CCIE Data Center Overview
Breakout

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@munawaz

BRKCRT-3000

Cisco Webex App

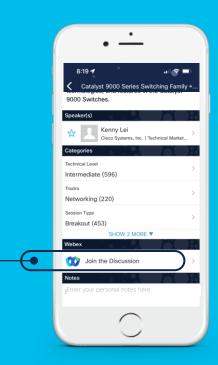## Questions?
Use Cisco Webex App to chat
with the speaker after the session

How

① Find this session in the Cisco Live Mobile App

② Click "Join the Discussion"

③ Install the Webex App or go directly to the Webex space

④ Enter messages/questions in the Webex space

Webex spaces will be moderated
until February 24, 2023.

Session Abstract

- If you're starting the journey to gain your CCIE Data Center number, this session is for you!

- The main objective of this session is to provide candidates with clear expectations of what to expect with the exams.

- There is no prerequisite to this session.

Disclaimer

- Not all topics discussed today appear on every exam

- Due to time restraints, we are unable to discuss every feature and topic described in the exam blueprint

Agenda

- Program Update

- CCIE DC Exam

- LDS Demo

- Study, Preparation and Closing

"It's not the strongest of the species that survives, nor the most intelligent, but the one most responsive to change."

Charles Darwin

Program
Updates

CISCO *Live!*

Future Roadmap

Agile & Incremental Revisions

Building a roadmap to update CCIE tracks to ensure technology alignment and skills needed for the current job market.

Minor revisions are changes to the exam topics (blueprints) which contain less than 20% update. It may also include upgrading hardware models and/or updating software versions.

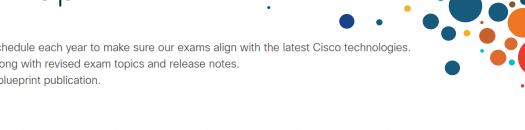Will continue to provide 6-month notification for any changes/revisions.

Certification Roadmap

How it works:

1. Cisco **reviews** each technology on the same quarterly schedule each year to make sure our exams align with the latest Cisco technologies.
2. We **announce** blueprint changes 3 months in advance along with revised exam topics and release notes.
3. We **publish** the updated exam 3 months after the exam blueprint publication.

Q1 (Aug-Oct 2022)	Q3 (Feb-Apr 2023)	Q1 (Aug-Oct 2023)	Q3 (Feb-Apr 2024)	Q1 (A...
Data Center and Collaboration	Service Provider and CCNA	Data Center and Collaboration	Service Provider and CCNA	Data Ce...
	Security and Enterprise	DevNet and CyberOps	Security and Enterprise	DevNet ...
	Data Center and Collaboration	Service Provider and CCNA	Data Center and Collaboration	Service ...

FY23Q1 FY23Q2 FY23Q3 FY23Q4 FY24Q1 FY24Q2 FY24Q3 FY24Q4 FY25Q1

Q2 (Nov-Jan 2023)	Q4 (May-Jul 2023)	Q2 (Nov-Jan 2024)	Q4 (May-Jul 2024)
Security and Enterprise	DevNet and CyberOps	Security and Enterprise	DevNet and CyberOps
Data Center and Collaboration	Service Provider and CCNA	Data Center and Collaboration	Service Provider and CCNA
	Security and Enterprise	DevNet and CyberOps	Security and Enterprise

● = Review certification exams　　● = Announce blueprint changes　　● = Publish updated exam

Dates shown reflect Cisco's fiscal year calendar.

Revision Framework

Major Revision
(Traditional Revision Model)

Blueprint version number
v2.1 ➡ v3.0

Every 3-5 years

- Large revisions
- Major changes
- Steep learning curve
- Wider Alignment (Product & Technology)

Minor Revision
(Agile Revision Model)

v2.1 ➡ v2.2 ➡ v2.3

Every year   Every year   Every year

- Smaller modular revisions
- Incremental changes
- Easy bite-size learning model
- Frequent alignment (Product & Technology)

Blueprint Revision Framework – Comparison

|	Major Revision	Minor Revision
Definition	Larger infrequent changes	Smaller but frequent changes
Frequency	Every 3-5 years	Every year
Blueprint Version Number X.Y	X will increment e.g., from 2.1 to 3.0	Y will increment e.g., from 2.1 to 2.2
Exam Topics Changes	Above 20%	Below 20%
Topology Changes	Yes	Yes (if needed)
Software Changes	Yes (major OS revs)	Yes (if needed)
Hardware/Equipment Model Changes	Yes (EOL, NPI, hw/sw evolution)	No
Notification / Announcement	6 months	3 months – Associate & Professional 6 months – Expert

Certification Roadmap
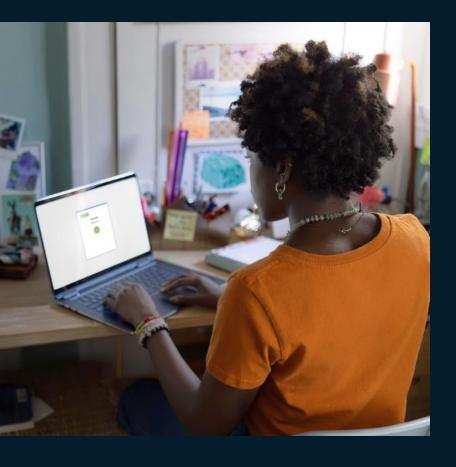
What's Changing

- Blueprint version number will incrementally update (1.1 to 1.2)

- Minor blueprint revision can result in up to 20% changes in exam topics

- Where necessary, the software version for Cisco products may be upgraded

What's NOT Changing

- Exam numbers (e.g., CCNA 200-301)

- Notification/Announcement:
  - 3-months for Associate & Professional
  - 6-months for Expert

- Hardware models/equipment do not change in minor revisions, but may change during major revisions

Resources

Release Notes:

- Overview of program technology
- Summary blueprint changes
- Side-by-side versions

Learning Matrix:

- Reference books with chapters identified
- Cisco Live! 365 presentations
- Training courses
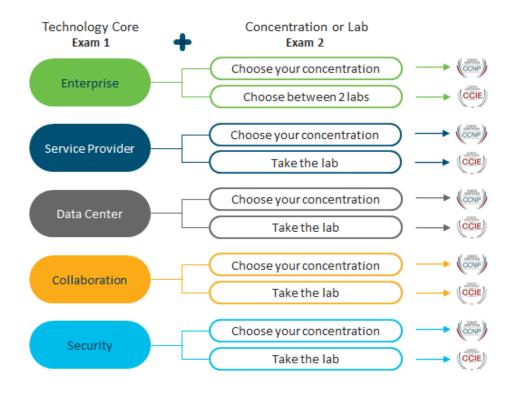- Webinars
- VoDs
- White papers

www.cisco.com/go/CertRoadmap

Exam Prep and Enablement

Expert Qualification

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Expert Recertification

All certifications will be active for three years from the date certification is achieved.

Each time recertification requirements are met; the certification active status will be extended for an additional three years (the sliding window concept). No more *Suspended* year/state.

How to recertify your CCIE?

- o Earn 120 CE credits (ce.cisco.com), *or*
- o Pass the CCDE written exam, *or*
- o Pass any one expert-level Lab/Practical exam, *or*
- o Pass any three separate professional concentration exams, or
- o Pass one technology core exam and pass any one professional concentration exam.

It is your responsibility to recertify on time. Recertification email reminders are sent at 90, 60 and 30 days

5-calendar-days exam *retake* policy for the written exam, and 30-calendar-days for the lab exam.

www.cisco.com/go/recertification

CCIE Practice Labs
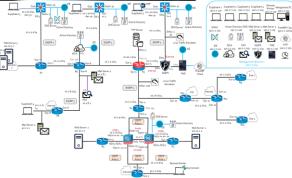
CCIE Practice Labs

Remote Rack rental service (4 hrs. slots) at US$ 50 per session including access to:

- Launched for the CCIE Enterprise Infrastructure and CCIE Security track. To be expanded to other tracks, stay tuned.
- Scenarios focusing on BP topics
- A topology that is representative of the exam topology
- Access to equipment (varies ~20-30 devices per POD)
- Access to the same lab exam delivery system (LDS)

cisco.com/go/cciepracticelabs

CCIE Prep Webinar Series

CCIE Prep Webinar Series

- Overview, Scope, and Preparation
- Build Your Own Lab and Beyond
- Technical Deep Dives
- Ask Me Anything

CISCO
CCIE Prep Program
Accelerate your learning

Join Now

https://learningnetwork.cisco.com/s/ccie-prep-program

Agenda

- Program Update
- CCIE DC Exam
- LDS Demo
- Study, Preparation and Closing

CCIE DC Exam

- Step 1: Pass the qualifying exam

  - [Implementing and Operating Cisco Data Center Core Technologies (DCCOR 350-601)](#)

- Step 2: Pass the lab exam

  - [CCIE Data Center v3.0](#)

CCIE DC Exam Blueprint v3.0

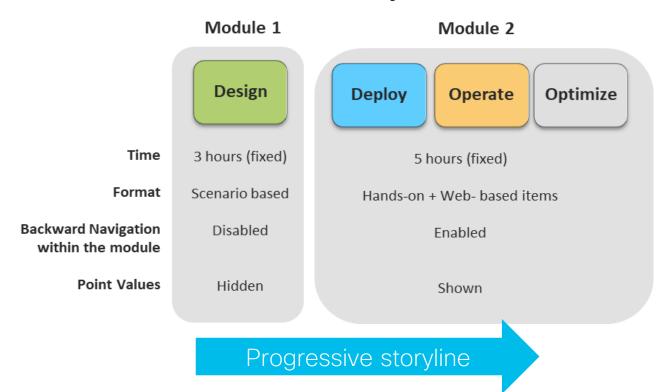|		
1.0 Data Center L2/L3 Connectivity	20%	⌄
2.0 Data Center Fabric Infrastructure	15%	⌄
3.0 Data Center Fabric Connectivity	15%	⌄
4.0 Data Center Compute	15%	⌄
5.0 Data Center Storage Protocols and Features	10%	⌄
6.0 Data Center Security and Network Services	10%	⌄
7.0 Data Center Automation and Orchestration	15%	⌄

Lab Hardware and Software

Lab Equipment

- APIC cluster
- Nexus 9336 ACI Spine Switch
- Nexus 9332 ACI Spine Switch
- Nexus 9372 Switch
- Nexus 93180 Switch
- Nexus 93108 Switch
- Nexus 7004 Switch
  - Supervisor 2 Enhanced
  - 48-Port 10-Gb Ethernet SFP/SFP+ (F3 module)
- Nexus 5672 Switch
- Nexus 2348 Fabric Extender
- UCS C220 M4 Series Rack Server
  - Virtual interface card (VIC) for C-Series
- UCS-6248 Fabric Interconnect
- UCS 5108 Blade Server Chassis
  - B200 M4 Blade Server
  - Cisco Virtual Interface Card
  - VIC 1340
- Dual Attached JBOD
- Cisco Catalyst 3750 Switch
- Cisco 2911/K9 terminal Server
- Cisco HyperFlex HX220c M5

Software

- Cisco NX-OS v8.x on Nexus 7000 switches
- Cisco NX-OS v7.x on Nexus 5000 switches
- Cisco NX-OS v9.x on Nexus 9000 switches
- Cisco UCS Manager Release 4.x Fabric Interconnect
- Cisco Application Policy Infrastructure Controller 4.x
- Cisco Data Center Network Manager 11
- Cisco Integrated Management Controller 4.x
- Cisco UCS Director 6.x
- Cisco Hyperflex version 4.x
- ACI Multi-site Software version 2.x

Lab exam format summary

	Module 1	Module 2		
	Design	**Deploy**	**Operate**	**Optimize**
Time	3 hours (fixed)	5 hours (fixed)		
Format	Scenario based	Hands-on + Web- based items		
Backward Navigation within the module	Disabled	Enabled		
Point Values	Hidden	Shown		

Progressive storyline

CCIE practical exam format – module 1

Design

What?

To measure a candidates ability to create, analyze, validate and optimize network designs, which is the base for all deployment activities. Candidates will need to understand capabilities of different technologies, solutions and services, translate customer requirements into solutions and assess the network readiness to support proposed solutions.

Environment?

- Scenario based. Web based items.
- Backward navigation is disabled.
- Point values are hidden.

Time?
3 hours

Done? Up to Module 2!

Progressive storyline

CCIE practical exam format – module 1

Design

How?
The design module itself runs as a progressive storyline, that will evolve as the candidate progresses through the module.

At the start of the module, you are presented generic information, that is expected to be used across the entire module.

- General storyline introduction
- overarching requirements and restrictions,
- the current state of the network
- main topology drawings

Throughout the course of the module, the candidate is presented with resources, which can be simulated to be coming in as documents, emails, or any other meaningful way.
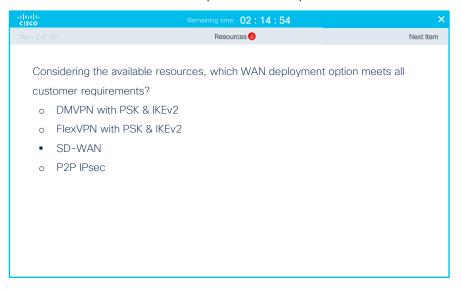
Item types?
MCxA – Hotspot – Drag and Drop – Dropdown – Matrix
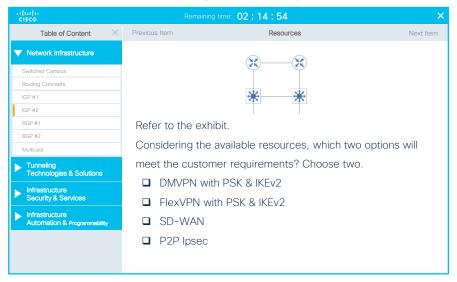
Item types: MCxA simple

MCxA with plain text options

Remaining time: 02 : 14 : 54

Resources ④

Next Item

Considering the available resources, which WAN deployment option meets all customer requirements?

o   DMVPN with PSK & IKEv2

o   FlexVPN with PSK & IKEv2

▪   SD-WAN

o   P2P IPsec

MCxA with plain text options

Remaining time: 02 : 14 : 54

Table of Content

Previous Item

Resources

Next Item

▼ Network Infrastructure

Switched Campus

Routing Concepts

IGP #1

IGP #2

BGP #1

BGP #2

Multicast

▶ Tunneling Technologies & Solutions

▶ Infrastructure Security & Services

▶ Infrastructure Automation & Programmability

Refer to the exhibit.

Considering the available resources, which two options will meet the customer requirements? Choose two.

☐   DMVPN with PSK & IKEv2

☐   FlexVPN with PSK & IKEv2

☐   SD-WAN

☐   P2P Ipsec

Item types: MCxA HTML

MCxA with multi-line options

Item 2 of 50   Resources ④   Next Item

Considering the available resources, which command option meets all customer requirements?

```
o   conf t
    int e0/0
    no shut
    end
o   conf t
    int e0/1
    no shut
    end
o   conf t
    int e0/2
    no shut
    end
```

MCxA with picture as options

Remaining time: 02 : 14 : 54

Table of Content   Previous Item   Resources   Next Item

Network Infrastructure
- Switched Campus
- Routing Concepts
- IGP #1
- IGP #2
- BGP #1
- BGP #2
- Multicast

Tunneling Technologies & Solutions

Infrastructure Security & Services

Infrastructure Automation & Programmability

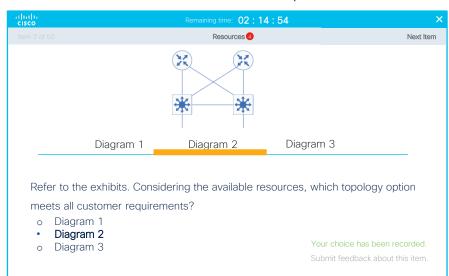Considering the available resources, which WAN deployment option meets all customer requirements?
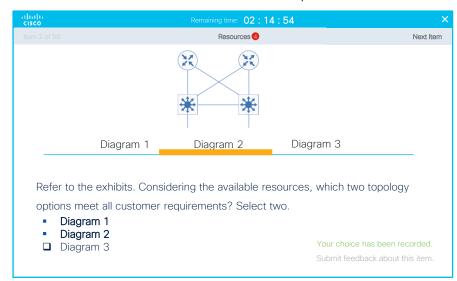
Item types: MCxA tabbed

MCSA with Tabbed options

- Each option refers to a separate exhibit
- Selecting an option will activate the corresponding tab
- Tabs can also be activated by selecting/clicking on their tab name
- MCSA = Can select only one option (i.e. selecting another option will unselect any previously selected option)
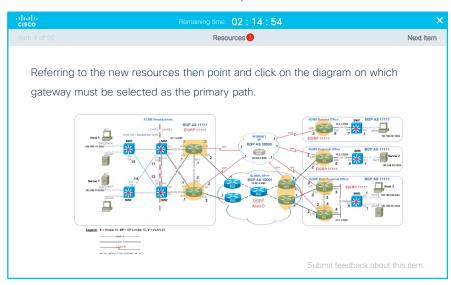
MCMA with Tabbed options

- Each option refers to a separate exhibit
- Selecting an option will activate the corresponding tab
- Tabs can also be activated by selecting/clicking on their tab name
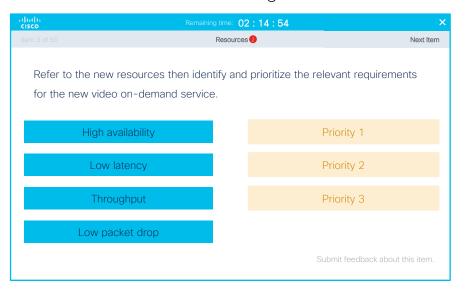- MCMA = Can select multiple options

Item types: hotspot

Hotspot

- Clickable area may be identified on the picture (of poly, circle and rect shapes)
- Only one possible selection
- Fixed min-width of popup (avoid resizing picture and clickable map)
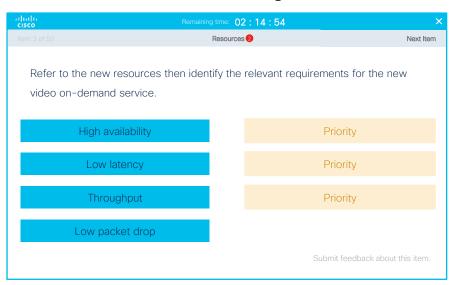
Item types: drag'n drop simple

Ordered targets

Item 3 of 50 · Resources ❷ · Next Item

Refer to the new resources then identify and prioritize the relevant requirements for the new video on-demand service.

High availability	Priority 1
Low latency	Priority 2
Throughput	Priority 3
Low packet drop	

Submit feedback about this item.

Unordered targets

CISCO · Remaining time: 02 : 14 : 54 · ✕

Item 3 of 50 · Resources ❷ · Next Item

Refer to the new resources then identify the relevant requirements for the new video on-demand service.

High availability	Priority
Low latency	Priority
Throughput	Priority
Low packet drop	

Submit feedback about this item.

Item types: drag'n drop

Category_DnD

Refer to the new resources then distribute all measures on the left to the applicable category on the right.

High availability		Network		Application
Low latency		Measure 1		Measure
Throughput		Measure 2		Measure
Low packet drop		Measure 3		Measure
		Measure 4		

- Drag options on the left to one category on the right
- Can have more options than targets, and vice-versa (each category can have between one and the total options)
- Options on left can be randomized
- Each category can be ordered or unordered

Graphical_DnD

Refer to the new resources then drag and drop a component on the left to the applicable spot on the canvas.

- Router
- L2 Switch
- L3 Switch
- Voice gateway

- Drag icon/options on the left to one drop_spot on the picture/canvas
- Each option can be dragged any number of times to any drop_zone
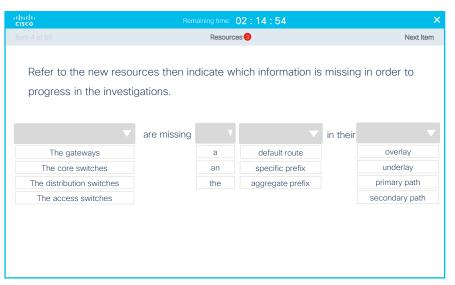- Each drop_zone can receive only one icon/option

Item types: dropdown

Dropdown Simple

Refer to the new resources then indicate which devices should advertise the aggregate prefix.

	must advertise an aggregate prefix upstream.

The gateways
The core switches
The distribution switches
The access switches

- Very similar to a MCSA, "just" presented as a dropdown
- Might be more appropriate in some case vs MCSA (e.g. when completing a sentence)
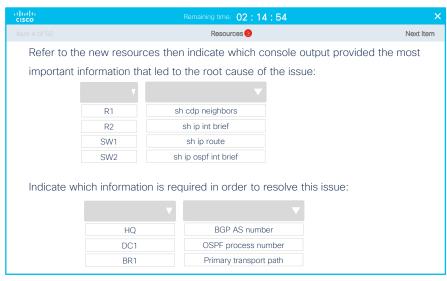
Dropdown Row (single)

Refer to the new resources then indicate which information is missing in order to progress in the investigations.

	are missing			in their	

The gateways   a   default route   overlay
The core switches   an   specific prefix   underlay
The distribution switches   the   aggregate prefix   primary path
The access switches   secondary path

- Any number of dropdown, sequenced in a row.

Item types: dropdown

Dropdown rows

Refer to the new resources then indicate which console output provided the most important information that led to the root cause of the issue:

▼	▼
R1	sh cdp neighbors
R2	sh ip int brief
SW1	sh ip route
SW2	sh ip ospf int brief

Indicate which information is required in order to resolve this issue:

▼	▼
HQ	BGP AS number
DC1	OSPF process number
BR1	Primary transport path

- Any number of dropdown, sequenced in a row.

Dropdown range

Refer to the new resources then select which line number in the automate.py script is causing the exception reported by the Python interpreter:

Line number:

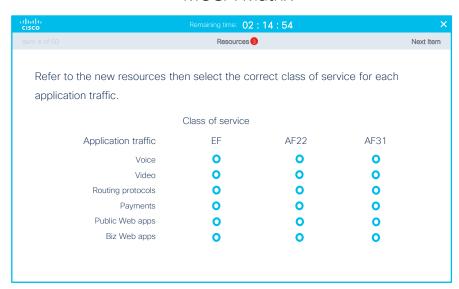| ▼ |
|---|
| 1 |
| 2 |
| 3 |
| 4 |
| 5 |
| 6 |
| ... |

- Large number of options in the dropdown, as a sequence of integer with min/max
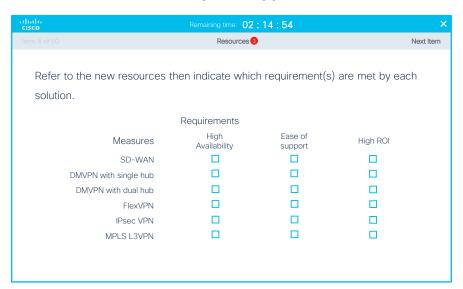
Item types: MCxA matrix

MCSA Matrix

Refer to the new resources then select the correct class of service for each application traffic.

Application traffic	Class of service		
	EF	AF22	AF31
Voice	◉	◉	◉
Video	◉	◉	◉
Routing protocols	◉	◉	◉
Payments	◉	◉	◉
Public Web apps	◉	◉	◉
Biz Web apps	◉	◉	◉

- Multiple MCSA, one per row (i.e. only one column may be selected per row)
- Great for compare/contrast

MCMA Matrix

Refer to the new resources then indicate which requirement(s) are met by each solution.

Measures	Requirements		
	High Availability	Ease of support	High ROI
SD-WAN	☐	☐	☐
DMVPN with single hub	☐	☐	☐
DMVPN with dual hub	☐	☐	☐
FlexVPN	☐	☐	☐
IPsec VPN	☐	☐	☐
MPLS L3VPN	☐	☐	☐
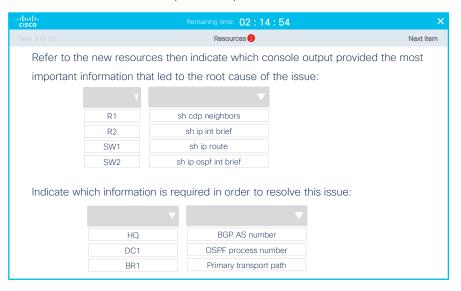
- Multiple MCMA, one per row (i.e. multiple columns may be selected per row)
- Great for compare/contrast
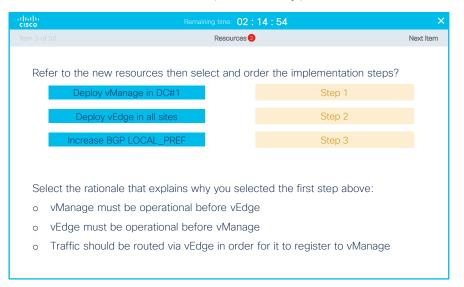
Item types: multiple question per Item

Multiple dropdown rows

Refer to the new resources then indicate which console output provided the most important information that led to the root cause of the issue:

▼	▼
R1	sh cdp neighbors
R2	sh ip int brief
SW1	sh ip route
SW2	sh ip ospf int brief

Indicate which information is required in order to resolve this issue:

▼	▼
HQ	BGP AS number
DC1	OSPF process number
BR1	Primary transport path

Various question types

Refer to the new resources then select and order the implementation steps?

Deploy vManage in DC#1	Step 1
Deploy vEdge in all sites	Step 2
Increase BGP LOCAL_PREF	Step 3

Select the rationale that explains why you selected the first step above:

o   vManage must be operational before vEdge

o   vEdge must be operational before vManage

o   Traffic should be routed via vEdge in order for it to register to vManage

CCIE practical exam format – module 2

Start Module 2

Progressive storyline →

Deploy

Operate

Optimize

What?

Candidates will build the network according to the design specifications, customer requirements and restrictions <u>AND</u> will operate and optimize given network technologies and solutions.

Environment?

- Hybrid: Hands-on (focus)+ Web-based items.
- Virtual environment (where possible)
- Backward navigation is enabled.
- Point values are shown.

Time?

5 hours

The End →

CCIE practical exam format – module 2

Start Module 2

Progressive storyline →

Deploy

Operate

Optimize

How?
The DOO module is a hands-on module focusing on deploying the network.

While the DOO module is <u>not</u> a 1:1 mapping to the Design module, there is a progressive storyline shared between both modules.

- Same main topology, diagram, IP addressing
- Same set of devices,
- Build upon the same high level design solutions: i.e. choice of RP, etc.
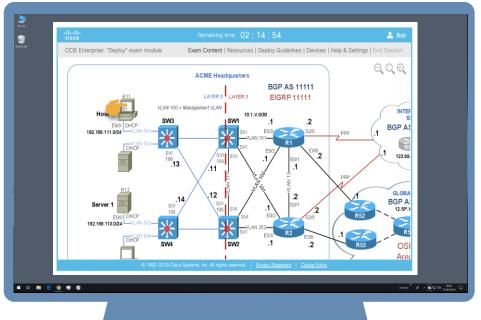
Item types?
Hands-on and web-based.
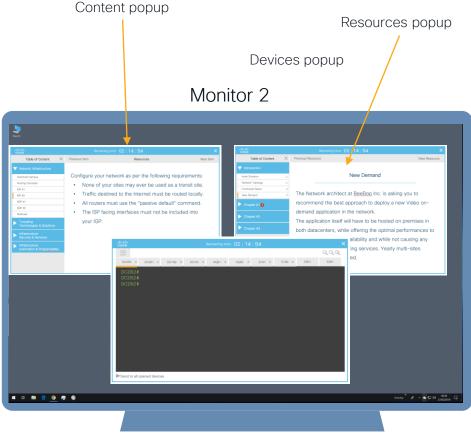
The End →

CCIE lab delivery system
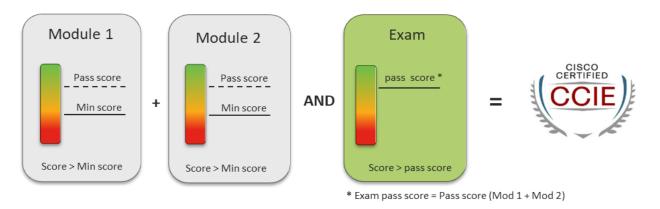
Exam scoring

Exam score evaluation

* Exam pass score = Pass score (Mod 1 + Mod 2)
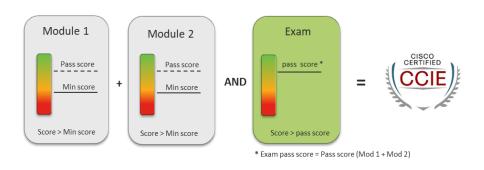
To pass the exam, candidates need to score higher than the aggregated pass score of both modules and score higher than the minimum score set on each of the modules individually.

If candidates score less than the overall aggregated pass score of both modules OR score less than the minimum score set on 1 (or more) of the individual modules, they will fail the exam.

Exam score reports

Candidates that fail the exam will be given a score report, indicating what module(s) they passed or failed. Additionally, candidates will be provided cumulative scoring percentages on a per domain level, across both modules.

* Exam pass score = Pass score (Mod 1 + Mod 2)

Score report

```
Module 1: Pass
Module 2: Fail

Domain 1: 75%
Domain 2: 20%
Domain 3: 40%
Domain 4: 19%
Domain 5: 90%
```

Agenda

- Program Update

- CCIE DC Exam

- LDS Demo

- Study, Preparation and Closing

LDS Demo

Agenda

- Program Update
- CCIE DC Exam
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- Study, Preparation and Closing

Preparation and Study

Our greatest weakness lies in giving up. The most certain way to succeed is always to try just one more time.
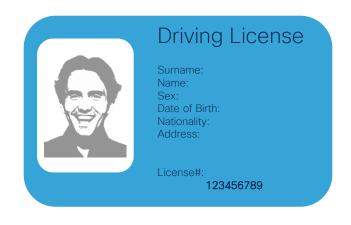
Thomas A Edison

Exam Strategy

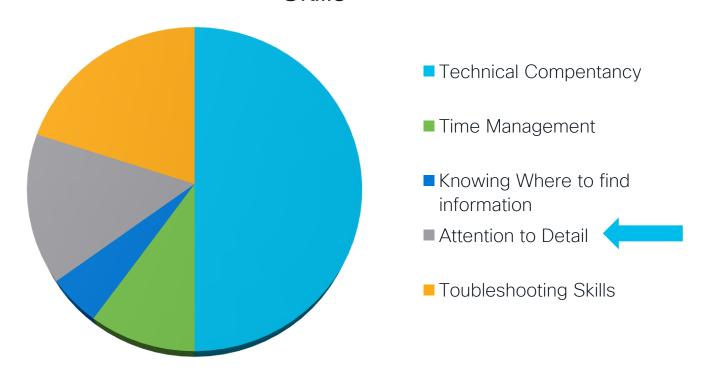- Did you drive the same way on your driving license test compared to how you drive in real life?

Lab Exam Strategy

"Just"…
PASS it!

CISCO *Live!*

Keeping Your Eye on the Prize

- Be prepared to commit to at least 4-8 months

- Studying becomes a work/life commitment

- Home Lab where possible (N1K, UCSPE, VIRL)

- Hands on Experience is a MUST (Remote labs included)

- Plan your success!
  - Set milestones/goals and do what's needs to be done to achieve them.

What Does it Take to Pass a CCIE Lab Exam?
Skills

- Technical Compentancy
- Time Management
- Knowing Where to find information
- Attention to Detail
- Toubleshooting Skills

Lab Exam: Tips & Tricks

Before the exam

- Prepare for the exam! Practice

- Plan your study
  - Do self assessment, "know what I don't know"
  - Dedicate time per day
  - Always ask "What if"
  - Practice, practice and practice

- Learn how to browse on Cisco Documentation (sort, don't search)

- Choose materials from trustworthy source

- Practice for speed and troubleshooting

Build a study plan that works for you

Don't Do It Alone

- There are many groups, forums and study groups available.
  - 95% of successful CCIEs participate in a study group of some form.
  - On going groups available including Learning @ Cisco etc
- If you can't team up locally, do it virtually

What Happens if I Get Stuck???

- If you get into a question and hit a wall (not sure what to do), make a note, move on and come back to it.

- Lab Exams are composed of multiple questions and multiple tasks. Weigh the score value against the time invested. Sometimes its better to skip a question and focus on the rest.

- Some questions may affect others. Many lab scenarios are treated as a dataCenter solution – questions may have an impact on other outcome of another.

A Note on Lab Proctors

- Proctors are there to run the exam

- They are not there to help you on any technically related questions

- A Proctor will:
  - Clarify a Question
  - Deal with Hardware Issues if encountered

- A Proctor will not:
  - Solve or Troubleshoot Configuration Issues
  - Answer questions on how to configure devices (Confirming good/bad configuration)
  - Answer Questions regarding a choice of how to configure something

Lab Exam: Tips & Tricks
Aftermath

- If you pass
  - CONGRATULATION!

- If you fail
  - Release the anger! Do whatever you have to do
  - Try to switch from "Denial" to "Curious" quickly
  - Start looking for your mistakes
  - Repeat the scenarios in your own lab
  - Back to lab practice focusing on the failed scenarios
  - Book the next lab exam in 4 weeks time.
  - Even some of the best TAC engineers require multiple attempts!
  - If you are 100% sure the CCIE Program team is wrong ask for review*
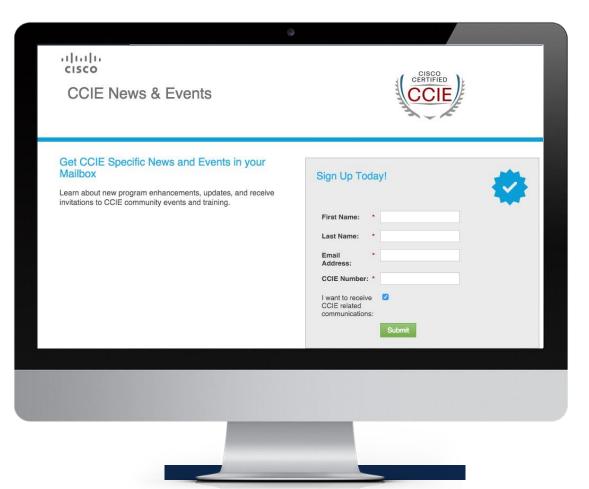   - *Additional Costs involved

Stay Connected!

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Stay Connected!

Opt-In for CCIE Specific Information

cisco.com/go/ccie-comms

Available Resources

- Learning @ Cisco – Forum for asking questions, support and free online resources such as webinars and other virtual events
https://learningnetwork.cisco.com/community/certifications/ccie_data_center

- Recommended Reading List
  - https://learningnetwork.cisco.com/docs/DOC-13986

- Recommended Training
  - https://learningnetwork.cisco.com/docs/DOC-13985

- Online Resources
  - https://learningnetwork.cisco.com/docs/DOC-13987

- Other Courses
  - http://www.cisco.com/web/learning/le31/ase/offerings/datacenter/index.html

Got a Question After the Session?

- Join the CCIE Data Center Study Group on CLN

- https://learningnetwork.cisco.com/groups/ccie-data-center-study-group
  - Ask technical questions
  - Find study partner(s)

- Open a CertSupport case at http://www.cisco.com/go/certsupport

- Send me an email at munawaz@cisco.com

Complete your Session Survey

- Please complete your session survey after each session. Your feedback is important.

- Complete a minimum of 4 session surveys and the Overall Conference survey (open from Thursday) to receive your Cisco Live t-shirt.

- All surveys can be taken in the Cisco Events Mobile App or by logging in to the Session Catalog and clicking the "Attendee Dashboard" at
https://www.ciscolive.com/emea/learn/sessions/session-catalog.html

Continue Your Education

Visit the Cisco Showcase for related demos.

Book your one-on-one Meet the Engineer meeting.

Attend any of the related sessions at the DevNet, Capture the Flag, and Walk-in Labs zones.

Visit the On-Demand Library for more sessions at ciscolive.com/on-demand.

Thank you