Quick inside. Course Overview

Introduction

- Welcome
- IMPORTANT. Please read!
- Quick inside. Course Overview
- Why Network Automation with Python? Why Now?
- Getting Course Resources
- How to Learn Python Basic Programming Fast

Quick inside. Course Overview

Setup the Environment: Python 3, PyCharm, GNS3, Cisco IOU/IOS, Arista vEOS, Linux

- Download and Install the Required Software
- Setup Python Programming Environment on Windows (PyCharm, Idle, Running Scripts)
- Where do I get Cisco IOS, Juniper vSRX or Arista vEOS Images
- How to Install GNS3 VM and Cisco IOU on Windows
- How to Install GNS3 VM and Cisco IOU on Linux
- How to Run Arista vEOS in GNS3
- How to Run Juniper vSRX in GNS3

Quick inside. Course Overview

Working with Files in Python

- Intro
- Reading From a File
- Reading From a File in a List
- Writing or Appending to a File
- Assignment: File Processing
- Assignment Answer 1: File Processing
- Assignment Answer 2 (CSV Module): File Processing

Quick inside. Course Overview

Serial Connections

- Bytes Objects, Encoding and Decoding
- Serial Communication Basics. Connecting to a Console Port
- Open a Serial Connection to a Device Console Port
- Configure Cisco Devices using Serial Connections
- Pyserial Refactoring. Creating Our Own myserial Module
- Module Enhancement. Initially Configuration of a Cisco Device
- Initial Configuration Automation From a File

Quick inside. Course Overview

Network Automation with Telnet

- Telnet Protocol Basics. Configure and Connect to Cisco Devices
- Connecting to Network Devices with Telnet from Python
- getpass Module
- Network Automation. Configure Multiple Devices
- Telnet Script Refactoring using Object Oriented Programming
- Testing the Custom Telnet Class. Configure Loopback Interfaces and OSPF
- Configure Multiple Devices Using the Custom Telnet Class

Quick inside. Course Overview

Network Automation with Paramiko

- Intro to Paramiko
- Bonus: Enable SSH on Cisco Devices
- Running a Command on a Cisco Device
- Running a Command on Linux
- Configure Loopback and OSPF on a Cisco Router using the invoke_shell(...) method
- Paramiko Refactoring. Creating myparamiko Module
- Running Commands Using myparamiko on Cisco IOS and Linux
- Assignment: Interactive User Creation on Linux with Paramiko
- Assignment Answer: Interactive User Creation on Linux with Paramiko
- Backup Configuration of a Single Cisco Device
- Automate Backup Configuration of Multiple Cisco Devices
- Secure Copying Files with SCP and Paramiko from Python

Quick inside. Course Overview

Network Automation with Netmiko

- Intro to Netmiko
- Connecting and Running a Command on a Networking Device
- Netmiko prompt. Enable & Global Config Mode
- Running Multiple Commands on a Networking Device
- Configure a Networking Device from a File
- Configure Multiple Networking Devices from Multiple Files
- Configuration Backup using Netmiko
- Netmiko and Linux
- Preparing the Router for SCP
- Copy files to Networking Devices using SCP and Netmiko
- Configure Arista vEOS Switches
- Netmiko in a Multivendor Environment: Cisco & Arista Configuration
- Troubleshooting Netmiko

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Parallel Programming in Python

- Python Parallel Processing Theory
- Multiprocessing vs.Multithreading
- Multithreading and Multiprocessing: Pros and Cons
- Implementing Multiprocessing in Python
- Netmiko Script without Parallel Programming
- Netmiko Script Using Multiprocessing
- Netmiko Script Using Multithreading

Quick inside. Course Overview

Network Automation Napalm

- Intro to Napalm
- Installing Napalm. Connecting to a Device
- Displaying Information
- Retrieving Information (facts, interfaces, arp table etc)
- Checking Connectivity Between Devices
- Configuration Management
- Merging Configurations
- Configuration Rollback