



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: List and Dict Modeling
- 📺 Lecture + Lab: Python Data to JSON
- 📺 Lecture + Lab: Python Data to YAML
- 📺 Lecture + Lab: Read from Files
- 📺 Lecture + Lab: CSV data - Standard Library and pandas dataframes
- 🗣️ Lecture: Functions and Control Flow
- 📺 Lecture + Lab: Modules, Libraries, and Exception Handling

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: APIs, pip, and requests
-  Lecture + Lab: Restful Open APIs with requests
-  Lecture + Lab: Interacting with APIs
-  Lecture + Lab: Restful Open APIs with Standard Library
-  Lecture + Lab: API-Driven Network Automation with requests

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 BeautifulSoup

Prerequisites

Although not required, students with some experience programming will most appreciate this hands-on course. ## Next Courses

- Python 201 - APIs and API Design with Python (5 days) (<https://alta3.com/courses/api>)
- Ansible 201 - Python and Ansible for Network Automation (5 days) (<https://alta3.com/courses/napya>)
- Terraform 101 - Infrastructure as Code (3 days) (<https://alta3.com/courses/terraform>)