Intermediate Python for Network Engineers (IPYNE)

ID IPYNE **Prix** sur demande **Durée** 5 jours

A qui s'adresse cette formation

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

Pré-requis

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)

Objectifs

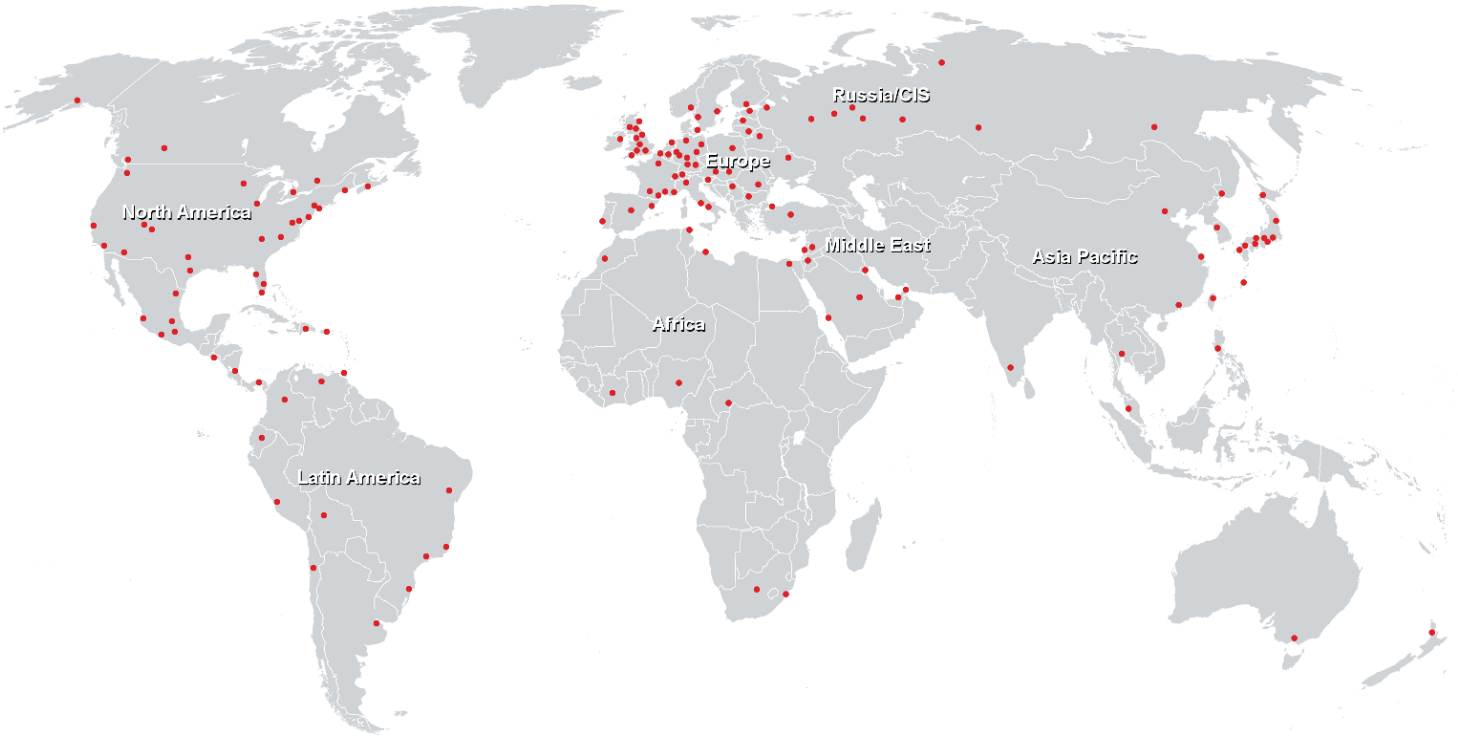
- Describe Python's versatility and suitability for network programmability and automation
- Explain why network programmability is needed and how it enables modern network automation
- Describe programmatic interaction with network devices and the benefits of network automation for scaling from traditional 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

Contenu

- 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

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