CCNA 3 Enterprise Networking, Security, and Automation, Version 7.0 Practice Exam (Sample)

Study Guide

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Everything you need from our exam experts!

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Introduction

Preparing for a certification exam can feel overwhelming, but with the right tools, it becomes an opportunity to build confidence, sharpen your skills, and move one step closer to your goals. At Examzify, we believe that effective exam preparation isn't just about memorization, it's about understanding the material, identifying knowledge gaps, and building the test-taking strategies that lead to success.

This guide was designed to help you do exactly that.

Whether you're preparing for a licensing exam, professional certification, or entry-level qualification, this book offers structured practice to reinforce key concepts. You'll find a wide range of multiple-choice questions, each followed by clear explanations to help you understand not just the right answer, but why it's correct.

The content in this guide is based on real-world exam objectives and aligned with the types of questions and topics commonly found on official tests. It's ideal for learners who want to:

- **Practice answering questions under realistic conditions,**
- **Improve accuracy and speed,**
- **Review explanations to strengthen weak areas, and**
- **Approach the exam with greater confidence.**

We recommend using this book not as a stand-alone study tool, but alongside other resources like flashcards, textbooks, or hands-on training. For best results, we recommend working through each question, reflecting on the explanation provided, and revisiting the topics that challenge you most.

Remember: successful test preparation isn't about getting every question right the first time, it's about learning from your mistakes and improving over time. Stay focused, trust the process, and know that every page you turn brings you closer to success.

Let's begin.

How to Use This Guide

This guide is designed to help you study more effectively and approach your exam with confidence. Whether you're reviewing for the first time or doing a final refresh, here’s how to get the most out of your Examzify study guide:

1. Start with a Diagnostic Review

Skim through the questions to get a sense of what you know and what you need to focus on. Your goal is to identify knowledge gaps early.

2. Study in Short, Focused Sessions

Break your study time into manageable blocks (e.g. 30 – 45 minutes). Review a handful of questions, reflect on the explanations.

3. Learn from the Explanations

After answering a question, always read the explanation, even if you got it right. It reinforces key points, corrects misunderstandings, and teaches subtle distinctions between similar answers.

4. Track Your Progress

Use bookmarks or notes (if reading digitally) to mark difficult questions. Revisit these regularly and track improvements over time.

5. Simulate the Real Exam

Once you're comfortable, try taking a full set of questions without pausing. Set a timer and simulate test-day conditions to build confidence and time management skills.

6. Repeat and Review

Don’t just study once, repetition builds retention. Re-attempt questions after a few days and revisit explanations to reinforce learning. Pair this guide with other Examzify tools like flashcards, and digital practice tests to strengthen your preparation across formats.

There’s no single right way to study, but consistent, thoughtful effort always wins. Use this guide flexibly, adapt the tips above to fit your pace and learning style. You've got this!

Questions

1. In the OSPF process, what does adjacency mean?

A. Two routers sharing the same subnet

B. Routers agreeing on routing metrics

C. Establishing a communication link between routers

D. Router configurations matching

2. What protocol uses smaller stratum numbers to indicate that the server is closer to the authorized time source than larger stratum numbers?

A. DHCP

B. NTP

C. RADIUS

D. TFTP

3. Which two statements are syntax rules for writing a JSON array?

A. Each value in the array is separated by a semicolon and values are enclosed in braces

B. Each value in the array is separated by a comma and values are enclosed in square brackets

C. Each key-value pair is separated by a colon and values are enclosed in parentheses

D. Each key must be unique and values cannot be strings

4. Which type of VPN connects a central site with branch sites flexibly?

A. Site-to-Site VPN

B. IPsec VPN

C. Cisco Dynamic Multipoint VPN

D. SSL VPN

5. Why is QoS critical in a converged network environment?

A. It simplifies network management

B. Voice and video communications are more sensitive to latency

C. It increases bandwidth availability

D. It ensures secure data transmission

6. What networking trend is being implemented when a data center hosts multiple operating systems on a single CPU for each customer?

A. Cloud computing

B. Virtualization

C. Load balancing

D. Network segmentation

7. What does the command "show ip nat translations" help a network administrator to determine?

A. The health status of network interfaces

B. Current dynamic IP assignments

C. Active NAT translations and mappings

D. Overall network traffic statistics

8. What functionality does mGRE provide to the DMVPN technology?

A. Static tunnel creation

B. Dynamic address assignment

C. Creation of dynamically allocated tunnels

D. Enhanced security features

9. What is the final operational state that occurs between an OSPF Designated Router and a DROTHER once they reach convergence?

A. Loading

B. Two-way

C. Full

D. Exstart

10. If configuring an OSPF router to advertise the network 192.168.0.0 255.255.254.0, what wildcard mask is used?

A. 0.0.0.255

B. 0.0.1.255

C. 0.0.2.255

D. 0.0.3.255

Answers

1. C
2. B
3. B
4. C
5. B
6. B
7. C
8. C
9. C
10. B

Explanations

1. In the OSPF process, what does adjacency mean?

A. Two routers sharing the same subnet

B. Routers agreeing on routing metrics

C. Establishing a communication link between routers

D. Router configurations matching

Adjacency in the OSPF (Open Shortest Path First) process refers specifically to the establishment of a communication link between routers. For OSPF to function effectively, routers must establish neighbor adjacencies. This process involves exchanging OSPF Hello packets, which help routers identify and maintain relationships with neighbors. Once adjacency is formed, routers can share routing information, allowing them to create a synchronized OSPF link-state database. This database is crucial as it forms the basis for the OSPF routing table and ensures that each router has an accurate map of the network. While sharing the same subnet, agreeing on metrics, and matching configurations are all important for network communication and protocol operation, they do not explicitly define what adjacency means in the context of OSPF. Therefore, establishing a communication link is the most accurate representation of what adjacency entails within OSPF.

2. What protocol uses smaller stratum numbers to indicate that the server is closer to the authorized time source than larger stratum numbers?

A. DHCP

B. NTP

C. RADIUS

D. TFTP

The protocol that uses smaller stratum numbers to represent a closer proximity to the authorized time source is Network Time Protocol (NTP). In NTP, the stratum value is crucial for determining the hierarchy of time sources in the network. Stratum 0 is the reference clock (such as atomic clocks or GPS clocks), stratum 1 servers synchronize directly with these reference clocks, and as you move down the hierarchy, stratum 2 servers synchronize with stratum 1 servers, and so forth. By utilizing smaller stratum numbers, NTP can effectively convey the reliability and accuracy of time by indicating how directly a server is connected to the primary time source. This hierarchical structure ensures that time synchronization is efficient and reliable across large networks. The protocol effectively balances the load of time requests and helps maintain consistency in time across devices, which is vital for various applications that require precise timekeeping. Other protocols listed, such as DHCP (Dynamic Host Configuration Protocol) and RADIUS (Remote Authentication Dial-In User Service), serve entirely different purposes in network management and security. TFTP (Trivial File Transfer Protocol) is used for file transfers but does not deal with time synchronization. Hence, these protocols do not utilize a stratum concept or hierarchical time management,

3. Which two statements are syntax rules for writing a JSON array?

A. Each value in the array is separated by a semicolon and values are enclosed in braces

B. Each value in the array is separated by a comma and values are enclosed in square brackets

C. Each key-value pair is separated by a colon and values are enclosed in parentheses

D. Each key must be unique and values cannot be strings

The choice stating that each value in the array is separated by a comma and that values are enclosed in square brackets accurately describes the syntax of a JSON array. In JSON (JavaScript Object Notation), arrays are utilized to hold ordered collections of values. These values can be of various data types, including strings, numbers, objects, arrays, booleans, or null. In a correctly formatted JSON array, multiple values are indeed separated by commas to indicate individual items within the collection, and the entire array is encapsulated within square brackets. This syntax makes it clear to both humans and machines how to interpret the data structure. The other options do not conform to JSON syntax rules. For instance, the use of semicolons and braces in the first choice is not applicable to arrays, as braces are typically used for JSON objects—not arrays. Similarly, parentheses and the requirement for keys in the third and fourth choices reflect characteristics of JSON objects rather than arrays. Additionally, keys in JSON must be unique within an object, but JSON arrays do not utilize key-value pairs in the same manner. This understanding is crucial for correctly working with JSON data structures in programming and data interchange scenarios.

4. Which type of VPN connects a central site with branch sites flexibly?

A. Site-to-Site VPN

B. IPsec VPN

C. Cisco Dynamic Multipoint VPN

D. SSL VPN

The Cisco Dynamic Multipoint VPN (DMVPN) is designed specifically to connect central sites with multiple branch sites in a flexible and scalable manner. It employs a hub-and-spoke topology, where the hub acts as the central point of communication. One of the key features of DMVPN is its ability to dynamically create secure tunnels between branch sites without requiring a static tunnel configuration between all branches and the central site. This is particularly beneficial when there are many branch offices that need to establish connections with one another as well. DMVPN utilizes protocols like Next Hop Resolution Protocol (NHRP) and supports various encryption protocols, including IPsec, to ensure data security. This configuration reduces the complexity involved in managing multiple static VPN connections, allowing branches to communicate directly with each other as required. It can also adapt to changes in the network topology efficiently, which is advantageous for organizations with fluctuating site connectivity needs. In contrast, while site-to-site VPNs provide secure connections between two fixed locations, they do not offer the same level of dynamic connectivity as DMVPN. An IPsec VPN is more about the encryption method rather than the dynamic topology aspect. SSL VPNs are typically better suited for secure remote access by individual users instead of being used to connect multiple sites.

5. Why is QoS critical in a converged network environment?

A. It simplifies network management

B. Voice and video communications are more sensitive to latency

C. It increases bandwidth availability

D. It ensures secure data transmission

Quality of Service (QoS) is critical in a converged network environment primarily because voice and video communications are particularly sensitive to latency, jitter, and packet loss. In such environments, different types of traffic share the same network infrastructure, including real-time applications like VoIP and video conferencing, which require timely delivery and minimal interruptions to maintain quality. Real-time communications, like voice and video, need a steady flow of data to ensure that conversations are clear and that video streams are smooth. Any delays (latency), variations in packet arrival (jitter), or loss of packets can lead to choppy audio, delayed conversations, or pixelated video, negatively impacting the user experience. QoS mechanisms prioritize this time-sensitive traffic over less critical data, ensuring that these high-priority streams receive the bandwidth and low latency they require for optimal performance. In contrast, alternatives like batch data transfers or file downloads can tolerate delays, making them less critical in terms of immediate network response. Therefore, effective implementation of QoS is essential in converged networks to guarantee that voice and video communications perform optimally.

6. What networking trend is being implemented when a data center hosts multiple operating systems on a single CPU for each customer?

A. Cloud computing

B. Virtualization

C. Load balancing

D. Network segmentation

The concept being described is the implementation of virtualization within a data center. Virtualization allows multiple operating systems to run on a single physical CPU through the use of hypervisors. This technology abstracts the hardware layer, enabling the creation of virtual machines (VMs) which can operate independently and run different operating systems as if they were on separate physical machines. Each VM is isolated from others, ensuring that different clients or applications can operate simultaneously without interference. This trend not only maximizes resource utilization by allowing efficient use of the underlying hardware, but also offers benefits in scalability, flexibility, and cost-effectiveness. Organizations can quickly deploy new services, manage workloads more effectively, and reduce hardware costs due to the consolidation of multiple servers onto fewer physical machines. Therefore, virtualization is a key enabler of modern data center architecture and is closely associated with cloud computing as well, but it specifically refers to the technology that allows those multiple systems to exist on a single CPU.

7. What does the command "show ip nat translations" help a network administrator to determine?

A. The health status of network interfaces

B. Current dynamic IP assignments

C. Active NAT translations and mappings

D. Overall network traffic statistics

The command "show ip nat translations" provides a network administrator with information about active NAT (Network Address Translation) translations and mappings. This command lists the IP address translations currently in use, showing the original (inside) addresses and their corresponding translated (outside) addresses. Understanding active NAT translations is crucial for troubleshooting connectivity issues, verifying that NAT is functioning correctly, and ensuring that internal network resources can communicate with external networks. The output of this command typically includes details such as the protocol (TCP/UDP), the inside local address, the inside global address, the outside local address, and the outside global address involved in the translation. By analyzing this information, administrators can track how internal addresses are being translated to external addresses, which is fundamental in managing and securing network traffic effectively.

8. What functionality does mGRE provide to the DMVPN technology?

A. Static tunnel creation

B. Dynamic address assignment

C. Creation of dynamically allocated tunnels

D. Enhanced security features

mGRE, or Multipoint Generic Routing Encapsulation, is a crucial component of DMVPN (Dynamic Multipoint Virtual Private Network) technology. The correct answer highlights that mGRE allows for the creation of dynamically allocated tunnels. This functionality is vital because it enables the network to efficiently set up multiple tunnels on-demand, which is particularly beneficial in scenarios with numerous remote sites needing to communicate without establishing a permanent point-to-point connection. With mGRE, each remote site can initiate a connection as needed, and the tunnel endpoint is determined dynamically. This reduces the need for pre-configured static tunnels and offers scalability, as new remote sites can be added without changing the existing configuration. The dynamic nature ensures that resources are utilized optimally, allowing for flexible and efficient network growth. In contrast, other options deal with aspects that do not align with what mGRE provides. For example, static tunnel creation and dynamic address assignment do not accurately describe mGRE's role in DMVPN. Additionally, while DMVPN can include security features, enhanced security is not a primary function provided by mGRE specifically. The focus of mGRE is on facilitating dynamic tunnel creation, making it an essential enabler within the DMVPN architecture.

9. What is the final operational state that occurs between an OSPF Designated Router and a DROTHER once they reach convergence?

A. Loading

B. Two-way

C. Full

D. Exstart

In OSPF (Open Shortest Path First), once the Designated Router (DR) and DROTHER (non-DR routers) reach a stable and synchronized state after exchanging routing information, the final operational state is identified as "Full." This state indicates that the DR has successfully established adjacencies with all the DROTHER routers in the network segment, ensuring that all OSPF routers have received the complete OSPF link-state database. The process of reaching this state involves several steps during which the routers exchange information about their link-state databases. Initially, routers begin by identifying neighbors and progressing through several states, including the "Two-way" state, which confirms the receipt of hello packets and acknowledgment of those peers. However, a "Full" state is the ultimate goal, confirming mutual knowledge and agreement on the network topology among the routers, ensuring efficient routing. In contrast, states like "Loading" and "Exstart" are intermediary phases during the adjacency process. "Loading" occurs when routers are in the process of transferring link-state advertisement (LSA) information, while "Exstart" is when they are negotiating the parameters for the adjacency. Thus, reaching the "Full" state is essential for an OSPF network to

10. If configuring an OSPF router to advertise the network 192.168.0.0 255.255.254.0, what wildcard mask is used?

A. 0.0.0.255

B. 0.0.1.255

C. 0.0.2.255

D. 0.0.3.255

To determine the correct wildcard mask for the OSPF router advertising the network 192.168.0.0 with a subnet mask of 255.255.254.0, it's important to understand how wildcard masks work in relation to standard subnet masks. A subnet mask identifies the network and host portions of an IP address. In this case, the subnet mask 255.255.254.0 signifies that the first 23 bits are the network part (255.255.254, which is 11111111.11111111.11111110.00000000 in binary) and the remaining bits are used for host addresses. The wildcard mask is essentially the inverse of the subnet mask. To calculate the wildcard mask, you subtract each octet of the subnet mask from 255. For 255.255.254.0, the calculation goes as follows: - First octet: 255 - 255 = 0 - Second octet: 255 - 255 = 0 - Third octet: 255 - 254 = 1 - Fourth octet: 255 - 0 = 255 Putting that together, the wildcard mask becomes 0.0.1.255.

Next Steps

Congratulations on reaching the final section of this guide. You've taken a meaningful step toward passing your certification exam and advancing your career.

As you continue preparing, remember that consistent practice, review, and self-reflection are key to success. Make time to revisit difficult topics, simulate exam conditions, and track your progress along the way.

If you need help, have suggestions, or want to share feedback, we'd love to hear from you. Reach out to our team at hello@examzify.com.

Or visit your dedicated course page for more study tools and resources:

https://ccna3enterprisenetsecautomationv7.examzify.com

We wish you the very best on your exam journey. You've got this!