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The bridge to possible

A License to Design

The Cisco Certified Design Expert Certification

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PSOCRT-1010

Agenda

- CCDE Overview
- Changes in CCDEv3
- Think like a network designer
- Practical Exam information
- Summary

CCDE overview

What is the CCDE about?

- CCDE works on the border between business and network.
- Analyzing and optimizing existing environments
- Make-before-break
- Fix design or operational issues
- Manageability concerns and options
- Consider costs, make cost/benefit analysis.
- Design choices based on business and technical requirements.
- Asks the “Why?” questions

CCDE tasks

HLD is the outcome

Examples of HLD topics

- Topology decisions
- Identifying protocols/features
- Build implementation/migration plans
- Adjusting network architecture/design to support business changes
- Merging networks (acquisitions)
- Divestiture (selling off)
- Resiliency/redundancy levels

Examples of non-HLD topics

- Protocol timers
- Defining passwords for protocol authentication
- Building configuration templates
- How to perform configuration backups
- How to monitor CPU, bandwidth, memory etc.
- Generally speaking, operational details

Obtaining the CCDE

- Pass CCDE Written
- Pass CCDE Practical
- A CCDE Written pass score required to schedule the CCDE Practical exam
- CCDE Written valid for three years
- Practical exam 12-month eligibility extension
  - If Written passed between March 2017 and March 2020

Obtaining the CCDE

- Passing CCDE Written results in a Cisco Certified Specialist certification + badge
- Also issued to
  - Current CCDE certified individuals
  - Anyone with a passing score on CCDE Written within the validity period (at time of issue)

Studying and preparing

- CLN has comprehensive preparation materials
- Starting point is the CCDE Learning Matrix, available at https://learningnetwork.cisco.com/s/ccde-v3-0-certification
  - Found under Additional Resources tab
  - Assess knowledge and keep track of progress
- Ask questions – don't be shy!
- Use study groups
- Team up with others

Think like a network designer

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Think design

- CCIE is not required nor a prerequisite
- No configuration skills tested
- Analyze and translate business requirements into solutions
- Lab up technologies if it helps understanding them
- Knowing how things work in the field is a plus
- Recommended 5-7 years of relevant job experience

Think design

- Keep it high-level
- No device specific details required
- High-level classification of devices
  - Firewalls, next-gen firewalls
  - Routers
  - Switches
  - Load balancers
  - etc

During the practical exam

- Take time to analyze the current environment
- Do not make assumptions
- All necessary information is provided
- Consider all information
- Make fact-based decisions
- Don’t spend time visualizing configuration snippets

Changes in CCDEv3

New in CCDEv3

- Practical Exam moving in-house (from November 2021)
  - Same locations as CCIE Lab exams
- Scheduling done via CCIE/CCDE portal
  - Registration opens 90 days prior to exam date
- Pricing and payment options aligned with CCIE Lab exams
- At launch, six yearly administrations are expected.
  - Utilization to be monitored and capacity adjusted if needed.
- Aim to provide exam results within 48 hours.

New in CCDEv3

- Increased focus on business strategies and impact
- Introduction of Core and Area of Expertise modules
- Core module covers technologies all candidates must know
  - Enterprise technologies (no Data Center/Service Provider)
  - Core module is vendor-agnostic
- Area of Expertise module covers specific technology areas
  - More detailed knowledge expected
  - Cisco-specific technologies may appear in Area of Expertise module

New in CCDEv3

Area of Expertise options at launch

- On-prem and Cloud Services
- Workforce Mobility
- Large-Scale Networks

For further details:

https://learningcontent.cisco.com/documents/exam-topics/CCDE_WrittenPracticalExam.pdf

Exam topics and technology lists

- Technology lists augments exam topics
  - Exam topics describe typical tasks of a network designer
  - Technology lists define potential technologies
  - Helps to focus studies
- Core technology list
- One technology list for each available Area of Expertise

CCDE Practical Exam

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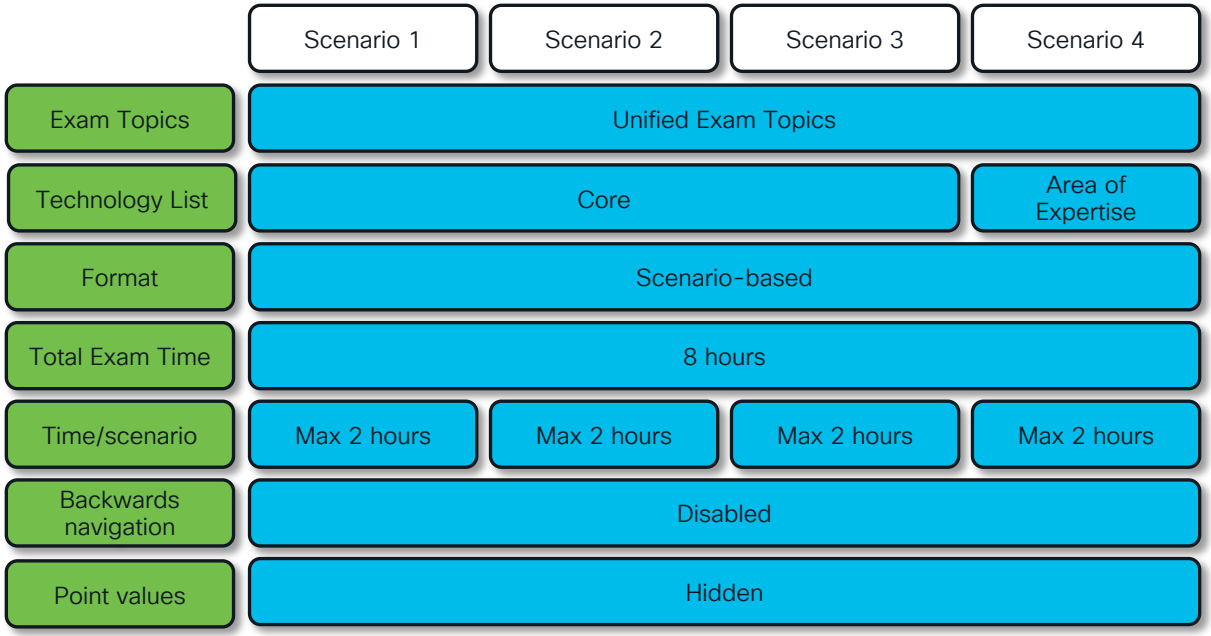
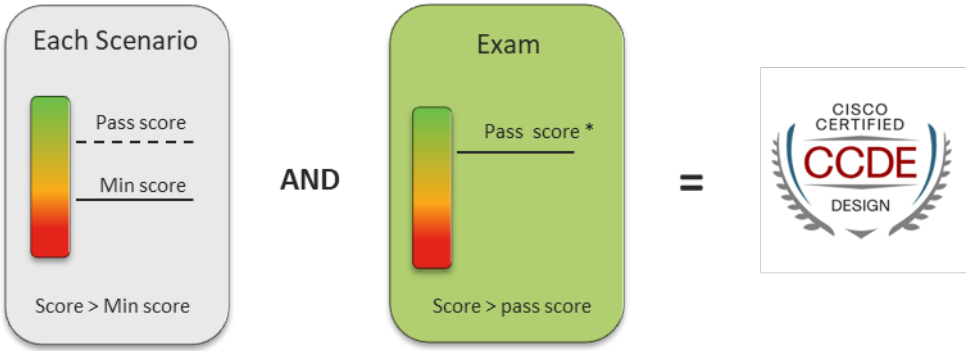
CCDE Practical exam information

Exam structure



Practical exam information

- Each scenario will have a minimum cut and pass score



* Exam pass score = Sum of pass scores of scenarios 1,2,3,4

Practical exam information

- Imagine working for the business
- Each scenario has resources/exhibits
- New resources can be introduced with a question
- Consider all provided information before answering
- Each scenario stands on its own
- Partial scoring

Practical exam content samples

Scenario introduction

Introduction Information

During this section of the test, assume that you are a Solutions Architect at ZHF Consultants. You have been asked to review problem statements and requirements from FlatSpace, Inc., a company that provides non-bulky, interior construction products such as countertops and wall fixtures for residential buildings.

Please keep this important information in mind while answering the questions within this section (these instructions can also be accessed at any time during this section by clicking the **Introduction** button at the top of your screen):

Question Navigation:

- Please respond to each question before continuing to the next question.
- When you have completed a question, click the **Next** button on the bottom right of the screen to move to the next question.
- You will not be permitted to return to a question once you have clicked the **Next** button.

Practical exam content samples

Company information, background, business strategies etc

FlatSpace, Inc. Background

Company Overview

FlatSpace, Inc. (FlatSpace) provides non-bulky, interior construction products such as countertops and wall fixtures for residential buildings. The company has developed a partner program in which third-party providers are able to offer products through FlatSpace. They have accepted memberships from lighting manufacturers, window covering companies, and shelving manufacturers.

Network Overview

FlatSpace runs OSPF as an IGP within its internal network and it runs BGP with the ISPs. There is a hub and spoke topology between the U.S. data centers and 250 remote sites. OSPF is used as an IGP between the data centers and the remote locations for route propagation. All the remote sites are in a single OSPF area. The remote sites are of T1 bandwidth (1.54 Mbps) with Frame Relay interfaces with Service Provider 1 (SP1) and Service Provider 2 (SP2). All 250 remotes have a Frame-relay PVC on each interface going to each Service Provider. Router 2 and Router 3 are the hub routers for these remotes. Router 1 and Router 4 have been decommissioned.

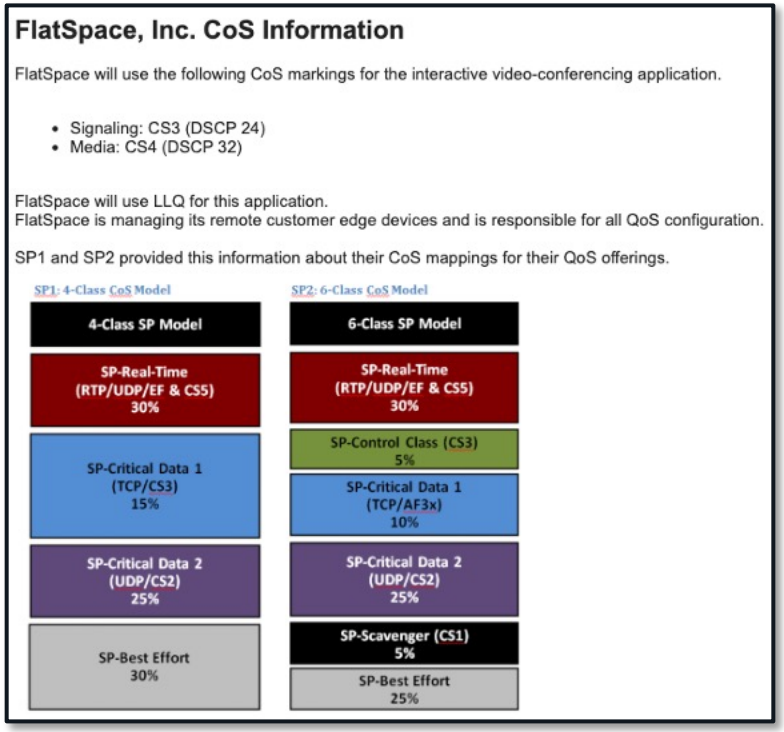
There is a secure VPN that allows partner organizations secure access to the FlatSpace network. FlatSpace runs OSPF over these secure IPSec tunnels. Each partner is in a separate OSPF area.

FlatSpace uses Microsoft Exchange and Cisco WebEx Connect for messaging. There are VoIP services between data centers and some of the remote locations.

FlatSpace uses LLQ for voice and video services, CBWFQ for business critical applications, and Best Effort Class of Service for all other traffic.

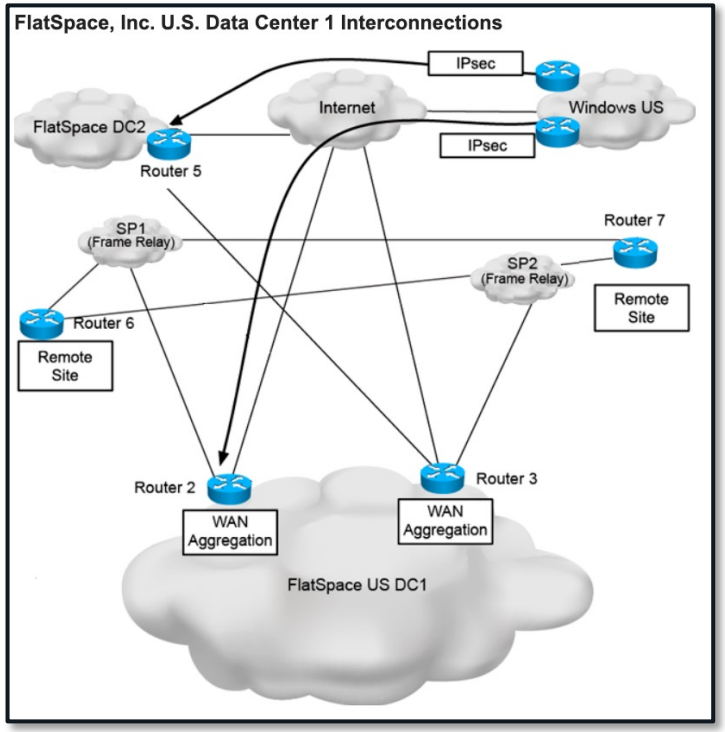
Practical exam content samples

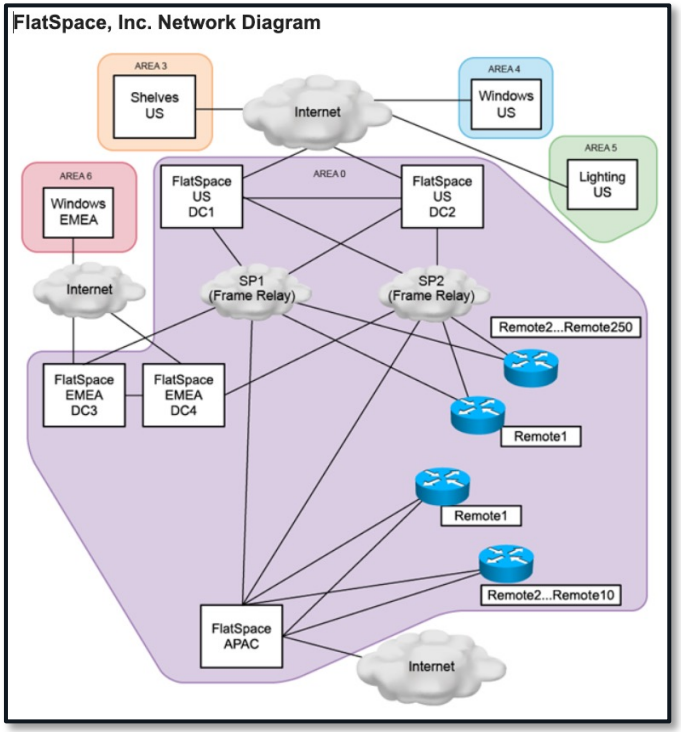
Technical information



Practical exam content samples

Topology drawings





Practical exam content samples

On-going correspondance, email

Email 1

From: ZHF Consultants
To: Zarold Faheer (FlatSpace Networks Engineering Group)
Cc:
Subject: RE: FlatSpace Networks Redesign

Based on the immediate need for FlatSpace to address scalability and flexibility in OSPF with your partners, we propose the following five options.

1. Change each partner area into a totally stubby area.
2. Change each partner area into a stub area.
3. Use Type 3 LSA filtering on WAN routers in FlatSpace data centers to block unnecessary routes toward the partners.
4. Change each partner area into an NSSA.
5. Change each partner area into a totally NSSA.

To address the remote scalability issue in the network, we propose the following four options.

Option A

1. Change WAN-AGG routers to ABR and put all 250 remotes in one separate area.
2. Change the area type to a totally stubby area.

Option B

1. Create 5 different areas at the WAN-AGG routers and put 50 remotes in each area.
2. Change the area type to a totally stubby area.

Practical exam content samples

On-going correspondance, email

Option C

1. Put all 250 remotes in a separate OSPF process.
2. Redistribute the remote OSPF process into the FlatSpace OSPF process.
3. Generate a Type 5 default route from the WAN-AGG routers.

Option D

1. Change the protocol between WAN-AGG and the remotes to distance vector protocols such as RIPv2, EIGRP, or BGP.
2. Use passive interface toward the remote.
3. Generate a RIP default toward the remote.

Regards,
ZHFConsultants

From: Zarold Faheer (FlatSpace Networks Engineering Group)
To: ZHF Consultants
Cc:
Subject: FlatSpace Networks Redesign

As we discussed over the phone, we want to significantly increase our partner relationships in the near future. Therefore, we need help redesigning our network so that it can be made scalable for our upcoming needs. One immediate requirement is how we can control our IGP . Our IGP routing increases as soon as we add a new partner or a remote site This concerns me a lot. What are your thoughts on how we can reduce our IGP routing table?

Let me know what other information you are interested in.

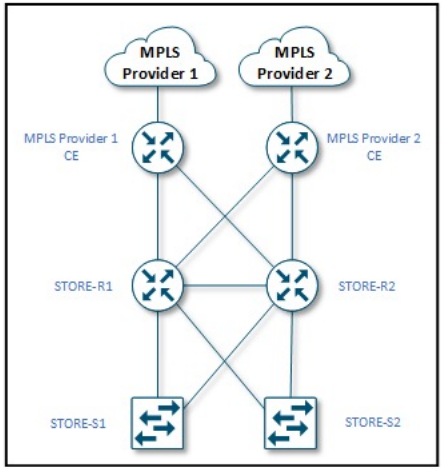
Thanks,
Zarold Faheer
Sr. Network Engineer
FlatSpace Networks

Practical exam content samples

Graphical feedback question

Which topology will satisfy the stated requirements?

◉ Topology 1 ○ Topology 2 ○ Topology 3 ○ Topology 4



○ Topology 1

○ Topology 2

○ Topology 3

○ Topology 4

Practical exam content samples

Graphical feedback

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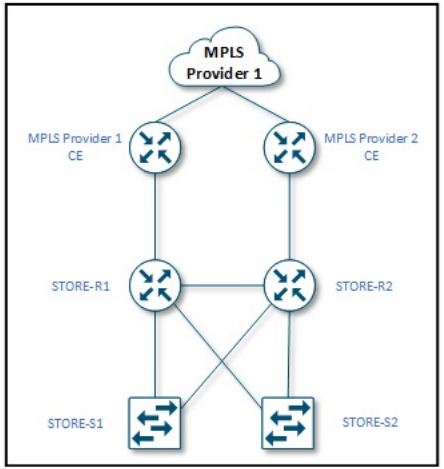

○ Topology 1

○ Topology 2

○ Topology 3

○ Topology 4

Practical exam content samples

Graphical feedback

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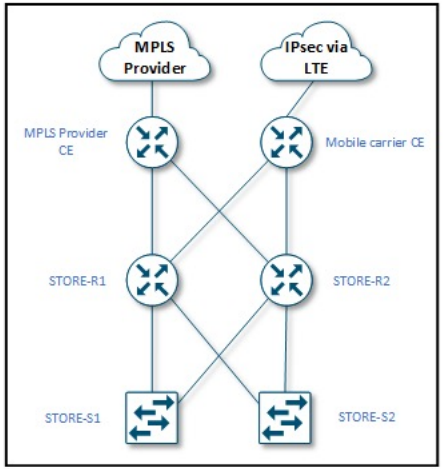

○ Topology 1

○ Topology 2

○ Topology 3

○ Topology 4

Practical exam content samples

Graphical feedback

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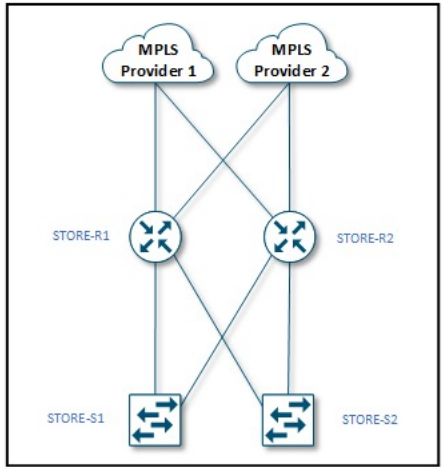

○ Topology 1

○ Topology 2

○ Topology 3

○ Topology 4

CCDE Practical exam – additional question types

Matrix, one answer per row

HHI is considering replacing its point-to-point DS3 national backbone with pseudowire solutions from the MPLS VPN service provider. Two solutions are being discussed:

Solution 1: Replace each DS3 with a 100M point-to-point Ethernet pseudowire
Solution 2: Replace the entire DS3 backbone with a VPLS Layer 2 VPN

In the table, choose the solution which best addresses each design consideration.

	Solutions	
Design Considerations	Solution 1: Replace each DS3 with a 100M point-to-point Ethernet pseudowire	Solution 2: Replace the entire DS3 backbone with one VPLS Layer 2 VPN
Minimal changes to routing policies	◉	○
Easier QoS management	○	◉
Larger number of adjacencies on WAN routers	○	◉
Less transit traffic through WAN routers	◉	○
Higher number of prefixes	◉	○
Faster convergence	○	◉
Smaller fault domains	○	◉

CCDE Practical exam – additional question types

Matrix, multiple answers per row

To improve link utilization, reduce costs, and improve application performance, HHI is implementing MPLS-based traffic engineering to better steer the traffic on its national Ethernet backbone. These traffic engineering tunnels will be used only for inter-region traffic. Select the technologies that need to be enabled on each router in the network.

	Groups			
Features	AGG routers	Retail store routers	WAN routers	IGW routers
Tunnel interfaces	☑	☐	☐	☐
TE configuration on each core-facing interface	☐	☑	☐	☐
RSVP configuration on each core-facing interface	☐	☑	☐	☑
Enable traffic engineering in OSPF to flood LSPs with TE extensions	☐	☐	☑	☑
TE configuration on each MPLS VPN service provider-facing interface	☐	☑	☐	☐
RSVP configuration on each MPLS VPN service provider-facing interface	☐	☑	☐	☐
TE configuration on each Frame Relay service provider-facing interface	☑	☐	☑	☐
RSVP configuration on each Frame Relay service provider-facing interface	☐	☐	☑	☐

Summary

Summary

- CCDE is a challenging certification
- Requires understanding of business
- Extend your mindset and skillset

This is your chance to get your License to Design.

Links

CCDE landing pages

https://learningnetwork.cisco.com/s/ccde-v3-0-certification

https://www.cisco.com/c/en/us/training-events/training-certifications/certifications/expert/ccde.html

CCDE exam summary

https://learningcontent.cisco.com/documents/exam-topics/CCDE_WrittenPracticalExam.pdf

Practical Exam booking (CCDEv3 only)

https://ccie.cloudapps.cisco.com/CCIE/Schedule_Lab/CCIEOnline/CCIEOnline

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