Catalyst Center and Catalyst 9K Programmability Integration Fundamentals (CATCPF)

Duration: 3 Days   **Course Code: N1_CATCPF**   **Delivery Method: Virtual Classroom**

Overview:

CATCPF (Cisco Catalyst Center Programmability Integration Fundamentals) is a 3-day, instructor-led, Cisco Catalyst Center course that will help you to become familiar with programmable infrastructure concepts and integrations that support Catalyst Center and the Cisco Catalyst 9000 Series switch programming. In this course you will learn about production solutions that run on or interact with IOS-XE on the Catalyst 9000 switches and with Software Defined Access fabrics as well.
Cisco Catalyst Center (formerly Cisco DNA Center) enables programmable interactions and integrations through APIs (Application Programming Interfaces) and event notifications. This feature allows network administrators and developers to build custom integrations, automate tasks, and enhance network operations within the platform. By leveraging programmability in Catalyst Center, users can extend the functionality of the platform, achieve innovation, business agility, and improved visibility across their network infrastructure by creating custom solutions tailored to their specific needs, driving operational efficiency within their network environments.

Virtual Learning

This interactive training can be taken from any location, your office or home and is delivered by a trainer. This training does not have any delegates in the class with the instructor, since all delegates are virtually connected. Virtual delegates do not travel to this course, Global Knowledge will send you all the information needed before the start of the course and you can test the logins.

Target Audience:

The primary audience for this course is as follows:
- Network Operations team with SD-Access solution
- Network admin staff that deal with Software Defined Networking
- Network Administrators
- Network Architects
- Network Engineers

Objectives:

- Upon completing this course, the learner will be able to meet these overall objectives:

- Describe what is SDN and Network Programmability

- Understand SD-Access

- Discuss how to apply Cisco Software-Defined Access programmatically

- Understand the Use Cases and Problems Solved with SDN programmability

- Explain an overview of OpenFlow and Network Controllers

- Describe use cases and examples of Catalyst 9000 programmability

- Learn about Python and how it automates the Catalyst 9000

- Understand object-oriented programming

- Explain an overview of Human Interaction DevOps-Style

Prerequisites:

- The knowledge and skills that a learner must have before attending this course are as follows:
- Familiarity with Catalyst 9k Switches
- Familiarity with Catalyst Center (formerly DNA Center) and SD-Access

Content:

Module 1: Catalyst Center (formerly DNA Center) Introduction

- Overview of Cisco Catalyst Center capabilities
- The Role of Cisco Catalyst Center in Network Management
- Architecture and components
- Network Management with Cisco Catalyst Center
- Automated Deployment and Configuration
- AI diagnostics for improved resolution times

Module 2: Cisco Catalyst 9K Introduction

- Intent Based Networking
- Cisco Catalyst 9K Features and Characteristics
- Cisco Catalyst 9K IOS-XE
- Catalyst 9K Platform Support
- Linux Service Containers Introduction
- Python Programmability Introduction
- Zero-Touch Provisioning, iPXE, PnP
- CLI – Legacy, Python CLI, Guest Shell

Module 3: SD-Access Overview

- SDA Quick Overview
- SDA Key Benefits
- Technical Overview
- Network Fabric
- SDA Overlay Key Components
- SDA Fabric Roles ; Terminology
- SDA Deployment
- Campus Fabric Automation
- Smart CLI
- Programmable APIs
- Catalyst Center Workflows
- Design
- Provision
- Policy
- Assurance

Module 4: Catalyst 9K and Cisco Application Framework

- Cisco Application Framework / Virtual Service Infra (IOx)
- Cisco Catalyst 9K Application Hosting
- Application Hosting Value Proposition
- Catalyst 9K Switching Application Ecosystem
- Virtual Machines
- KVMs
- Containers
- General LXC (Linux Service Containers)
- GuestShell (pre-packaged LXC)
- Other pre-packaged LXCs, i.e., PerfSonar
- Python Programmability in Depth
- Python API
- Zero Touch Provisioning (ZTP) and Plug 'n Play

Module 6: Catalyst Center Ecosystems Integrations

- Event Notifications and Webhooks
- Integrations Overview
- DevOps Integrations
- ChatOps Integrations
- Use Cases
- ITSM Integrations
- Client Insights with Apple Analytics
- IP Address Management (IPAM)
- Network Orchestrators
- Policy Orchestrators
- Security Analytics
- Firewalls
- Public and Private Cloud Integration

Module 7: Python Programming

- Programmability Overview
- APIs Primer
- Python Foundation Overview
- Lists, Tuples ; Dictionaries
- Control Sentences
- Functions
- Modules
- Classes
- Error Handling (Exceptions)

Module 8: Programming Catalyst Center

- Catalyst Center Architecture Overview
- Catalyst Center Controller
- Catalyst Center Automation
- Catalyst Center APIs
- Building Catalyst Center Applications

Module 9: Catalyst 9K EEM Python Module

- EEM Overview
- Python Scripting in EEM
- EEM Python Package
- Python-Supported EEM Actions
- EEM CLI Library Command Extensions

Module 10: DNA Assurance

- Catalyst Center Architecture
- Cisco DNA Assurance Introduction
- DNA Assurance Architecture
- Telemetry Collection Overview
- DNA Assurance Getting Started
- Full Stack Visibility
- Network ; Client Experience
- Intelligent Capture
- Real Time Monitoring RF
- Path Trace
- Sensor-based Proactive Monitoring
- Application Experience
- Issue Remediation
- AI Network Analytics
- Machine Reasoning

Module 11: Data Models ; Model Driven Programmability

- Why Models are Important
- YANG data models
- Native models
- IETF models
- OpenConfig models
- Data Encoding
- XML
- JSON
- YANG Tools
- YANG Explorer
- YANG Catalog
- Pyang
- NetConf
- History
- Protocol layers
- Operations
- Messages
- Using NetConf
- RESTConf
- History
- Protocol layers
- Operations
- Messages
- Using RestConf
- Telemetry Introduction

Module 12: Model Driven Telemetry

- Yang Data Streaming
- Telemetry History
- gRPC
- Collectors ; Renderers
- ELK
- Elastic Search
- Logstash
- Kibana
- TIG
- Telegraph
- Influx
- Grafana
- Quick Start with Docker
- Publication Types
- Telemetry Subscriptions
- IOS-XE 16.x and 17.x Yang Model Support
- Yang Model Metadata
- CLI and XML Configuration Examples
- Pipeline
- Splunk

Module 13: 3rd Party Integrations

- ServiceNow
- Splunk

Lab Outline:

Labs are designed to assure learners a whole practical experience, through the following practical activities:

Module 5: Fabric and Non-Fabric Wireless Architecture

- Wireless Architecture Overview
- Wireless Benefits
- Policy Rollout
- Wireless Integration in SDA Fabric

- Lab 1: Exploring Catalyst Center
- Lab 2: Python Overview
- Lab 3: Catalyst Center API
- Lab 4: Using Catalyst Center API and Postman
- Lab 5: Using Catalyst Center API and Request library
- Lab 6: Using Catalyst Center API and Ansible
- Lab 7: Using Catalyst Center SDK
- Lab 8: Catalyst Center Automation Configuration Workflow
- Lab 9: Catalyst Center Automation Monitoring Workflow
- Lab 10: Challenge: ConfigMon Integration Use Case
- Lab 11: Cisco Catalyst Center and Splunk Integration
- Lab 12: NETCONF on Catalyst 9000
- Lab 13: RESTCONF on Catalyst 9000
- Lab 14: Configuring Telemetry on Cisco IOS XE
- Lab 15: Cisco Catalyst 9300, CSR and Splunk Integration

Further Information:

For More information, or to book your course, please call us on 00 966 92000 9278

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