Intermediate Python for Network Engineers (IPYNE)

Category: Networking & Security | **Vendor:** Cisco

Duration: 40.00 hours (5 days) **32.5 CPD Hours**

Rating: ⭐ 4.6 (5,878 reviews)

Course Information

Delivery Format: Instructor Led - Online

Course Overview

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
- Earn 29 CE credits toward recertification

About This Course

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Who Should Attend

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

Prerequisites & Entry Requirements

General 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)

Learning Outcomes

Upon successful completion of this course, participants will be able to:

- Describe Python’s versatility and suitability for network programmability and automation
- Explain why network programmability is needed and how it enables modern network automation
- Describe programmatic interaction with network devices and the benefits of network automation for scaling from traditional to programmable networks
- Identify practical examples and existing Python tools for network automation
- Write and run basic Python scripts, demonstrating foundational syntax, elements (variables, data types, operators), and logic (decisions and loops)
- Introduce standard and third-party libraries, the import statement, and using the Python interpreter
- Demonstrate hands-on interaction with Python, including accepting input and performing basic network tasks (e.g., connectivity checks)
- Emphasize code styles, readability, and development environment setup, including Python installation, VS Code, virtual environments, Docker, and Git
- Implement Python tools for automating device inventory, including data storage with variables, grouping devices with lists and dictionaries, iterating and filtering device data, and file operations (load/save)
- Organize code with functions and develop scripts for inventory management
- Use external libraries (e.g., Netmiko) for SSH connections and scaling network configurations with Python and templates
- Parse and analyze device output, handle exceptions, and build CLI applications for device management
- Implement tools for testing and validating device state using PyATS and Genie, including retrieving and verifying configuration data
- Demonstrate Python context managers, parsing outputs, performing compliance validation, and running scripts on Cisco IOS-XE devices (Guest Shell)
- Create tools for backing up device configs, automating backup storage with Git, comparing configs, and periodic backups with logging
- Use PyATS for configuration comparison and automate backup processes
- Describe HTTP REST API fundamentals, interactive documentation, and creating API requests in Python
- Parse JSON data, automate interactions with APIs (e.g., Cisco Meraki Dashboard, ThousandEyes), and manage authentication securely
- Demonstrate creating, configuring, and analyzing network tests and monitoring data with API scripts

- Explain the importance of debugging, logging, unit testing, and integrating scripts with CI/CD pipelines
- Handle API errors, implement rate limiting/retries, and introduce telemetry collection with OpenTelemetry

Detailed 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

Skills You Will Learn:

- Describe Python’s versatility and suitability for network programmability and automation
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Frequently Asked Questions

Q: What delivery options are available for Intermediate Python for Network Engineers (IPYNE)?

We offer multiple delivery formats:

- Live Instructor-Led Classroom Online (Virtual/Live Online)
- Traditional Instructor-Led Classroom Training (ILT)
- On-site delivery at your offices anywhere in United Kingdom
- Private dedicated courses customized for your team

Q: How many CPD hours does this course provide?

The 5-day Intermediate Python for Network Engineers (IPYNE) course provides up to 32.5 CPD hours of structured learning. CPD certificates can be provided upon request.

Q: What is the duration of the Intermediate Python for Network Engineers (IPYNE) training?

The training takes place over 5 day(s), with each day lasting approximately 40.00 hours including breaks for lunch and refreshments.

Q: Do you provide corporate training for Intermediate Python for Network Engineers (IPYNE)?

Yes, we provide corporate training, dedicated training, and closed classes for Intermediate Python for Network Engineers (IPYNE). Training can take place anywhere in United Kingdom including London, Manchester, Birmingham, Edinburgh, or live online allowing teams from across United Kingdom or internationally to attend.

Q: What related terms do people search for?

Popular related searches include: Intermediate Python for Network Engineers, Cisco Networking, IPYNE

Q: Why choose Nexus Human for Intermediate Python for Network Engineers (IPYNE)?

Nexus Human is recognized as one of the leading training providers. Our trainers have won multiple awards including:

- Small Firms Best Trainer Award
- National Training Partner of the Year (Ireland) - Multiple Years
- Global Top 30 Instructor Awards (2012, 2019, 2021)
- Tech Excellence Award Nominations
- Learning Performance Institute (LPI) External Training Provider Sponsor 2024

Q: Are there any discount codes available?

Yes! Use discount code **PENPAL5** when booking your Intermediate Python for Network Engineers (IPYNE) training. Please note that only one discount code can be used per booking and cannot be combined with other special offers.

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