NETWORK IMPLEMENTATION: ROUTING, SWITCHING, AND WIRELESS PROTOCOLS PRACTICE TEST (SAMPLE)

STUDY GUIDE



SAMPLE STUDY GUIDE WITH LIMITED QUESTIONS

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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.

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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!

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Questions

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1. Which switch port is assigned to a single VLAN and connects end-user devices, with untagged traffic?

A. Edge Port

B. Access Port

C. Trunk Port

D. Uplink Port

2. Which protocol uses SAE instead of pre-shared keys?

A. WEP

B. WPA

C. WPA2

D. WPA3

3. Which switch feature shuts down a port if it receives a BPDU frame?

A. Sticky MAC

B. Port Security

C. BPDU Guard

D. 1000BASE-T

4. Which exterior gateway protocol routes traffic between autonomous systems?

A. BGP Border Gateway Protocol

B. IGP Interior Gateway Protocol

C. NAT Network Address Translation

D. EGP Exterior Gateway Protocol

5. What is the purpose of a CAM table aging timer, and what is a potential performance impact of high MAC address learning (MAC churn)?

A. The aging timer controls how quickly ARP entries expire.

B. The aging timer removes inactive MAC entries; excessive MAC churn can fill the CAM, causing flooding and reduced performance or stability.

C. The aging timer controls VLAN assignments automatically.

D. The aging timer limits the rate of switch fabric traffic.

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6. What term describes a specific frequency subdivision within a wireless band?

A. Channel

B. Band

C. Subband

D. Slot

7. Which protocol maps IP addresses to MAC addresses in IPv6?

A. Neighbor Discovery using ICMPv6.

B. DHCPv6 exclusively.

C. ARP for IPv6.

D. DNS mapping.

8. Also called NAT overload, which translation technique lets many private IP addresses share a single public IP by using different port numbers?

A. NAT Network Address Translation

B. PAT Port Address Translation

C. Static NAT

D. Dynamic NAT

9. Using VLSM on a 192.168.0.0/24 network, you need subnets for 50 hosts, 20 hosts, and 6 hosts. Which set of masks fits while minimizing waste?

A. 50 hosts -> /26, 20 hosts -> /27, 6 hosts -> /29

B. 50 hosts -> /25, 20 hosts -> /28, 6 hosts -> /30

C. 50 hosts -> /27, 20 hosts -> /26, 6 hosts -> /29

D. 50 hosts -> /26, 20 hosts -> /30, 6 hosts -> /28

10. What is the native VLAN in 802.1Q trunking?

A. The untagged VLAN used for untagged frames

B. The VLAN with the highest ID on the trunk

C. The VLAN used for management traffic only

D. The VLAN that requires tagged frames

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Answers

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

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Explanations

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1. Which switch port is assigned to a single VLAN and connects end-user devices, with untagged traffic?

A. Edge Port

B. Access Port

C. Trunk Port

D. Uplink Port

Focusing on how a switch treats traffic for end-user devices, the port that is assigned to a single VLAN and sends untagged frames is the access port. An access port is configured for one VLAN and accepts traffic that arrives untagged from connected devices such as PCs or printers. The switch internally associates that untagged traffic with the configured VLAN, and when sending frames out, it continues to transmit untagged frames to those devices so they don't need to understand VLAN tagging. In contrast, a trunk port carries traffic for multiple VLANs over the same link and uses 802.1Q tags to identify which VLAN each frame belongs to, which is not appropriate for a typical end-user device that expects untagged traffic. An uplink port is a general term for a link to another switch or network device and can be a trunk or an access port depending on design, but it isn't defined by the single-VLAN, untagged behavior. An edge port describes a role related to enabling fast entry for end devices in some contexts, but the standard, unambiguous choice for a port serving end-user devices in a single VLAN with untagged traffic is an access port.

2. Which protocol uses SAE instead of pre-shared keys?

A. WEP

B. WPA

C. WPA2

D. WPA3

SAE, Simultaneous Authentication of Equals, is used in WPA3 to replace the traditional pre-shared key in personal mode. This password based key exchange authenticates devices without exposing a single shared password for later offline guessing. In practice, each authentication run uses a fresh exchange, and deriving the session keys requires verification that both sides know the actual password. That makes offline dictionary attacks impractical, because guesses cannot be tested against captured data without interacting with the network and performing the full handshake each time. Older protocols like WEP and WPA/WPA2 Personal rely on a static pre-shared key. If someone captures traffic, they can mount offline guesses against that single key to decrypt communications, which is why those are far less secure. WPA3's adoption of SAE addresses that weakness by providing a robust, interactive, password-based authentication mechanism. So, the protocol that uses SAE instead of pre-shared keys is WPA3.

3. Which switch feature shuts down a port if it receives a BPDU frame?

A. Sticky MAC

B. Port Security

C. BPDU Guard

D. 1000BASE-T

BPDU Guard protects edge ports from participating in spanning-tree. It watches for BPDU frames on ports that are typically connected to end devices (often with PortFast enabled). If a BPDU is received on such a port, the switch shuts the port down by putting it into an error-disabled state. This prevents a rogue device or misconfigured equipment from sending BPDUs and potentially altering the STP topology, which could cause loops. The port can then be re-enabled later if needed, sometimes automatically with an errdisable recovery timer. Sticky MAC is about preserving learned MAC addresses, Port Security restricts which devices can connect by MAC, and 1000BASE-T is just a physical Ethernet standard—none of these automatically shut down a port when a BPDU arrives.

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4. Which exterior gateway protocol routes traffic between autonomous systems?

A. BGP Border Gateway Protocol

B. IGP Interior Gateway Protocol

C. NAT Network Address Translation

D. EGP Exterior Gateway Protocol

Exchanging routing information between autonomous systems is handled by exterior gateway protocols. The standard method today is BGP, the Border Gateway Protocol, which is designed to scale across the Internet and to enforce routing policies between different ASes. BGP uses TCP to ensure reliable delivery and carries path information via the AS path attribute to prevent loops, while allowing operators to influence route selection through policies and route attributes. This contrasts with interior gateway protocols, which operate inside a single autonomous system (such as OSPF or EIGRP). NAT is not a routing protocol between ASes; it translates addresses rather than routes between domains. Exterior gateway protocols like EGP existed historically but are not used now, with BGP providing the current inter-domain routing solution.

5. What is the purpose of a CAM table aging timer, and what is a potential performance impact of high MAC address learning (MAC churn)?

A. The aging timer controls how quickly ARP entries expire.

B. The aging timer removes inactive MAC entries; excessive MAC churn can fill the CAM, causing flooding and reduced performance or stability.

C. The aging timer controls VLAN assignments automatically.

D. The aging timer limits the rate of switch fabric traffic.

The aging timer for the CAM table controls how long a learned MAC address stays in the switch's memory after its last seen frame. When a device sends a frame, the switch learns its source MAC and records the port in the CAM. If that MAC stops transmitting, the entry would sit in the CAM forever unless it's aged out. The aging process periodically removes those inactive entries so memory can be reused for new devices and the switch can adapt to topology changes. When MAC churn is high—many devices frequently appearing, disappearing, or moving across ports—the CAM can fill up quickly as new addresses are learned and old ones are removed. Once the CAM is full, the switch may have to flood frames for destinations it doesn't know on a specific port, increasing broadcast or unknown-unicast flooding. This extra flooding consumes bandwidth, taxes processing, and can reduce overall forwarding performance and stability. So the aging timer serves to prune inactive MAC entries, and high MAC churn can lead to CAM exhaustion, flooding, and degraded performance.

6. What term describes a specific frequency subdivision within a wireless band?

A. Channel

B. Band

C. Subband

D. Slot

A channel is the specific frequency slice allocated within a wireless band for a single communication. A wireless band covers a broad range of frequencies, and that range is divided into channels, each with its own center frequency and bandwidth. This separation lets multiple transmissions occur in the same band without interfering with each other. For example, in the 2.4 GHz Wi Fi band, several channels exist, each occupying about 22 MHz of spectrum, so devices can pick a channel and communicate there. The broader band is the entire spectrum; a subband would be a smaller portion within a band but isn't the standard term for a single communication path in this context, and a slot refers to a time division rather than a frequency division.

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7. Which protocol maps IP addresses to MAC addresses in IPv6?

A. Neighbor Discovery using ICMPv6.

B. DHCPv6 exclusively.

C. ARP for IPv6.

D. DNS mapping.

In IPv6, the process of turning an IP address into a data-link (MAC) address on the local link is handled by the Neighbor Discovery Protocol, which runs over ICMPv6. When a host needs to contact another IPv6 device on the same local network, it checks its neighbor cache. If the MAC isn't known, it sends a Neighbor Solicitation to the target IPv6 address (delivered via the solicited-node multicast) and includes its own MAC in the ICMPv6 option. The target responds with a Neighbor Advertisement that carries its MAC address, allowing the initiator to fill its cache and send the IPv6 packet to that MAC. This mechanism also supports duplicate address detection and router discovery, all coordinated through ICMPv6 messages. DHCPv6 is used for configuring devices (like obtaining an IPv6 address and other information) but not for mapping IP to MAC on the local link. ARP is an IPv4 protocol and is not used in IPv6. DNS maps domain names to IP addresses, not MAC addresses.

8. Also called NAT overload, which translation technique lets many private IP addresses share a single public IP by using different port numbers?

A. NAT Network Address Translation

B. PAT Port Address Translation

C. Static NAT

D. Dynamic NAT

Port Address Translation (PAT), also called NAT overload, lets many private IP addresses share a single public IP by using different port numbers. When an internal host communicates outward, the edge router replaces the source private IP with the public IP and assigns a unique source port for that session. The router keeps a translation table that maps the public IP and port back to the specific private IP and port. Replies coming back to the public IP and port are then forwarded to the correct internal host using that table entry. This multiplexing of multiple internal sessions over one public address is what enables many devices to access external networks simultaneously. This differs from other NAT types: static NAT maps one private IP to one public IP (no sharing), and dynamic NAT uses a pool of public addresses but still pairs each internal host with a public address rather than multiplexing many hosts over a single public IP via port numbers.

9. Using VLSM on a 192.168.0.0/24 network, you need subnets for 50 hosts, 20 hosts, and 6 hosts. Which set of masks fits while minimizing waste?

A. 50 hosts -> /26, 20 hosts -> /27, 6 hosts -> /29

B. 50 hosts -> /25, 20 hosts -> /28, 6 hosts -> /30

C. 50 hosts -> /27, 20 hosts -> /26, 6 hosts -> /29

D. 50 hosts -> /26, 20 hosts -> /30, 6 hosts -> /28

In VLSM you size each subnet to the exact number of hosts needed, using the smallest mask that still fits. For 50 hosts you need at least 50 usable addresses, and a /26 provides 64 addresses total (62 usable), which comfortably covers 50. A smaller mask like /27 would only yield 30 usable addresses, which isn't enough. For 20 hosts a /27 gives 32 total addresses (30 usable), enough for 20, while a /28 would provide only 14 usable and would be insufficient. For 6 hosts a /29 provides 8 total addresses (6 usable), exactly matching the requirement, whereas a /30 would give only 2 usable. So the most efficient arrangement is to assign 192.168.0.0/26 for the 50-host subnet, 192.168.0.64/27 for the 20-host subnet, and 192.168.0.96/29 for the 6-host subnet. This order (largest first) minimizes waste within the 192.168.0.0/24, leaving some addresses unused at the end but avoiding oversized subnets.

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10. What is the native VLAN in 802.1Q trunking?

A. The untagged VLAN used for untagged frames

B. The VLAN with the highest ID on the trunk

C. The VLAN used for management traffic only

D. The VLAN that requires tagged frames

In 802.1Q trunking, most traffic on a trunk is tagged with a VLAN identifier, but there's a special VLAN whose frames travel untagged. This is the native VLAN. It's the VLAN designated to carry untagged frames across the trunk, providing compatibility for devices or configurations that don't tag frames. You can configure which VLAN serves as the native VLAN, and while many setups default to VLAN 1, changing it is common for security or segmentation reasons. If the native VLAN isn't consistent on both ends of the trunk, untagged frames can be misinterpreted, leading to traffic being delivered to the wrong VLAN. So, the native VLAN is the untagged VLAN used for untagged frames on the trunk.

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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://netimproutingswitchingwirelessprot.examzify.com

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

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