

bluemap

NETWORK
AUTOMATION

UPGRADE YOUR KNOWLEDGE

Network Automation

Course Overview

Python and Ansible allow you to build scripts to automate complex network configuration. Ansible is an extension of Python. These are the most widely used languages for software-defined networking, and are a hot skill for network engineers. This course is intended to teach you the basics of network automation with Python and Ansible.

Duration & Module Coverage

Duration: 14 Days (28hrs)

Session Options	Module Coverage
Session Weekdays[4] : 2 hours per day 4 days per week	Day 1 – Modules 1 to 2 Day 2 - Modules 3 to 4 Day 3 - Module 5 Day 4 - Module 6 Day 5 - Module 7
Session Weekends: 2 hours per day	Day 6 – Module 7 contd. Day 7 – Module 8 Day 8 – Module 9 Day 9- Module 9 contd. Day 10- Module 9 contd. Day 11 – Module 10 Day 12 – Module 11 Day 13 – Module 12 Day 14 – Module 13

Learning Goals

By the end of this course participants will be able to:

1. Understand concepts of python as a programming language.
2. Gain familiarity with loops, controls statements and operators in Python.
3. Understand libraries in Python used to automate network tasks.
4. Become proficient in using Ansible module and playbooks.
5. Understand Jinja and yaml templates.
6. Use Ansible to automate simple and complex networks.

Pre-Requisites

The pre-requisite for this course is basic computer knowledge.

Teaching Methodology

This is a very hands-on course where participants carry out practical exercises according to the lab guide provided. The concepts are taught through implementation of real-world use-cases. Our exercises have been carefully designed to replicate scenarios participants will face in real life work conditions.



Who Should Take This Course?

This course is designed for network specialists, network administrator and network support engineers with 1 to 3 years of experience.

Course Content

1. Introduction to Python

- What is Python?
- Application areas of Python
- Download and install Python
- Execute Python program from command prompt and using IDLE
- Save programs with .py extension and execute it from prompt.

2. Python Basics

- Data types and variables
- Operator and operator precedence
- Data type conversions
- Command line arguments
- Data input and comments
- Import Modules

3. Flow control in Python

- If statement
- If..elif..else statement
- While loop
- For loop
- Break and continue
- Else clause

4. Python Sequences

- Range
- String
- List
- Tuple
- Dictionary
- Sets

5. Functions and Modules

- Define a function in Python
- Pass arguments
- Arguments with default values
- Arbitrary arguments
- Local and global variables
- Return a value from functions
- Return multiple values
- Documentation strings

6. Python built in functions

- Mathematical functions



- Random number functions
- Mathematical constants

7. Python classes and objects

- Class definition
- Creating objects
- Constructors
- Accessing attributes
- Built-in class attributes
- Destructors
- Inheritance
- Overriding
- Overloading
- Data hiding

8. Sockets Programming

- What is a socket?
- Module server
- Socket methods
- Client socket methods
- General socket methods

9. Network libraries in Python and scripting concepts

- Netmiko
- Paramiko
- Sample scripts to automate configuration on Cisco and Juniper devices

10. Introduction to Ansible

- Ansible Architecture
- Basics of Ansible
- Installation on Ansible on Ubuntu and CentOS
- Setup lab environment for Ansible using VMWare Workstation and GNS3

11. Ansible Playbook and Modules for Network Automation

- Ansible playbooks in detail
- Ansible Playbook basic examples
- Ansible modules
- Usage of Ansible modules

12. Ansible Tower and Ad-hoc Commands

- Ad-hoc commands in Ansible
- YAML and JINJA2
- Install and run playbooks from Ansible tower
- AWX- the open source version of Ansible tower

13. Configuration Management using Ansible

- Generate Network Configuration from templates
- Pushing created configuration to target devices
- Backup a Cisco router using Ansible
- Basic configuration of BIG IP F5 LTM using Ansible
- Basic configuration of Palo Alto Firewall using Ansible
- Basic configuration of Juniper router using Ansible



Practical Learning Exercises

A lab guide will be provided to each student with requirement scenarios. Along with lab guide required VMs will be provided to set up individual labs for self practice.

There would be scenarios for implementing, verifying and troubleshooting all modules covered in the course.