

# Scripting Workshop for SDN and NFV

Instructor Led | Duration: 2 Days | Course Number: NWW\_408

Wireless, Wireline and Cable service providers are deploying Network Functions Virtualization (NFV) and Software-Defined Networking (SDN). This class surveys the popular methodology known as DevOps and introduces software tools which are used to define and orchestrate services. In the world of software defined networks, service providers are moving from configuring networks to programming networks. The participants are introduced to several network programming languages through hands-on exercises. They study how scripting languages interface with SDN Controllers and NFV Virtual Infrastructure Manager (VIM e.g. OpenStack) along with software concepts such as declarative programming which are used in software tools such as TOSCA, YANG, Heat, Ansible and Python.

## Intended Audience

This course is intended for those seeking a technical hands-on introduction to scripting in the world of SDN and NFV.

## Learning Objectives

After completing this course, the student will be able to:

- List opportunities for scripting in the SDN, NFV based Networks
- Contrast DevOps with previous project development methodologies
- Develop or modify TOSCA service templates for network service
- Modify simple YANG models for network configuration
- Distinguish between modeling, configuration, and software programming tools
- Differentiate between data formatting languages such as YANG, TOSCA, JSON etc.
- Interpret Ansible playbook for infrastructure configuration
- Write a basic python script to retrieve and modify OpenStack configuration

## Suggested Prerequisites

- OpenStack Workshop for SDN and NFV (Instructor Led)

## Required Equipment

- Students will need a laptop with a web browser and Windows Remote Desktop installed

## Course Outline

### 1. DevOps and Scripting in the SDN and NFV World

- 1.1. DevOps in Virtualized Networks
- 1.2. Modeling and Scripting

**Exercise: Group discussion of DevOps and changing job roles**

### 2. Orchestration Tools - TOSCA

- 2.1. History of TOSCA
- 2.2. Overview of TOSCA
- 2.3. TOSCA Applications

**Exercises: Examine and execute TOSCA service templates**

### 3. Data Abstraction - YANG

- 3.1. History of YANG
- 3.2. Overview of Declarative Programming
- 3.3. Abstraction Applications

**Exercise: Convert NETCONF YANG to YIN model**

### 4. Orchestration Tools - Heat

- 4.1. Orchestration (Heat) Overview
- 4.2. Heat Orchestration Template Structure
- 4.3. Sample Heat Resources

**Exercise: Launch OpenStack Heat stack**

### 5. Deployment Tools - Ansible

- 5.1. History of Ansible
- 5.2. Overview of Ansible
- 5.3. Ansible Playbook

**Exercise: Examine and execute an Ansible playbook**

### 6. Orchestration Tools - Python

- 6.1. History of Python
- 6.2. Overview of Python
- 6.3. Python Applications

**Exercise: Modify a Python SDN application**