Device Profiles
- Logical Devices
- Port Groups and Roles
- Interface Maps
- Racks
- Templates

6 Build Phase

- System Agents
- Managed Devices
- Juniper Apstra Device Config Stages
- Blueprints
- Assigning Resources to a Blueprint

Lab 1: Introduction to Juniper Apstra, Milestone 1

7 Deploy Phase

- Deploying Nodes
- Uncommitted View
- Committing
- Deployment Status
- Blueprint Dashboard
- Physical

Lab 1: Introduction to Juniper Apstra, Milestone 2

8 Connectivity Templates

- Connectivity Template Overview
- CT Example: Adding an External Router

9 Multitenancy

- VXLAN Overlay Networks
- Hardware VTEPs
- VXLAN to VLAN Mapping
- EVPN
- Routing Zones
- Virtual Networks
- Apply CTs to Interfaces

Lab 1: Introduction to Juniper Apstra, Milestone 3

DAY 2

10 Configlets

- Configlets and Property Sets
- Configlet Modeling
- Configlet Processing Order

11 Intent-Based Analytics

- What Is Intent-Based Analytics?
- Leveraging the Graph Datastore
- Asking Multidimensional Questions
- IBA Probes
- IBA Example
- How to Create Probes

12 Root Cause Identification

- A Lot of Data When Something Goes Wrong
- Juniper Apstra Monitors Various Event Types and Can Determine the Root Cause
- Root Cause Identification User Interface

Lab 1: Introduction to Juniper Apstra, Milestone 4

13 Group-Based Policies

- What Is Group-Based Policy?
- Objects
- Endpoints
- Endpoint Groups
- Policies
- Workflow
- Conflict Resolution (Auto or User-Based)
- Incremental Changes

14 Time Voyager

- What Is Time Voyager?
- Blueprint Revisions
- Permanently Saving a Revision
- Restoring a Revision
- Caveats

15 REST API and Graph Interface

- Overview
- User Documentation
- Swagger 2.0
- Platform API
- Reference Design API
- Getting the Specifications
- Tools in the GUI

Lab 2: Advanced Topics

Lab 3: More Advanced Topics