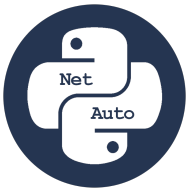

Network Automation with Python Fast Track

- 3 Days
- Lecture and Hands-on Labs

Course Overview

This course provides a practical and hands-on approach to network automation using Python. It's designed to empower network engineers to move beyond manual, time-consuming command-line interfaces. Participants will learn to leverage a full-featured programming language for advanced data manipulation, multi-vendor automation, and seamless integration with the broader IT ecosystem. The hands-on labs focus on automating real-world network devices from major vendors like Cisco, Arista, and others.

Who Should Attend

- Network Engineer
- Network Architect
- DevOps/SRE (Site Reliability Engineer)
- Network Operations Center (NOC) Technician/Analyst
- IT Infrastructure Manager

What You'll Learn

- Apply Python to Network Tasks: Use Python fundamentals to programmatically interact with network devices.
- Master Multi-Vendor Automation: Confidently manage and configure devices from different vendors via both CLI and APIs.
- Automate with Data: Parse and manipulate structured and semi-structured data formats like JSON and CLI output.
- Build Reliable Solutions: Securely manage credentials and version control network configurations to ensure reliability.

Outline

Python Fundamentals for Networking

- Lecture + Lab: Python Data to JSON
- Lecture + Lab: Python Data to YAML
- Lecture + Lab: Functions and Control Flow
- Lecture + Lab: Read from Files
- Lecture + Lab: CSV data - Standard Library and pandas dataframes
- Lecture + Lab: Error Handling with Try/Except
- 🚀 List and Dict Modeling

CLI Automation

- Lecture: Introducing Paramiko

- Lecture + Lab: Automating Commands Across SSH
- Lecture + Lab: Paramiko and SFTP
- Lecture + Lab: Python Telnet Client
- Lecture + Lab: Performing ICMP Checks

Multi-Vendor Automation

- Lecture + Lab: Netmiko for Router and Switch Automation
- Lecture: Python to Cisco NX-OS
- Lecture + Lab: Getting Switch Configuration with NAPALM
- Lecture + Lab: Switch Validation and NAPALM
- Lecture + Lab: Exploring Network Interfaces

Parsing and Data Handling

- Lecture + Lab: Python and Regular Expression for Searching
- Lecture + Lab: Parsing Semi-Structured Data with Regex
- Lecture + Lab: Python for Network Captures and Wireshark
- Lecture + Lab: Examining Network Capture pcaps Files with termshark

API-Driven Automation

- Lecture + Lab: Restful Open APIs with Standard Library
- Lecture + Lab: APIs, pip, and requests
- Lecture + Lab: Accessing APIs with Exception Handling

Data Logging and Reliability

- Lecture + Lab: Lightweight Database Interactions
- Lecture + Lab: Data Logging and State Tracking
- Lecture + Lab: Controlling run time with Environmental Variables
- Lecture + Lab: Using Argparse

Advanced and Optional Topics

- Lecture + Lab: Automating HTTP Requests
- Lecture + Lab: Automating HTTP Requests with Async IO
- Lecture + Lab: Introduction to FastAPI
- Lecture + Lab: Web Scraping Data with Beautiful Soup