

Python for Network Engineer

5 Days Workshop

Prerequisite : Participants should have Basic Python + Networking Skills.

LAB Requirements

Ubuntu 18.X / Windows10 / MAC

RAM : 16GB RAM

CPU : High Speed Core5 or Core 7

Anaconda with Python3.7

GNS3 LAB with 7200 Router Series Image + Appliance.

GNS Virtual Lab

Docker with YDK-Py

Day1.

- Quick Python Introduction.
- What is Python? Why Python ?
- Where we use Python?
- Features of Python
- Applications of Python
- Anaconda Installation for Python
- Quick Introduction to Anaconda Jupiter Lab
- Data Types
- int, float , str, bool , complex
- Data Structure
- Mutable : List, Dictionary, (Set)
- Immutable : Tuple, String, (Number)
- Control Structure
- if elif else
- while
- for
- User Define Functions
- function with parameter
- global Variable
- Fibonacci Sequence

- factorial of number
- Variable Argument *arg, **kwarg
- Multiplier
- Python Built in Functions
 - lambda
 - filter
 - map
 - max, min, sum
 - set
 - sorted
 - reversed
 - zip
- List Comprehension,
- Dictionary Comprehension
- Dictionary Case Study
- Summary

Day 2.

- Object Oriented Programming
- Class vs Object
- Object Variable vs Class Variable
- Use of self
- Constructor __init__
- Polymorphism : Overriding
- use of super function
- Module
- What is Module in Python?
- User Define Module.
- How to import Modules?
- math
- os, sys,
- Pickle,
- JSON,
- Regular Expression,
- XML
- YML Concept
- YAML/JINJA– What/how/why do we use
- File Handling ,
- Exception Handling

- User Define Exception

Day 3.

- YAML/JINJA— What/how/why do we use
- File Handling ,
- Exception Handling
- User Define Exception
- Multithreading
- Thread Introduction
- Thread and Process
- Thread Life Cycle
- Thread Logging
- Deamon Thread
- Thread Synchronisation
- Thread Producer and Consumer (Conditional Thread)
- Thead Lock
- GNS Lab Set Up for IOS Images
- Configure Routers and Switches
- Summary

Day 4.

- Introduction to SNMP,
- NETCONF vs SNMP YANG and NETCONF Data Model
- GNS Lab Set Up for IOS Images (7200 Series)
- GNS + SSH to network devices cisco with GNS
- Netmiko and Paramiko Introduction
- Netmiko Connection to Router
- Summary

Day 5.

- Docker Installation for YDK-PY
- Docker Commands
- OASIS TOSCA Introduction
- TOSCA vs YANG,

- XML Structure ,
- YANG Model,
- YANG-YIN,
- YANG to YIN
- Project using following library :
- *'''Network Configuration using Python3.*
- *We shall include following Python Modules to execute.*
- 1) *re*
- 2) *fileinput*
- 3) *glob*
- 4) *netmiko / paramiko*
- 5) *json*
- 6) *pickle*
- *'''*
- **import re**
- **import fileinput**
- **import glob**
- **import netmiko**
- **import json**
- **import pickle**
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- Project Assignment to Participants and Conclusion.