




DevNet Expert :

Build your own Lab
(and beyond)

- 01 Where do I start? :
DevNet Expert Exam Topics &
Software and Equipment List
 - 02 The Candidate Workstation
 - 03 Network topology
 - 04 Service utilities (e.g. GitLab,Vault,...)
 - 05 Which resources does Cisco have?
(CML/Sandbox/Learning Labs)
- 

Where do I start?

Exam Topics

1.0 Software Design, Development, and Deployment	20%	✓
2.0 Infrastructure as Code	30%	✓
3.0 Network Programmability and Automation	25%	✓
4.0 Containers	10%	✓
5.0 Security	15%	✓

Align the exam topics to the software list to identify the practical skills needed and what to lab

Equipment and Software List

Cisco Certified DevNet Expert (v1.0) Equipment and Software List

🕒 Mar 11, 2022 · Knowledge

· Posted by: Iryna Melnykov

The lab exam tests candidates on solutions that can be developed/configured using the listed equipment and software. Candidates may see more recent software versions during their attempt but will only be tested on features that are supported in the list below.

Passing the exam requires a depth of understanding difficult to obtain without hands-on experience. Early in your preparation you should arrange access to the listed equipment and software.

Virtual Machines

- Ubuntu Linux: 20.04 LTS
- IOSvL2: 15.2
- IOSv: 15.9
- Cisco Catalyst 8000V: 17.5
- Nexus 9300v (N9Kv): 9.3(8)
- Cisco Application Policy Infrastructure Controller 5.2 w/ ACI Simulator

<https://learningnetwork.cisco.com/s/devnet-expert-exam-topics-lab>

<https://learningnetwork.cisco.com/s/article/devnet-expert-equipment-and-software-list>

Where do I start?

Exam Exam Topics

1.4 Use Git in a CI/CD development workflow

1.5 Troubleshoot issues with a CI/CD pipeline (e.g., code-based failures, pipeline issues, and tool incompatibility)

3.5 Design a model-driven telemetry solution based on given business and technical requirements by using gNMI dial-in, gRPC dial-out, and NETCONF dial-in

3.6 Create YANG model-driven telemetry subscriptions

- 3.6.a Identify model elements and cadence
- 3.6.b On-change or event drive
- 3.6.c Optimize frequency
- 3.6.d Dial-out subscription
- 3.6.e Secure telemetry streams
- 3.6.f Confirm data transmission
- 3.6.g Identify network issues and make changes

Equipment and Software List

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Other Third Party Software

- GitLab 14
- GitLab Runner 14
- HashiCorp Vault 1.8
- Telegraf 1.19
- InfluxDB 1.8
- Grafana 8.1
- Kubernetes 1.23

Where do I Start?

Candidate Workstation

Note: A virtual machine image (OVA) of the Candidate Workstation can be [downloaded here](#) (8.2 GB). The instructions to install it on vCenter are available for download at the bottom of the page. These assets are provided to assist candidates in preparing for the DevNet Expert Lab exam. They are provided without support or warranty from Cisco.

This is based on Ubuntu 20.04 LTS. Manual pages for all software packages will be supplied where available.

<https://cs.co/DevExCWS>





Candidate Workstation : A close up view

- Linux based : Ubuntu 20.04
- The workstation you will be using during your exam
- All software and tools pre-installed that you have access to on the exam
 - NSO is not installed on downloadable CWS, but can be [installed from DevNet](#)
- Get familiar with the candidate workstation during your preparation for the DevNet Expert exam
- While studying, use it in your testing environment.

Network Topology

- It's not an expert exam in network technologies!
- Focus of the exam is network automation.
- The CML 'Personal' edition is sufficient to build network topologies for all automation skills for exam.

<https://learningnetworkstore.cisco.com/cisco-modeling-labs-personal/cisco-modeling-labs-personal/CML-PERSONAL.html>





Service Utilities (Vault, GitLab, TIG...)













- Details on versions can be found in the software and equipment list
- All these utilities will be installed and ready for use on the exam. Focus will be on the use and application these service utilities in the questions.
 - *These applications are NOT running on the CWS or included in the Published OVA.*
- All code will need to be committed to the GitLab environment in the lab. Spend time on getting proficient with GitLab


What about access to Cisco software and platforms??


- Cisco NSO, Cisco DNAC, Meraki, Cisco ACI, ...
- Checkout the DevNet Sandboxes!
- Checkout DevNet Learning Labs



DevNet Sandboxes

 Version 5.2 ACI Simulator Version 5	 Version 5.0 ACI Simulator Version 5	 Version 3.0.3i Cisco ACI Multi-Site Orchestrator	 Meraki	 Meraki Enterprise	 Meraki Small Business
ACI Simulator 5.2 APIC Simulator Version 5.2	ACI Simulator AlwaysOn - V5 APIC Simulator Version 5	Cisco ACI Multi-Site Orchestrator Cisco ASE with Multi-Site Orchestrator Application managed ACI Fabrics	Meraki Always On Explore this shared Meraki network to sample what it has to offer!	Meraki Enterprise Access private Meraki Enterprise networks for API exploration!	Meraki Small Business Access private Meraki networks for API exploration!
RESERVE	ALWAYS-ON	RESERVE	ALWAYS-ON	RESERVE	RESERVE
 Version 2.2.3.4 Cisco DNA Center AlwaysOn Lab 1	 Version 2.2.3.4 Cisco DNA Center AlwaysOn Lab 2	 Version 2.2.3.4 Cisco DNA Center with ISE Hardware Lab 1	 Version 2.2.3.4 Cisco DNA Center with ISE Hardware Lab 2	 Version 5.4.1 Cisco Network Services Orchestrator (NSO)	 Version 5.4.3 Cisco Network Services Orchestrator (NSO)
Cisco DNA Center AO 2.2.3.4 Always-On: Cisco DNA Center Version 2.2	Cisco DNA Center AO2 2.2.3.4 Always-On: Cisco DNA Center Version 2.2.3.4	Cisco DNA Center Lab 1 Cisco DNA Center Release 2.2.3.4 with ISE	Cisco DNA Center Lab 2 Cisco DNA Center Release 2.2.3.4 with ISE	Cisco Network Services Orchestr... NSO sandbox for Self Learning	Cisco NSO AlwaysOn Cisco Network Services Orchestrator Always On
ALWAYS-ON	ALWAYS-ON	RESERVE	RESERVE	RESERVE	ALWAYS-ON

 Contains a resource(s) that is currently unavailable

 Contains a resource(s) that is currently unavailable

<https://developer.cisco.com/docs/sandbox/>

DevNet Learning Labs

<https://developer.cisco.com/learning/tracks>

The screenshot displays the DevNet Learning Labs interface. At the top, the navigation bar includes the DevNet logo, 'DevNet Express', 'Tracks' (highlighted), 'Modules', 'Labs', 'Challenges', 'Help', and 'Feedback'. User links for 'Login' and 'Register' are in the top right. Below the navigation bar, a heading 'Choose a module to start learning' is followed by a light blue box with the message 'Please login to see your progress....'. The main content area features two module cards. The first card, 'Introduction to ACI Programmability', has a purple header and describes a module for learning ACI SDN basics and using the ACI Toolkit, with a duration of 1 hour 40 minutes. It lists four sub-topics: 'Understanding ACI', 'ACI Programmability Options', 'Introduction to ACI Toolkit', and a challenge to use the toolkit for fault reporting. The second card, 'Intermediate ACI Programmability', also has a purple header and describes a module for exploring more APIs and SDKs, with a duration of 3 hours. It lists four sub-topics: 'Creating ACI Scripts the Easy Way - WebArya', 'Peeling back the ACI API', 'Add 'Bite' to your ACI Python Scripts with Cobra', and a challenge to build an application health dashboard using Cobra. A 'Login to Start Module' button is located at the bottom right of the first module card.

DEVNET

Learning Labs

DevNet Express Tracks Modules Labs Challenges Help Feedback

Login Register

Choose a module to start learning

Please login to see your progress....

Introduction to ACI Programmability

This module introduces you to programmability options with the Cisco ACI SDN solution and provides hands on with ACI Toolkit, the simplest way to begin programming ACI.

⌚ 1 Hour 40 Minutes

- 🔍 **Understanding ACI**
Learn the basics of Application Centric Infrastructure and the Application Policy Objects.
- 🔍 **ACI Programmability Options**
Learn the basics of the APIC controller and interfaces, and issue basic commands using the CLI.
- 🔍 **Introduction to ACI Toolkit**
Introduction to the ACI Toolkit, a set of Python utilities for interfacing with the APIC.
- 🔍 **Challenge: Use the ACI Toolkit to Collect and Report Critical Faults**
Breakout your Tools! Keep track of Critical ACI Faults

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Login to Start Module

Intermediate ACI Programmability

Continue exploring ACI Programmability with a look at more APIs, SDKs and Features!

⌚ 3 Hours

- 🔍 **Creating ACI Scripts the Easy Way - WebArya**
Leverage the Arya tool to quickly build Python scripts to program the APIC.
- 🔍 **Peeling back the ACI API**
Investigate the ACI REST API and the tools available to easily use it.
- 🔍 **Add 'Bite' to your ACI Python Scripts with Cobra**
Create powerful Python scripts for managing ACI using the Cobra SDK.
- 🔍 **ACI Websockets**
Learn how to link your applications to ACI with WebSockets.
- 🔍 **Challenge: Use Cobra to build an Application Health Dashboard**
Your turn to Code! Create an ACI Health Dashboard using Cobra.

Get ready!!



Lab exam registration is open!

First day to sit the lab is May 2, 2022.



The bridge to possible