

Learning Services

Developing with Cisco Network Programmability (NPDEV) v4.0



The Cisco® Platinum Learning Library¹ is a catalog of over 400 online courses offered by Cisco Learning Services. Courses cover major Cisco technologies and products, as well as Cisco certifications.

Overview

The Developing with Cisco Network Programmability (NPDEV) v4.0 Cisco Training on Demand course provides you with the basics of networking, IPv4 and IPv6 addressing and subnetting, functions of infrastructure components in a network, and the need for network programmability. It also reviews data handling and formats. You learn about Cisco Application Centric Infrastructure (Cisco ACI™), Cisco Application Policy Infrastructure Controller Enterprise Module (APIC-EM) and open software-defined networking (SDN) controller technologies and conceptual frameworks, as well as how to make representational state transfer (REST) and Python requests.

In addition, you learn about the Cisco Network Services Orchestrator (Cisco NSO) framework and how to make REST, YANG, and Python requests. Finally, you learn to interpret and produce code to deploy configurations to multiple devices using RESTCONF and Network Configuration Protocol (NETCONF), and identify available network programmability developer tools and Cisco virtual platforms.

Duration

The NPDEV v4.0 Training on Demand course is a self-paced course based on the 5-day instructor-led training version. It consists of 21 sections of consumable segments via instructor video and text totaling more than 8 hours of instruction along with interactive activities, 38 hands-on lab exercises, content review questions, and challenge questions.

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Target Audience

This course is designed for entry-level to experienced network administrators; network field and systems engineers, designers, operations, automation engineers, and programmers; and those preparing for the 300-560 NPDEV exam.

Objectives

After completing this course, you should be able to:

- Understand the basics of networking, IPv4 and IPv6 addressing and subnetting, functions of infrastructure components in a network, and the need for network programmability
- Review data handling and formats
- Have knowledge of Cisco ACI, APIC-EM, and OpenDaylight (ODL) Controller technologies and conceptual frameworks, as well as how to make REST and Python requests
- Learn about Cisco NSO framework and how to make REST, YANG, and Python requests
- Interpret and produce code to deploy configurations to multiple devices using RESTCONF and NETCONF
- Identify available network programmability developer tools and Cisco virtual platforms

Course Prerequisites

The knowledge and skills recommended before attending this course are:

- Ability to program in Java, Python, C, or other language
- Complete the Programming for Network Engineers (PRNE) v1.0 Cisco E-Learning or equivalent Python programming experience
- Any CCNA, CCNP, or CCIE Certification

Course Outline

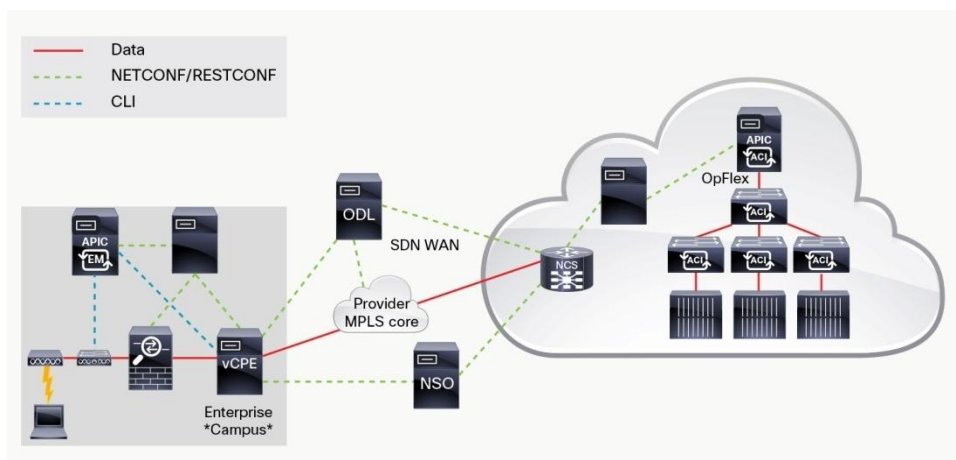
- Section 1: Describing the Components and Concepts of Network Programmability
- Section 2: Describing Networking Concepts and the OSI and TCP/IP Models
- Section 3: Describing the Functions of Infrastructure Components in a Network
- Section 4: Switching Concepts
- Section 5: Describing IPv4 and IPv6 Addressing and Subnetting
- Section 6: Routing Concepts
- Section 7: Describing NETCONF, YANG, and RESTCONF
- Section 8: Programming Cisco IOS XE and XR Software
- Section 9: Programming Cisco ASA Software
- Section 10: Programming Cisco NX-OS Software
- Section 11: Describing Cisco ACI
- Section 12: Using Cisco APIC REST API
- Section 13: Cobra SDK and Arya
- Section 14: Describing the Cisco APIC-EM Platform
- Section 15: Describing Cisco APIC-EM Services
- Section 16: Describing the Cisco APIC-EM Advanced Applications

- Section 17: Exploring Cisco APIC-EM REST APIs
- Section 18: Using Cisco APIC-EM Developer Resources for Postman and Python
- Section 19: Introducing the OpenDaylight SDN Controller
- Section 20: Working with the OpenDaylight Code
- Section 21: Describing Network Programming Tools and Techniques

Labs Outline

This course contains 38 hands-on lab exercises.

Representative topology for all labs in the course:



The labs included in this course are:

- Discovery Lab 6.6: Explore and Configure Device using CLI
- Discovery Lab 7.4: Explore YANG Models
- Discovery Lab 7.6: Use Yang Tools
- Discovery Lab 8.3: Use NETCONF Via SSH
- Discovery Lab 8.4: Use the pyang Tool for Sample XML
- Discovery Lab 8.5: Use the ncclient Python Library
- Discovery Lab 8.8: Use YDK
- Discovery Lab 8.9: Use RESTCONF with Cisco IOS XE Software
- Discovery Lab 9.4: Use the Documentation Pages
- Discovery Lab 10.3: Run Native Python Scripts on Cisco NX-OS
- Discovery Lab 10.4: Use Cisco NX-API on Cisco NX-OS
- Discovery Lab 10.5: Configure Cisco NX-OS Device Using NETCONF and CLI
- Discovery Lab 11.7: Use Cisco APIC Web GUI
- Discovery Lab 11.9: Explore the ACI Toolkit
- Discovery Lab 12.5: Use Postman for Cisco APIC Fabric Discovery
- Discovery Lab 12.6: Use Python and Cisco APIC REST API
- Discovery Lab 13.3: Use Cobra with Tenants and Related MOs

- Discovery Lab 13.4: Use Arya to Generate Cobra Code
- Discovery Lab 14.3: Access the Cisco APIC-EM Web User Interface
- Discovery Lab 15.3: Configure Network Device Discovery Job
- Discovery Lab 15.4: Work with Device Inventory
- Discovery Lab 15.5: Use Locations and Tags
- Discovery Lab 15.7: Create Cisco APIC-EM Internal Users and Examine User Roles
- Discovery Lab 17.3: Use Browser Developer Tools to Examine REST APIs
- Discovery Lab 17.4: Use the Swagger API Pages
- Discovery Lab 18.4: Use Postman for Discovery
- Discovery Lab 18.5: Use Python with Cisco APIC-EM
- Discovery Lab 18.7: Use the Python uniq Library with Cisco APIC-EM
- Discovery Lab 19.5: Install ODL Distribution and Use Karaf to Manage Features
- Discovery Lab 19.6: Examine the Feature Manager Application
- Discovery Lab 19.8: Examine the YANG UI Application
- Discovery Lab 19.9: Experiment with OpenFlow
- Discovery Lab 19.10: Experiment with NETCONF
- Discovery Lab 19.11: Use ODL with Cisco IOS XR Software
- Discovery Lab 20.3: Explore Nodes DLUX User Interface Application
- Discovery Lab 20.4: Examine Toaster Service Sample Application
- Discovery Lab 20.5: Examine ODL Inventory Model
- Discovery Lab 20.6: Run Your Own ODL Distribution

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