

Designing and Implementing Cisco Network Programmability - On Demand (NPDESI 1.0)

Modality: Self-Paced Learning

Duration: 40 Hours

SUBSCRIPTION: Master Plus

This course prepares you for the 300-550 NPDESI Exam leading to 300-550 NPDESI Certification. This course does not include the **Official Exam Voucher**, however, you can request to purchase the Official Exam Voucher separately.

About this course:

In this course, you will learn how to minimize the amount of manual interactions with the network and increase the use of scripts and automation tools to drive down operational inefficiencies. Within these goals, you will review network programmability fundamentals such as using Linux and Python, and common automation protocols such as NETCONF and REST. Learn how the protocols relate to YANG data models as well as SDN controller northbound and southbound APIs. You will also learn how to use device APIs on various Cisco platforms. Get started using automation tools such as Ansible and Puppet.

Course Objective:

- Minimize the amount of manual interactions with the network, and increase the use of scripts and automation tools to drive down operational inefficiencies
- Review network programmability fundamentals including Linux and Python
- Common automation protocols such as NETCONF and REST
- YANG data models
- SDN controllers including APIC, APIC-EM, and OSC
- Device-level APIs such as Cisco NX-OS, IOS-XE, IOS-XR, and ASA OS
- DevOps and Agile software development methodologies
- Automation tools such as Ansible, Chef, and Puppet

Audience:

- Network engineer
- Field engineer
- System engineer
- Network designer
- Network operations
- Network automation engineer
- Network programmer
- Network developer
- Software engineer
- Application developer

Prerequisite:

- Baseline Python knowledge
- Data Center CCNA/CCNP-level network background

Course Outline:

Course Introduction

- Network Programmability Fundamentals
- APIs and Automation Protocols
- Data Models
- SDN Controllers
- Network Operations

Labs:?

- Challenge 1: Using the Linux Command Line
- Challenge 2: Linux Networking
- Challenge 3: Python Foundations (Part 1)
- Challenge 4: Python Foundations (Part 2)
- Challenge 5: Writing and Troubleshooting Python Scripts
- Challenge 6: Custom Python Libraries
- Discovery 1: Working with JSON Objects in Python
- Discovery 2: Using XML in Python
- Discovery 3: NETCONF Capabilities Exchange
- Challenge 7: Interacting with Cisco ASA REST API
- Discovery 4: NX-API Discovery
- Challenge 8: Consume NX-API with Python
- Challenge 9: Consuming NETCONF on Nexus
- Challenge 10: Using Python on the Nexus Switch
- Challenge 11: Interacting with the Cisco IOS XE RESTCONF API
- Challenge 12: Interacting with the Cisco IOS XE NETCONF API
- Challenge 13: Interacting with the Cisco IOS XR NETCONF API
- Challenge 14: Securing the Management Plane
- Discovery 5: Validating YANG Models Using yangvalidator
- Challenge 15: Writing a Custom YANG Model
- Discovery 6: Viewing and Validating YANG Models with pyang
- Discovery 7: BGP Configuration Change Using ydk-py (with OC BGP Models)
- Discovery 8: Generate Python Bindings with ydk-gen
- Discovery 9: Navigating YANG-Explorer
- Discovery 10: Network Discovery Configuration
- Challenge 16: APIC-EM Network Discovery and RBAC
- Challenge 17: Consuming the APIC-EM API
- Discovery 11: ACI Fabric Discovery
- Discovery 12: Creating Objects with APIC GUI
- Discovery 13: Navigating the Object Model

- Discovery 14: Using API Inspector
- Discovery 15: Using ARYA
- Discovery 16: CLI Emulation
- Discovery 17: ACI Diagram Tool
- Discovery 18: ACI Toolkit—Lint
- Challenge 18: Using the APIC REST API
- Discovery 19: GitHub Pull Request
- Challenge 19: Working with Git
- Discovery 20: DevNet Sandbox
- Discovery 21: DevNet Learning Labs
- Discovery 22: DevNet GitHub
- Challenge 20: Integration Testing
- Challenge 21: Compliance Checks with Ansible
- Challenge 22: Tenant Provisioning with Ansible