

Network Automation with Python and Ansible Training

Alta3 Research Authorized Training • Applied Technology Academy

Managing networks can be repetitive and error-prone, but Python can make incredible changes to how you automate with all major (and most minor) network vendors. This course is driven by lessons and labs designed to utilize Python libraries designed to interact with and configure your network devices. At the conclusion of this course, you'll be empowered with the tools and skills necessary to take your network to the next level. This class is a combination of live demonstrations and hands-on labs with virtual network devices and endpoints as targets for your configuration.

LEVEL	DURATION	EXPERIENCE	AVERAGE SALARY	LABS
Intermediate	5 Days	3 Years; Python	\$119,500	Yes

Course Overview

- Sending HTTP Requests to APIs with builtin and 3rd party libraries
- Opening Telnet Sessions with builtin libraries
- Automating SSH commands with Paramiko
- Performing ICMP Pings
- Transforming Data between JSON, YAML, and Python
- Retrieve and Push network device configuration via Netmiko and Napalm
- Use Pandas to manipulate data in a variety of formats (CSV, Excel, JSON)
- Database manipulation
- Capturing and Parsing Network Traffic
- AI LLM prompt engineering for Python snippets and jumpstarting solutions

All notes and scripts will be made available to students by the end of each day via a cloud-share or email. Lab time will reinforce that day's topics and demonstrations.

Class is appropriate for those interested in automation, specifically network automation, and those looking to marry a Python and Ansible skill-set.

Course Outline

- Summary
- Up And Running
- Using vim
- Introduction to VScode
- Tmux Basics
- Certification

- Python for Network Automation - Certification Project
- AI LLM Toolkit
- Large Language Model toolkit for AI Solution Assistance
- Software Control Management
- SCM Option #1 - GitHub
- SCM Option #2 - GitLab
- Python
- Installing Python
- Data And File Manipulation
- Read from Files
- Python Data to JSON
- Python Data to YAML
- Pandas dataframes with Excel, csv, json, HTML and beyond
- CSV data - Standard Library and pandas dataframes
- List and Dict Modeling
- APIs And HTTP
- Interacting with APIs
- APIs, pip, and requests
- Restful Open APIS with Standard Library
- Restful Open APIS with requests
- Troubleshooting
- Python for Network Captures and Wireshark
- Examining Network Capture pcaps Files with termshark
- ICMP (Ping)
- Performing ICMP Checks
- Automating Email
- Automating SMTP
- Exploring Network Interfaces
- Front End Web Calls
- Web Scraping Data with Beautiful Soup
- Automating Front-End Web Forms
- Connecting With Python
- Python Telnet Client
- Introducing Paramiko
- Paramiko and SFTP
- Automating Commands Across SSH

- Python And Network Devices
- Python to Cisco NX-OS
- Netmiko for Router and Switch Automation
- Lightweight Database Interactions
- NAPALM
- Getting Switch Configuration with NAPALM
- Switch Validation and NAPALM
- Building APIs
- Building APIs with Python Flask
- Intro to Building Django Apps
- CI/CD Automation
- Introduction to CI CD with GitLab
- Running Python in a Container
- CI CD with Python, Webhooks, and GitLab Runner
- Lifecycling a Python App with GitLab
- Testing
- Testing Code with PyTest
- Optimizing Code For Automation
- Using Argparse
- Controlling run time with Environmental Variables
- Python and Regular Expression for Searching
- Concurrency
- Automating HTTP Requests
- Automating HTTP Requests with Async IO
- Enterprise Applications
- VMWare NSX Automation
- scrapy - Network Traffic as Code
- Ansible Primer (Optional)
- Introduction to Ansible and Playbooks
- Retrieving Switch Config with Ansible
- Using Agnostic Networking Modules
- Appendix
- Glossary

Intended Audience

- Network Administrators
- Ansible devs
- Python devs
- Administrators interested in Automation
- Individuals interested in devops, specifically for networking

Prerequisites

- Basic Linux skills are helpful.
- Familiarity with a text editor like vi, vim, or nano is helpful.

Follow-On Courses

- Python for Network Automation
- Certified OpenStack Administrator

Ready to enroll? Call 800.674.3550 or email Info@AppliedTechAc.com — private team cohorts, GSA MAS purchasing, military credentialing funding, VA GI Bill and VR&E and student financing available.