Learning Services

Cisco Training on Demand

Programming for Network Engineers (PRNE)

Overview

Programming for Network Engineers (PRNE) Version 1.0 is a Cisco® Training on Demand course. It provides you with an understanding of programming in Python. You also gain knowledge that helps you automate repetitive networking tasks and provides you with useful programming tools to use in your day-to-day job.

This course teaches you how to manage a network more efficiently with network programmability as you develop Python programming fundamental skills. In addition, it provides you with the foundation required before attending the Cisco Network Programmability Engineer course.

Interested in purchasing this course in volume at discounts for your company? Contact ctod-sales@cisco.com.

Duration

The PRNE Training on Demand course is a self-paced course based on the 1-day instructor-led training version. It consists of 16 sections of instructor video and text, totaling more than 7 hours of instruction along with interactive activities, 27 hands-on lab exercises, content review questions, and challenge questions.

Target Audience

This course is designed for network engineers looking to use network programming and those preparing for the Cisco Network Programmability Engineer course.

Objectives

After completing this course, you should be able to:

- Describe use cases and examples of the value of network programmability
- Acquire a complete complement of Python programming skills: basics, data structures, control structures, comparison operators, input and output, structured programming, object-oriented programming, etc.
- Use Python to communicate to individual network devices, using examples of real-world networking communication and operations
- Use Python to communicate to multiple devices
- Use object-oriented programming in Python to abstract network devices
- Use databases in a network-based application to store information about the network
- Use test methodologies to create quality applications
- Use software available through open source and existing libraries, for example, Cisco GitHub, Cisco DevNet, Python general-purpose and Cisco-specific libraries, and NX-API

Course Prerequisites

The knowledge and skills recommended before attending this course are:

- Experience with network management (CCNA-level recommended)

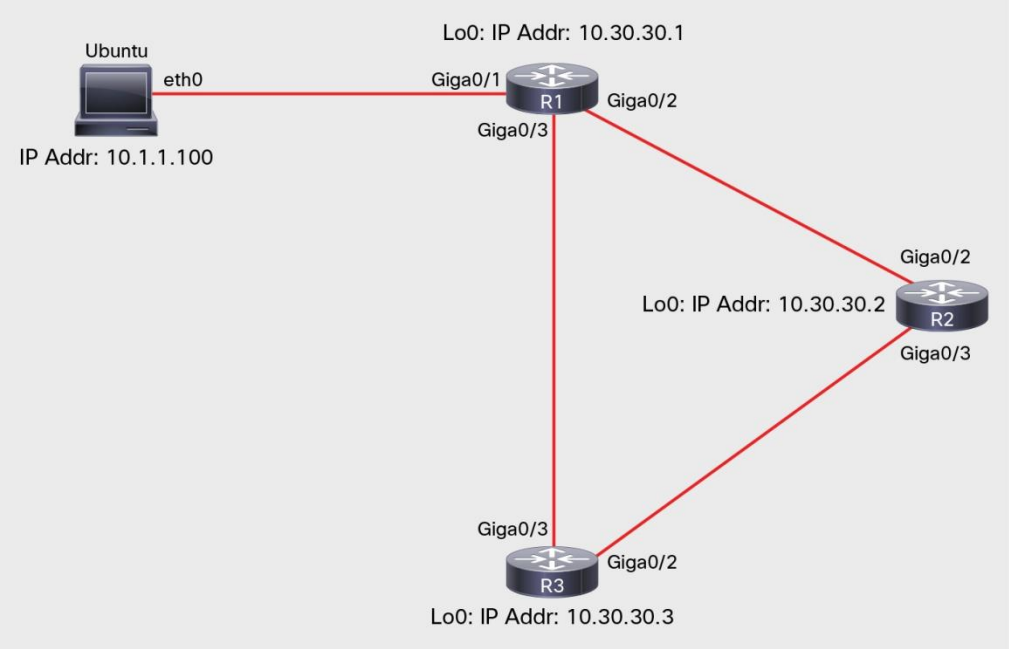
Course Outline

- Section 1: Network Programmability
- Section 2: Your First Network Program
- Section 3: Python Overview
- Section 4: Creating Your First Python Program
- Section 5: Reading and Writing Network Device Information
- Section 6: Communicating with Network Devices
- Section 7: Python Data Structures
- Section 8: Comparing Network Information
- Section 9: Conditional Code
- Section 10: Looping with for and while
- Section 11: Functions
- Section 12: Object-Oriented Programming
- Section 13: Object-Oriented Programming: Classes
- Section 14: Modules and Packages
- Section 15: Python and Data Storage
- Section 16: Debugging, Testing, and Logging

Labs Outline

This course contains 27 hands-on lab exercises.

Figure 1. Topology for All Labs in Programming for Network Engineers



The labs included in this course are:

- Lab 2.5: Running Your First Program
- Lab 4.2: "Hello Device" Application
- Lab 4.7: Create a Reusable Application
- Lab 5.4: Read Information from a File
- Lab 5.7: Write Information to a File
- Lab 6.4: Telnet to a Network Device
- Lab 6.6: Establish an SSH Connection
- Lab 7.10: Using Lists and Dictionaries
- Lab 7.15: Using Tuples and Sets
- Lab 8.5: Creating Comparisons
- Lab 9.5: Using Conditionals with Network Devices
- Lab 10.6: Using Loops
- Lab 10.1: Using break and continue
- Lab 10.11: Tabulate and Print Routes per Interface
- Lab 11.6: Creating Functions
- Lab 11.8: Creating Functions That Return Values
- Lab 12.6: Creating Classes and Objects

- Lab 13.4: Defining Classes
- Lab 13.6: Defining Child Classes
- Lab 14.5: Using Modules
- Lab 14.8: Using Packages
- Lab 15.5: Reading and Writing Structured Files
- Lab 15.7: Reading and Writing Database Files
- Lab 15.8: Storing Traffic Data
- Lab 16.3: Debugging a Network Application
- Lab 16.5: Unit Testing a Network Application
- Lab 16.7: Logging Communication with Network Devices

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