Model-Driven Programmability Workshop - Course Resources

General Availability | April 2020 developed in partnership with

cisco DevNet
developer.cisco.com

Workshops Overview

The Cisco Networking Academy's Emerging Technologies Workshops are short, hands-on experiences--developed in partnership with Cisco DevNet--that expose your students to the latest internet technologies. The traditional networker skillset is evolving from being limited to solving problems using the CLI interface to meeting the opportunities and demands of programmable networks and automation. To meet this opportunity, students learn about new concepts in network programmability and automation, see how they work on real-world equipment, and quickly develop new emerging skills for today's evolving job market. Furthermore, each 8-hour Workshop is designed as bite-sized learning experiences to be flexibly and easily used to complement your existing learning pathways.

In each Workshop, students learn to work with emerging technologies that are frequently heard only as a series of buzzwords (i.e. APIs, REST, JSON, Python, Git, Postman, SDN, NFV, NETCONF, RESTCONF, Controllers, Orchestration, YANG, YAML, ACI, APIC-EM, Containers, etc.). The Workshop concept is to translate these buzzwords into simple "hello world" type systems integration practice with hands-on experiences. To accelerate the skills acquisition and to support future real-world tasks, students also learn the value of Communities of Practice such as Cisco DevNet, GitHub, StackOverflow. They will join these communities to further learn, collaborate, build, share as active members and start building their online professional presence.

Certification and Career Pathways

The Emerging Technologies Workshops provide a good starting point on the journey towards the Cisco DevNet Associate certification. Moreover, expanding existing learning pathways with Workshops increase the relevancy of the students in the job market with new emerging skills in network programmability and automation domain. There is a Certificate of Completion available for each Workshop.

Workshop: Model Driven Programmability

With the increasing size of the modern network and the frequency of changes required by the business, managing and automating networks via a Command Line Interface (CLI) is ineffective and error prone. A new approach, using Model Driven Programmability, enables transactional changes, by defining standardized device models and APIs. This workshop introduces students to device level programmability competencies, to automate configuration and management tasks using standardized YANG device models and using the RESTCONF and NETCONF device level APIs. By going through this workshop, every networking student will benefit in grasping the importance of YANG, as language to "model" a networking device, combined with the robustness of the RESTCONF and NETCONF device level programmability APIs. Students will also

experiment and develop Python scripts to manage networking devices at scale, using the Model Driven Programmability approach

By the end of this workshop, students will be able to:

- Explain the concept of APIs and the importance of RESTful APIs for software integration.
- Explain how network programmability enhances network management and automation.
- Explain the advantages of using model based device APIs, compared with a traditional CLI based approach for network automation.
- Explain how YANG device models define the structure, syntax and validation rules for device data.
- Interact with networking devices using RESTCONF and NETCONF API interfaces.
- Use Python with combination of RESTCONF and NETWORK APIs to retrieve and update the device's configuration..

Equipment & Applications

In this workshop, academies have a flexibility to use one of the 3 equipment options:

- Virtual Cisco SW Router - students having their own Cisco CSR1000v router running on their computer in a Virtual Machine using VirtualBox. Please note: only instructors who have activated the Academy Maintenance program can download the CSR1000v ISO installation file from cisco.com.
- DevNet Sandbox Reservation - students accessing the Cisco CSR1000v router running remotelly in the free DevNet Sandbox.
- Real Equipment with Cisco ISR4k routers - students accessing academy bundles with real Cisco hardware routers with programmability support (Cisco ISR4xxx).

Pre-requisites

- CCNA SRWE course level networking knoweldge.
- Basic programming knowledge