

# NETCONF/YANG Configuration Workshop

Instructor Led | Duration: 3 Day | Course Number: NWV\_207

Network configuration tools are increasingly important as more network services move to the cloud. In the past, SNMP has been a standard tool for this task but now it is being superseded by NETCONF (Network Configuration Protocol) and the associated YANG (Yet Another Next Generation) standard. NETCONF has important features which go beyond the capabilities on SNMP. Network operating center workflows will change as we move toward configuration with NETCONF. In this class, the student will update and implement YANG data models and use NETCONF configuration. We will also use YANG modeling for network service and Virtual Network Functions (VNF) models in NFV.

## Intended Audience

This hands-on course is designed for network operations, planning, engineering, management or other related functions.

## Learning Objectives

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

- Discuss how does YANG modeling and NETCONF apply to NFV and SDN networks
- Elaborate on YANG modeling
- Discuss NETCONF and its relationship to YANG
- List alternatives to NETCONF
- Describe, update, and build a YANG data model for an NFV network service and VNFs
- Differentiate between NETCONF usage for configuration management and control plane.
- Demonstrate Importing data models and running NETCONF configuration
- Utilize the tools such as ConfD, yang-explorer, WebUI, RESTAPI to perform various network functions/device configuration.
- Describe the goals of end to end network automation

## Suggested Prerequisites

- OpenStack Workshop for SDN and NFV (Instructor Led)
- SDN and NFV Architecture and Operations (Instructor Led)

It is highly recommended that students use more than one monitor for this workshop.

## Course Outline

### 1. YANG and NETCONF for NFV and SDN

#### Networks

- 1.1. Why NETCONF and YANG?
- 1.2. NETCONF for network management
- 1.3. Applicability in NFV and SDN networks
  - 1.3.1. TOSCA vs YANG

*Exercise: Lab access and setup*

### 2. YANG Data Models

- 2.1. Introduction to data modeling
- 2.2. YANG data modeling
- 2.3. YANG model components

*Exercise: Create a YANG model*

### 3. YIN XML Introduction

- 3.1. YANG-YIN conversion process
- 3.2. XML structure highlights
- 3.3. YANG to YIN

*Exercise: YANG to YIN, and other YANG model viewing options*

### 4. NETCONF vs. SNMP

- 4.1. Introduction to SNMP
- 4.2. NETCONF vs SNMP
- 4.3. Northbound interface auto rendering

*Exercise: Northbound interface auto rendering and usage*

### 5. NETCONF Introduction

- 5.1. Purpose of NETCONF
- 5.2. NETCONF features
- 5.3. NETCONF layers

*Exercise: NETCONF datastores*

### 6. NETCONF Operations

- 6.1. NETCONF protocol handshake
- 6.2. NETCONF datastores
- 6.3. Main NETCONF operations
- 6.4. NETCONF server discovery

*Exercise: NETCONF operations*

### 7. YANG for NFV

- 7.1. NFV data modeling
- 7.2. YANG modeling for NFV