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Register

NetOps Training: Automating Network Infrastructure Management

5 days (35 hours)

Overview

With NetOps, you can benefit from a modern, flexible, and automated network infrastructure. This allows you to deploy your systems more quickly and avoid malfunctions between production and network teams due to the implementation of DevOps.

Thanks to NetOps, network administrators can adapt to the integration of DevOps into their organization. This involves using new tools such as Ansible or Kubernetes, which significantly reduce manual network configuration and management tasks.

Automation is fundamental for NetOps engineers because it not only simplifies and speeds up network deployment, but also creates more reliable networks and enhances system performance and security.

Our NetOps training course will introduce you to the benefits of DevOps and how to automate your tasks with Python. You will learn how to automate the management of a local area network (SD-LAN), a wide area network (SD-WAN), and a data center local area network (SD-DC).

Objectives

- Program in Python and use Ansible to automate network management
- Virtualize an environment with Docker and Kubernetes
- Automate the management of a local area network (SD-LAN)
- Automate the management of a wide area network (SD-WAN)
- Automate the management of a local data center network (SD-DC)

Target audience

- Network developers
- Network administrators
- Infrastructure engineers
- Network engineers
- Cloud engineers
- System administrators
- DevOps

Prerequisites

- Knowledge of Python
- Knowledge of DevOps and agility
- Professional experience in network administration

Our NetOps training program

What is NetOps?

- Introduction to DevOps and agility
- How has DevOps transformed network administration?
- DevOps versus NetOps
- NetOps best practices

Programming in Python for network administration

- Introduction
- Linux fundamentals
- Creating a lab for automation
- Using libraries and integration with Ansible and Cisco

Presentation and configuration of Ansible

- What is Ansible?
- The benefits of the tool
- Presentation of the different elements
- Configuring plugins
- Installing Git repositories
- Installing Ansible in accordance with best practices

Using Ansible

- Presentation of different data formats (JSON, XML, and YANG)
- Creating your first commands
- Playbooks

- Creating filters and modules
- Vaults and lookups

Automating infrastructure management

- Introduction to conditions, loops, and result captures
- ZDD (Zero Downtime Deployment)
- Delegating tasks
- Deploying your infrastructure
- Manage errors
- Test automation

Virtualizing an environment

- Introduction to Docker and Kubernetes
- Pods, containers, and nodes
- Difference between containers and virtual machines
- Virtualizing your environment with Docker
- How the network works with Kubernetes
- Introduction to the different components for network management (LoadBalancer, ClusterIP, NodePort, Ingress)
- Managing your network with Kubernetes

Cisco DNA Center

- Overview of Cisco DNA Center
- The benefits of the tool
- Presentation of the different components (Netflow, Stackwise, Cloud, and SDN)

Configuring your local network (SD-LAN) with Cisco DNA Center

- The role of the different agents (Seed Device, PnP Agent, etc.)
- Planning your system (determining your IP address pools and switches)
- Configuring SNMP

Managing and automating your SD-LAN network

- Understanding SDN
- Introduction to SD-Access
- Integrating SD-Access
- Steps to validate before automating your network (disconnect the management port, ports are connected in layer 2, etc.)
- Begin automating your LAN network
- Complete automation
- Adding switches and links
- Troubleshooting

Cisco ACI

- Introduction to Cisco ACI
- Overview of the architecture
- The different layers and concepts
- Connecting to the external network
- Programming with Cisco ACI

Automating the management of your local data center network (SD-DC)

- Configuring the different resources
- Creating Cisco ACI scripts (WebArya)
- Using Ansible
- Debugging

Optimization

- Ensuring network performance
- Cisco Code Exchange
- Best practices for saving resources

Cisco SD-WAN Solutions

- Overview of Cisco SD-WAN Solutions
- Overview of the architecture
- Reminder of the characteristics of a wide area network
- Configuration

Automating SD-WAN network management

- Examine the different deployment methods
- Cisco SD-WAN Viptela
- Using data with POSTMAN APIs
- Programming in Python with Cisco SD-WAN Viptela

Target companies

This training is intended for both individuals and companies, large or small, wishing to train their teams in advanced new IT technology or to acquire specific professional knowledge or modern methods.

Placement at the start of training

The positioning at the start of the training complies with Qualiopi quality criteria. Upon

final registration, learners receive a self-assessment questionnaire that allows us to assess their estimated level of proficiency in different types of technologies, as well as their expectations and personal objectives for the upcoming training, within the limits imposed by the selected format. This questionnaire also allows us to anticipate certain connection or internal security issues within the company (intra-company or virtual classroom) that could be problematic for the monitoring and smooth running of the training session.

Teaching methods

Practical training: 60% practical, 40% theory. Training materials distributed in digital format to all participants.

Organization

The course alternates between theoretical input from the trainer, supported by examples and discussion sessions, and group work.

Assessment

At the end of the session, a multiple-choice questionnaire is used to verify that the skills have been correctly acquired.

Certification

A certificate will be issued to each trainee who has completed the entire training course.

Training organization registered under number 11 75 54743 75. This registration does not constitute state approval.
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