

# CCIE Data Center

## Written and Lab Exam Content Updates

### Introduction

The CCIE Data Center exam topics have been revised from version 1.0 to version 2.0 to certify candidate's knowledge and capabilities based on the latest skills and technologies required of expert-level data center professionals. CCIE Data Center v2.0 exam curriculum comprises of six domains.

Each domain lists specific tasks that a minimally qualified candidate to perform is expected to perform in a data center job role requiring expert-level skills. Note the exam topics serve as a general guideline for the content likely to be included in the exam. However, other related topics may also appear on any delivery of the exam. All of the domains or tasks listed appear on both the Written and the Lab exam making it a unified blueprint for both the exams.

### Domain comparison between CCIE Data Center v1.0 and CCIE Data Center v2.0

Below you can find a domain level comparison between the CCIE Data Center v1.0 and CCIE Data Center v2.0.

#### CCIE Data Center Domain v1.0 versus v2.0

CCIE Data Center v1.0	CCIE Data Center v2.0
1. Cisco Data Center Architecture	Cisco Data Center L2/L3 Technologies
2. Cisco Data Center Infrastructure-Cisco NX-OS	Cisco Data Center Network Services
3. Cisco Storage Networking	Data Center Storage Networking and Compute
4. Cisco Data Center Virtualization	Data Center Automation and Orchestration
5. Cisco Unified Computing System	Data Center Fabric Infrastructure
6. Cisco Application Networking Services	Evolving Technologies

The Exam Topics changes reflect both the evolving Data Center environment and the evolving CCIE Data Center job role. Compared to CCIE Data Center v1.0, CCIE Data Center v2.0 domains were designed to focus more on skills and technologies then on the hardware. All the v2.0 domains include skills focused on design, implement and troubleshoot. Domains like **Application Networking Services**, which were focused on products like **ACE** and **WAAS** has been removed. Meanwhile evolving technologies like **Cloud** and **ACI** has been added in the v2.0 blueprint. Storage and Compute has been refreshed and combined into a consolidated domain in v2.0 as **Data Center Storage Networking and Compute**.

### CCIE Data Center v2.0 Changes

Please refer to the [Exam Topics](#) more detailed information.

#### Topics added to the CCIE Data Center v2.0 Exam:

- Implement and Troubleshoot Data Center Automation
- Implement and Troubleshoot Data Center Orchestration Tools
- Integrate Cisco Cloud Offerings into existing Data Center Infrastructure
- Design, Implement and Troubleshoot policy and non-policy driven Internal Fabric Connectivity

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- Design, Implement and Troubleshoot Infrastructure policies and elements
- Design, Implement and Troubleshoot External Fabric Connectivity
- Evolving Technologies

### Topics no longer included in CCIE Data Center v2.0

- Implement Data Center application high availability and load balancing
- Implement FCIP features

The hardware and software list have been updated for version 2.0, the required implementation and troubleshooting skills have changed significantly for several of the tasks. The figure below is a high level overview of the changes in hardware and software, please refer to the [Lab Equipment and Software List](#) for more detailed information.

CCIE Data Center v1.0	CCIE Data Center v2.0
<ul style="list-style-type: none"> <li>• MDS 9222i</li> <li>• Nexus7009               <ul style="list-style-type: none"> <li>– (1) Sup</li> <li>– (1) 32 Port 10Gb (F1 Module)</li> <li>– (1) 32 Port 10Gb (M1 Module)</li> </ul> </li> <li>• Nexus5548</li> <li>• Nexus2232</li> <li>• Nexus 1000v</li> <li>• UCS C200 Series Server               <ul style="list-style-type: none"> <li>– vic card for c-series</li> </ul> </li> <li>• UCS-6248 Fabric Interconnects</li> <li>• UCS-5108 Blade Chassis               <ul style="list-style-type: none"> <li>– B-200 Series Blades</li> <li>– Palo mezzanine card</li> <li>– Emulex mezzanine card</li> </ul> </li> <li>• Cisco Application Control Engine Appliance - ACE4710</li> <li>• Dual attached JBODs</li> </ul>	<ul style="list-style-type: none"> <li>• APIC Cluster</li> <li>• Nexus 9336 ACI Spine</li> <li>• Nexus 9372</li> <li>• Nexus 7004               <ul style="list-style-type: none"> <li>– Sup2E</li> <li>– 48 Port 10Gb (F3 Module)</li> </ul> </li> <li>• Nexus 5672</li> <li>• Nexus 2348</li> <li>• Nexus 1000v</li> <li>• UCS C220 M4 Series Rack Server               <ul style="list-style-type: none"> <li>– VIC card for C-Series</li> </ul> </li> <li>• UCS-6248 Fabric Interconnects</li> <li>• UCS-4308 M-Series Chassis               <ul style="list-style-type: none"> <li>– UCS M142 Compute Cartridge</li> </ul> </li> <li>• UCS-5108 B-Series Chassis               <ul style="list-style-type: none"> <li>– B-200 M4 Series Blades</li> <li>– Palo mezzanine card</li> <li>– VIC 1340 Card for B-Series</li> </ul> </li> <li>• Dual attached JBODs</li> </ul>

### Unified Blueprint

CCIE DC v2.0 unifies Written and Lab Exam Topics documents into a unique curriculum, while explicitly disclosing which domains pertain to which exam, and the relative weight of each domain.

### CCIE Data Center v2.0 Exam Format

The Written exam v2.0 (400-151) includes a new educational approach ensuring that expert-level candidates can demonstrate knowledge and skills with “Evolving Technologies (E.T.)” such as Network Programmability, Cloud and Internet of Things (IoT). The intent behind this change is to ensure that certified experts are well equipped to

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participate in meaningful discussions with business leaders about these new technical areas that already greatly influence business globally.

The web-based delivery infrastructure supporting the new Lab exam is very similar to version 1.0. The format of the Lab exam itself however has changed significantly compared to version 1.0. The Lab exam format has been updated similar to other CCIE tracks to include a **Diagnostic module**.

As a result, the CCIE Data Center v2.0 lab format is designed follows:

- **Part 1: Diagnostic** module
- **Part 2: Configuration & Troubleshooting** module.



The new **Diagnostic** module, which has a length of 60 min, focuses on the skills required to properly diagnose network issues, without having device access. The main objective of the **Diagnostic** module is to assess the skills required to properly diagnose network issues. These skills include:

- Analyze
- Correlate
  - Discerning multiple sources of documentation (in example e-mail threads, network topology diagrams, console outputs, logs, and even traffic captures.)

In the **Diagnostic** module, candidates need to make choices between pre-defined options to indicate:

- What is the root cause of an issue
- Where is the issue located in the diagram
- What is the critical piece of information allows us the identify the root cause
- What piece of information is missing to be able to identify the root cause

The **Configuration and Troubleshooting** module consists of one topology, similar to CCIE Data Center v1.0. The length of the **Configuration and Troubleshooting** module is seven hours. At the beginning of the module, the candidate has a full overview of the entire module; and can make a choice of working on items in sequence or not, depending on the candidates comfort level, the overall scenario and question interdependencies.

The **Diagnostic** and **Configuration and Troubleshooting** modules in the Lab exam are delivered in a fixed sequence: the candidate starts the day with the 1 hour **Diagnostic** module, which is followed by the 7 hours **Configuration**

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**and Troubleshooting** module. The entire Lab exam lasts up to eight hours. Note that candidates are not allowed to go back and forth between modules.

### Diagnostic Module

For the **Diagnostic** module, no device access is provided. Candidates are provided various pieces of information (example emails, debug outputs, example network diagram information that is provided to a Data Center support engineer assisting a customer in determining the root cause of an issue, or an analogy of information that is provided by a colleague who is stuck in a troubleshooting issue).

Within the **Diagnostic** module, the items are presented in a similar format as within the Written exam. The module includes multiple-choice, drag-and-drop, or even point-and-click style items. The major differences between the Written exam and the **Diagnostic** module is that the items in the **Diagnostic** module (called troubleshoot tickets) contain a set of documents that the candidate must consult in order to be able to understand and identify the root cause of the issue presented. Candidates need to analyze and correlate information (after discerning between valuable and worthless pieces of information) in order to make the right choice among the pre-defined options provided.

The troubleshoot tickets will not require candidates to type in order to provide the answer. All tickets will be closed-ended so grading will be deterministic, ensuring a fair and consistent scoring process. The new module allows us to grant credit to candidates who are able to accurately identify the root cause of a networking issue, but fail to resolve it within specific constraints (as in the **Configuration and Troubleshooting** module).

Real-life experience is certainly the best training to prepare for this module. Candidates with limited experience should focus on discovering, practicing and applying efficient and effective troubleshooting methodologies that are used for any realistic networking challenge.

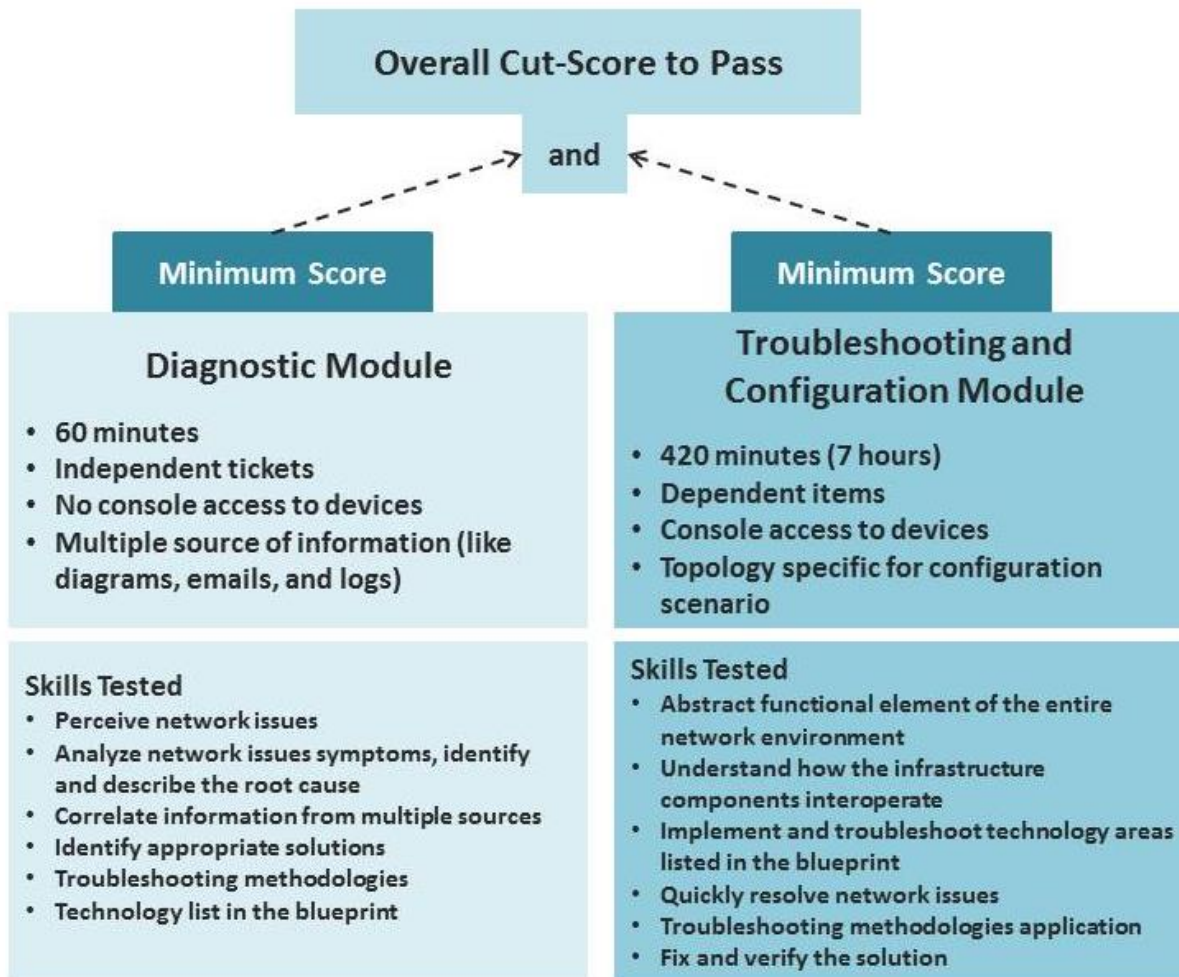
### Passing Criteria

In order to pass the Lab exam, the candidate must meet both of the following conditions:

- The minimum cut-score of the each individual module must be achieved.
- The total score of both modules together must be above the minimum value of the combined cut-score.

The point value(s) of the items in each module is known to the candidate. Note points are only granted when all requirements and sometimes restrictions of the item are met. There is no partial scoring for any items.

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