Developing Applications Using Cisco Platforms and APIs

Duration: 5 Days **Course Code: DEVCOR** **Version: 2.0** **Delivery Method: Virtual Learning**

Overview:

The Developing Applications Using Cisco Core Platforms and APIs (DEVCOR) course helps you prepare for the Cisco DevNet Professional certification and for professional-level network automation engineer roles. The focus of this course is the implementation of network applications using Cisco® platforms as a base, from initial software design to diverse system integration, as well as testing and deployment automation. The course gives you hands-on experience solving real world problems using Cisco Application Programming Interfaces (APIs) and modern development tools.

To fully benefit from this course, you should have three to five years of experience designing and implementing applications that are built on top of Cisco platforms.

Please note this course is a combination of Instructor-Led and Self-Paced Study - 5 days in the classroom and approx 3 days of self study. The self-study content will be provided as part of the digital courseware that you recieve at the beginning of the course and should be part of your preparation for the exam.

This course is worth 64 Continuing Education (CE) Credits

Target Audience:

Existing network engineers expanding their skillbase to include software and automation; Developers expanding their expertise in automation and DevOps; Solution Architects moving to the Cisco ecosystem and Infrastructure developers designing hardened production environments.

Objectives:

- **After completing this course you should be able to:**
- Describe the architectural traits and patterns that improve application maintainability
- Describe the architectural traits and patterns that improve application serviceability
- Identify steps to design and build a ChatOps application
- Implement robust Representational State Transfer (REST) API integrations with network error handling, pagination, and error flow control
- Describe the necessary steps for securing user and system data in applications
- Describe the necessary steps for securing applications
- Identify common tasks in automated application release process
- Describe best practices for application deployment
- Describe methodologies for designing distributed systems
- Describe the concepts of infrastructure configuration management and device automation
- Utilize Yet Another Next Generation (YANG) data models to describe network configurations and telemetry
- Compare various relational and nonrelational database types and how to select the appropriate type based on requirements

Prerequisites:

Attendees should meet the following prerequisites:

- Knowledge of program design and coding with focus on Python
- Familiarity with Ethernet, TCP/IP, and Internet-related networking
- Understand the utilization of APIs
- Understanding of software development and design methodologies
- Hands-on experience with a programming language (specifically

Testing and Certification

Recommended as preparation for the following exam:

- **350-901** - DEVCOR Exam

By passing this exam, you satisfy the core exam requirement toward Cisco Certified DevNet Professional, and you earn the Cisco Certified DevNet Specialist – Core certification specialisation.

Python)
- DEVASC - Developing Applications and Automating Workflows using Cisco Platforms

Follow-on-Courses:

- C-DEVOPS - Implementing DevOps Solutions and Practices using Cisco Platforms
- ENAUI - Implementing Automation for Cisco Enterprise Solutions
- CLAUI - Implementing Automation for Cisco Collaboration Solutions
- DCAUI - Implementing Automation for Cisco Data Center Solutions
- SAUI - Implementing Automation for Cisco Security Solutions
- SPAUI - Implementing Automation for Cisco Service Provider Solutions

Content:

Designing for Maintainability (Self-study)

- Functional and Non-Functional Requirements
- Non-Functional Requirements and Application Quality
- Maintainability Through Design
- Maintainability Through Implementation
- Modularity in Application Design
- Dependency Injection

Designing for Serviceability (Self-study)

- Observability in Application Design
- Scalability in Application Design
- High Availability and Resiliency
- Latency and Rate Limiting
- Architectural Patterns
- Sequence Diagrams

Implementing ChatOps Application

- Introducing ChatOps
- ChatOps with Cisco Webex
- API Sequence Diagramming
- ChatOps Application Design
- Managing SSIDs and Retrieving Location Data Using Cisco Meraki API

Describing Advanced REST API Integration

- Consuming Paginated REST API Endpoints
- REST API Network Error Strategies
- REST API Error Control Flow
- Optimizing API Usage

Securing Application Data (Self-study)

- Data Storage and Protecting Data Privacy
- Storing Application Secrets
- Public Key Infrastructure
- Configuring Public Key Certificates for Applications
- Applying End-to-End Encryption for APIs

Securing Web and Mobile Applications (Self-study)

- OWASP Top 10
- Broken Access Control
- Injection Attacks and Data Validation
- XSS and Request Forgery
- OAuth Authorization Framework
- OAuth 2.0 Three-Legged Authorization Flow

Automating Application-Release

- Release Packaging and Dependency Management
- Advanced Version Control with Git
- Branching Strategies
- Continuous Testing and Static Code Analysis in CI Pipeline
- Identifying CI/CD Pipeline Failures

Deploying Applications

- 12-Factor App Methodology
- Containerizing Applications Using Docker
- Kubernetes Introduction
- Integrating Applications into Exisiting CI/CD Environment
- Downloadable Lab Code Reference - Integrate Application into Existing CI/CD Environment
- Hosting Applications on Network Devices

Exploring Distributed Systems

- Distributed Application Concepts
- Custom Dashboard Example
- Event-Driven Architecture Concepts
- Microservice Architecture Concepts
- Effective Distributed Application Logging Strategies
- Using Distributed Logging to Diagnose Problems
- Application Monitoring with Cisco AppDynamics
- Limitations of Distributed Systems and CAP Theorem
- Overcoming Challenges in Distributed Systems

Orchestrating Network and Infrastructure

- Differentiating Configuration Management Solutions
- Terraform Introduction
- Operating Terraform Fundamentals
- Case Study: Deploying Basic Network Configuration to Cisco Routers
- Configuring Network Parameters Using Ansible
- Defining Network Automation Source of Truth
- Creating and Deleting Objects Using

Modeling Data with YANG

- YANG Overview
- XPath Query Language
- YANG Language Syntax
- Data Model Modularity
- Network Configuration Using RESTCONF
- Model-Driven Telemetry
- Streaming Telemetry with gNMI

Using Relational and Non-Relational Databases (Self-study)

- Evaluating Database Types to Meet Application Needs
- Relational Database Concepts
- Key-Value Database Concepts
- Document-Based Database Concepts
- Graph-Based Database Concepts
- Columnar-Based Database Concepts
- Time-Series Database Concepts

Labs

- Discovery Lab 1: Construct Sequence Diagram
- Discovery Lab 2: Construct Web Sequence Diagram
- Discovery Lab 3: Use Paginated REST API Endpoint
- Discovery Lab 4: Use REST API Error Control Flow Techniques
- Discovery Lab 5: Evaluate Application for Common Open Web Application Security Project (OWASP) Vulnerabilities
- Discovery Lab 6: Resolve Merge Conflicts with Git
- Discovery Lab 7: Containerize Application Using Docker
- Discovery Lab 8: Integrate Application into Existing CI/CD Environment
- Discovery Lab 9: Diagnose Problems Using Application Logs
- Discovery Lab 10: Automate and Manage Cisco IOS XE Network Infrastructure with Terraform and GitLab CI/CD Pipelines
- Discovery Lab 11: Configure Network Parameters Using Ansible
- Discovery Lab 12: Synchronize Firepower Device Configuration
- Discovery Lab 13: Utilize RESTCONF for Network Configuration
- Discovery Lab 14: Query Relational Database
- Discovery Lab 15: Query Document Store
- Discovery Lab 16: Query Time Series Database
- Discovery Lab 17: Query Graph Database

- Firepower Threat Defense API
- Configuring Servers Using Cisco UCS APIs

Additional Information:

Explore the DevNet Certification area for specific topics and labs related to this course and certification:
https://developer.cisco.com/certification/

Further Information:

For More information, or to book your course, please call us on Head Office 01189 123456 / Northern Office 0113 242 5931

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