

COURSE OUTLINE



CISCO CERTIFIED

DEVNET ASSOCIATE



Course Overview

The networking industry is undergoing a transformation to using a software-oriented approach with APIs and automation. This change is driven by the ever-increasing complexity and size of networks due to new connections such as the IoT, as well as a need to deliver more agile networking services. This change requires a new software-oriented skillset that complements existing networking skills. The DevNet Associate course teaches students the best practices of modern software development practices and DevOps, to understand and learn how to securely use APIs, and how to automate network operations using those APIs.

Target Audience

The Cisco Networking Academy® DevNet Associate (DEVASC) course is designed for college and university students, vocational training center students, and participants of coding bootcamps who want to understand and manipulate networks using software. The DEVASC certificate is the associate-level certification in the software-focused Cisco DevNet track. The DEVASC certification validates foundational knowledge and skills in areas like Software Development and Design, Understanding and Using APIs, Cisco Platforms and Development, Application Deployment and Security, Infrastructure and Automation, and Network Fundamentals. These software-focused areas complement networking skills from CCNA and CyberOps Associate. Together, they create a bridge between the worlds of Software Developers, Networking Engineers and, Cybersecurity Professionals.

Course Duration

It will take **2 months** to complete the course.

Prerequisites

Students should have the following skills and knowledge:

- Basic coding skills in any object-oriented programming language (loops, if/else, objects, etc.)
- Basic understanding of computer networks (CCNA ITN level)
- Basic PC operating system navigation skills
- Basic internet usage skills
- Familiarity with Cisco Packet Tracer

Target Certification

This course aligns with the Cisco Certified DevNet Associate (DEVASC) certification. Candidates need to pass the 200-901 DEVASC exam to achieve the Cisco Certified DevNet Associate certification.

Course Description

In the DEVASC course curriculum, Cisco Networking Academy™ participants develop workforce readiness skills and build a foundation for success in automation-related careers and degree programs. With the support of video and rich media, participants learn, apply, and practice programming and infrastructure automation knowledge and skills through a series of in-depth hands-on experiences that reinforce their learning. Upon completion of the DEVASC course, learners will be prepared to take the Cisco DEVASC certification exam.

DEVASC includes the following features:

- The course is comprised of eight modules. Each module is comprised of topics
- Modules emphasize critical thinking, problem solving, collaboration, and the practical application of skills
- Each module contains some way to practice and assess understanding, such as a lab or a Packet Tracer activity. These module-level activities provide feedback and are designed to indicate learner's mastery of the skills needed for the course. Learners can ensure their level of understanding well before taking a graded quiz or exam
- Students learn the basics of software development, APIs, fundamentals of networking, application deployment, infrastructure and automation, as well as Cisco platforms
- The language used to describe these concepts is designed to be easily understood by learners at the college level
- Assessments and practice activities are focused on specific competencies to increase retention and provide flexibility in the learning path
- Multimedia learning tools, including videos, and quizzes, address a variety of learning styles and help stimulate learning and promote increased knowledge retention
- Labs and Cisco® Packet Tracer simulation-based learning activities help students develop critical thinking and complex problem-solving skills
- Cisco Packet Tracer activities are designed for use with a newer version of Packet Tracer designed specifically for this course, Packet Tracer for Network Automation (PTNA). PTNA is included in the virtual machines created for this course.

Course Objectives

The DEVASC course is designed for people who want to learn the knowledge and skills they need to work in network programming and automation. These course materials will assist you in developing the skills necessary to do the following:

- Use basic Python programming and Linux skills
- Implement a development environment using DevNet resources
- Use software development and design best practices
- Create REST API requests over HTTPS to securely integrate services
- Explain the processes and devices that support network connectivity

Lab Equipment Requirements

This course requires no physical equipment other than the student's lab PC. It uses several Virtual Machines (VMs) to create the lab experience.

Baseline Equipment Bundle:

PCs - minimum system requirements

- CPU: Intel Pentium 4, 2.53 GHz or equivalent with virtualization support
- Operating Systems, such as Microsoft Windows, Linux, and Mac OS
- 64-bit processor
- RAM: 8 GB
- Storage: 10 GB of free disk space
- Display resolution: 1024 x 768
- Language fonts supporting Unicode encoding (if viewing in languages other than English)
- Latest video card drivers and operating system updates

Internet connection for lab and student PCs

Student PC Software:

- Oracle VM VirtualBox Manager (version 6.1 or later)
- DEVASC VM (Downloadable from the Course)
- CSR1000V VM (Instructor download and distribution)
- Packet Tracer Network Automation Edition (pre-installed on the DEVASC VM)

Course Curriculum

Module 1. Course Introduction

- 1.1 Your Lab Environment
- 1.2 Linux
- 1.3 Python

Module 2. The DevNet Developer Environment

- 2.1 DevNet Overview
- 2.2 Exploring DevNet Online Resources

Module 3. Software Development and Design

- 3.1 Software Development
- 3.2 Software Design Patterns
- 3.3 Version Control
- 3.4 Coding Basics
- 3.5 Code Review and Testing
- 3.6 Understanding Data Formats

Module 4. Understanding and Using APIs

- 4.1 Introducing APIs
- 4.2 API Design Styles
- 4.3 API Architecture Styles
- 4.4 Introduction to REST APIs
- 4.5 Authenticating to a REST API
- 4.6 API Rate Limits
- 4.7 Working with Webhooks
- 4.8 Troubleshooting API Calls

Module 5. Network Fundamentals

- 5.1 Introduction to Network Fundamentals
- 5.2 Network Interface Layer
- 5.3 Internetwork Layer
- 5.4 Network Devices
- 5.5 Networking Protocols
- 5.6 Troubleshooting Application Connectivity Issues

Module 6. Application Deployment and Security

- 6.1 Understanding Deployment Choices with Different Models
- 6.2 Creating and Deploying a Sample Application
- 6.3 Continuous Integration/Continuous Deployment (CI/CD)
- 6.4 Networks for Application Development and Security
- 6.5 Securing Applications

Module 7. Infrastructure and Automation

- 7.1 Automating Infrastructure with Cisco
- 7.2 DevOps and SRE
- 7.3 Basic Automation Scripting
- 7.4 Automation Tools
- 7.5 Infrastructure as Code
- 7.6 Automating Testing
- 7.7 Network Simulation

Module 8. Cisco Platforms and Development

- 8.1 Introduction to Cisco Platforms
- 8.2 Cisco SDKs
- 8.3 Understanding Network Programmability and Device Models
- 8.4 Cisco Network Management
- 8.5 Cisco Compute Management
- 8.6 Cisco Collaboration Platforms
- 8.7 Cisco Security Platforms



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