Intermediate Python for Network Engineers (CPLL-IPYNE)

Duration: 180 Days

The Intermediate Python for Network Engineers (IPYNE) Learning Path is tailored for network professionals seeking to expand their skills in network programmability and automation using Python. Ideal for those looking to deepen their knowledge, this Learning Path emphasizes practical applications that enhance network efficiency and reduce repetitive tasks through automation. Participants will gain hands-on experience with real-world use cases, such as automating device configurations, managing network inventories and integrating with Cisco products such as IOS XE, Meraki, and ThousandEyes using REST APIs. The Learning Path introduces intermediate programming concepts such as creating modular and reuseable code with object-oriented programming, building simple web interfaces with Flask, and leveraging large language models for intelligent automation workflows. Upon completion, you will be able to design and implement Python-based automation solutions that interact with network infrastructure and streamline operational tasks.

Skills You'll Learn:

- Automate network device configuration, monitoring, and management using Python scripts
- Leverage modern tools and libraries (e.g., Netmiko, PyATS, REST APIs) for scalable network automation
- Build and deploy reusable automation solutions, such as scripts, web interfaces, and API wrappers
- Integrate advanced technologies like CI/CD, telemetry, and large language models into network automation workflows
- Troubleshoot, test, and validate network automation solutions using best practices in logging, error handling, and unit testing

Learning Path Objectives:

1. First Steps with Python: Explore network programmability and automation by setting up a Python development environment and learning to write and run basic Python scripts.
2. Automating Network Devices: Build network management tools while learning essential Python concepts, libraries, and best practices.
3. HTTP API Automation: Gain practical Python skills to automate network operations by working with APIs, authentication, testing, monitoring, CI/CD integration, and creating reusable code with SDKs and API wrappers.

4. Innovative Approaches to Network Automation: Design web interfaces for network automation using the Python Flask framework.