Intermediate Python for Network Engineers (IPYNE) 1.0

Duration: 05 Days (40 HRS)

Description

The **Intermediate Python for Network Engineers (IPYNE)** training introduces the fundamental concepts of network programmability and automation using Python. It is designed for network engineers new to programming or professionals looking to enhance their automation skills through Python and Cisco APIs. The training focuses on practical use cases, such as automating device configurations, managing network inventories, and integrating with Cisco products like IOS XE, Meraki, and ThousandEyes for API automation. You will also learn the basics of creating reusable programs using object-oriented programming, building web interfaces with Flask, and interacting with large language models for advanced network automation. Upon completion, you will be able to write Python scripts, interact with network devices via APIs, and design automation workflows to streamline network management tasks.

How You'll Benefit

This training will help you:

- Gain hands-on experience using Python to automate, configure, and monitor network devices, increasing efficiency and reducing manual errors

- Develop practical skills in leveraging modern tools and libraries—such as Netmiko, PyATS, and REST APIs—for scalable and reliable network automation
- Learn to build and deploy reusable automation solutions, including scripts, web interfaces, and API wrappers, to streamline network operations
- Acquire foundational knowledge in integrating advanced technologies like CI/CD, telemetry, and large language models (LLMs) to enhance and future-proof network management

Who Should Enroll

- Network Engineers with little or no programming or Python experience
- Network Administrators
- Network Managers
- Systems Engineers

Course Prerequisites

There are no prerequisites for this training. However, the knowledge and skills you are recommended to have before attending this training are:

- Familiarity and basic understanding of core networking concepts
- Familiarity with Cisco IOS-XE software or other Cisco network device configuration and operation skills
- Cisco CCNA certification or equivalent knowledge

These skills can be found in the following Cisco Learning Offerings:

- Implementing and Administering Cisco Solutions (CCNA)

Course Outline

- Python Programming for Network Engineers
- Write Your First Python Scripts
- Python Development Environment Setup
- Device Inventory Automation
- Scale Configuration of Network Devices
- Network Monitoring and Validation
- Device Configuration Backup Automation
- HTTP API Fundamentals
- Cisco ThousandEyes Network Insights with HTTP API Automation
- Network Automation Debugging and Testing
- HTTP API Automation Wrapper
- Build a Web Interface for Network Automation
- Large Language Models for Network Automation

Lab Outline

- Interact with Python Using the Interpreter
- Run Your First Script
- Install Python and Setup Developer Environment
- Create a Device Inventory Tool
- Create a Network Device Configuration Tool
- Monitor and Validate Device Configurations
- Create a Backup Tool for Network Configurations
- Retrieve Data from Cisco Meraki Dashboard API
- Create and Monitor ThousandEyes Network Tests
- Write Unit Tests for Network Automation Scripts
- Harden Automation Scripts with Logging and Error Handling
- Build a Reusable Cisco ThousandEyes API Automation Wrapper
- Build a Web Interface for Network Device Management
- Build a Web Interface for Network Automation
- Build a Network Automation Tool with Ollama