

# ROUTER AND ROUTING BASICS PRACTICE TEST (SAMPLE)

**STUDY GUIDE**



**SAMPLE STUDY GUIDE  
WITH LIMITED QUESTIONS**

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THE FULL VERSION STUDY GUIDE**

<https://routerroutingbasics.examzify.com>



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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

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- 1. Which information is displayed by the command show ip int brief?**
  - A. A summary of all interfaces including the IPv4 address and the current operational status
  - B. The full running configuration of all interfaces
  - C. The ARP table for connected devices
  - D. The routing table
- 2. Which memory type is volatile and erased when the device is powered off?**
  - A. RAM
  - B. ROM
  - C. NVRAM
  - D. Flash
- 3. Devices need the following three information items for network access. Which three items are required?**
  - A. IP Address, Subnet Mask, and Default Gateway
  - B. IP Address, DNS Server, and Default Gateway
  - C. Subnet Mask, Default Gateway, and DNS Server
  - D. MAC Address, IP Address, and Default Gateway
- 4. If two or more paths to the same destination have identical metrics, what will the router do?**
  - A. Use equal-cost load balancing
  - B. Prefer a single path with the lowest metric
  - C. Choose the path with the most hops
  - D. Drop the extra paths
- 5. If a destination belongs to a remote network, the router will typically forward the packet to which next hop?**
  - A. The next-hop router
  - B. The directly connected interface
  - C. The Gateway of Last Resort
  - D. The local host

- 6. What is the main purpose of an IPv4 loopback interface?**
- A. Mostly for Testing and Management Purposes
  - B. For External WAN Connectivity
  - C. For Bridging LANs
  - D. For Port Forwarding
- 7. Which device typically acts as the route for traffic destined for destinations outside the local network?**
- A. Default Gateway
  - B. DNS Server
  - C. DHCP Server
  - D. Switch
- 8. Which mechanism reduces convergence time by sending an immediate update when a route changes?**
- A. Triggered Updates
  - B. Split Horizon
  - C. Hold-Down Timers
  - D. Route Poisoning
- 9. What is RIP's maximum hop count and what does a hop count of 16 indicate?**
- A. Maximum is 15; 16 indicates the destination is unreachable.
  - B. Maximum is 20; 21 indicates unreachable.
  - C. Maximum is 255; 256 indicates unreachable.
  - D. Maximum is 1; 2 indicates unreachable.
- 10. In IPv6, which statement correctly describes how link-local addresses are used?**
- A. They are globally routable.
  - B. They are used for neighbor discovery and essential control plane communications on the local link.
  - C. They must be unique across the Internet.
  - D. They are only used for multicast communication.

## **Answers**

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

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## **Explanations**

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### 1. Which information is displayed by the command show ip int brief?

- A. A summary of all interfaces including the IPv4 address and the current operational status**
- B. The full running configuration of all interfaces
- C. The ARP table for connected devices
- D. The routing table

*show ip int brief displays a concise snapshot of all interfaces, including the IPv4 address assigned to each interface and the current operational status. It shows whether the interface is up or down at the interface level and whether the line protocol is up, giving you a quick view of which interfaces are active and have addresses. This is not the full running configuration, not the ARP table, and not the routing table—those come from different commands. So you see a summary of interfaces with their IPv4 addresses and whether they're currently operational.*

### 2. Which memory type is volatile and erased when the device is powered off?

- A. RAM**
- B. ROM
- C. NVRAM
- D. Flash

*Volatile memory loses its data when power is removed. RAM is the fast, temporary storage that the CPU uses for active programs and data, and it must be powered to retain its contents. When you power off, RAM is cleared, which is why it's described as volatile. The other options are non-volatile: ROM stores firmware and remains intact without power; NVRAM is designed to retain data without power, and Flash memory also keeps data across power cycles. So the memory type that fits the description is RAM.*

### 3. Devices need the following three information items for network access. Which three items are required?

- A. IP Address, Subnet Mask, and Default Gateway**
- B. IP Address, DNS Server, and Default Gateway
- C. Subnet Mask, Default Gateway, and DNS Server
- D. MAC Address, IP Address, and Default Gateway

*To access a network using IP, a device needs an IP address to identify itself, a subnet mask to determine which part of an address is the local network vs. remote networks, and a default gateway to forward traffic to destinations outside the local subnet. The subnet mask makes the device decide whether a destination is on the same local network or must be sent to the gateway for routing. Without a gateway, traffic to other networks can't be routed. DNS is for translating names to IPs, not required for basic IP connectivity, and a MAC address is used for on-link communication on the local network, not as a separate requirement for initial network access. So the essential trio is IP address, subnet mask, and default gateway.*

**4. If two or more paths to the same destination have identical metrics, what will the router do?**

- A. Use equal-cost load balancing**
- B. Prefer a single path with the lowest metric
- C. Choose the path with the most hops
- D. Drop the extra paths

*When two or more paths to the same destination have identical metrics, the router uses equal-cost multipath routing. It keeps all of those equal-cost routes active and distributes traffic among them instead of sticking to just one path. This load balancing can be done per destination or per flow, depending on the router's implementation, which helps maximize bandwidth and provides redundancy. If one path fails, the router can continue sending traffic over the remaining equal-cost paths without needing to recompute a new single best path. The other options describe behaviors that don't utilize multiple equal-cost paths: choosing a single path ignores the extra available routes, selecting by hop count isn't how metrics-based routing works, and dropping extra paths wastes the gained reliability and capacity.*

**5. If a destination belongs to a remote network, the router will typically forward the packet to which next hop?**

- A. The next-hop router**
- B. The directly connected interface
- C. The Gateway of Last Resort
- D. The local host

*When a destination is in a remote network, the router forwards the packet toward the next hop indicated by the routing table. This next hop is the next router on the path to the destination. The router uses the appropriate exit interface to send the frame to that next-hop router, which will then continue routing toward the destination. The gateway of last resort is only used if there's no specific route for the destination, acting as a default path. A directly connected interface is only for destinations on networks directly attached to the router, and the local host would be the router itself or a locally attached device, not a remote network. So the packet goes to the next-hop router.*

**6. What is the main purpose of an IPv4 loopback interface?**

- A. Mostly for Testing and Management Purposes**
- B. For External WAN Connectivity
- C. For Bridging LANs
- D. For Port Forwarding

*The main concept is that the loopback interface provides an internal, software-only path for the device to talk to itself. It uses a reserved IPv4 address (the loopback address, typically 127.0.0.1) and is implemented as a virtual interface that always exists and is always up, independent of any physical network hardware. This makes it ideal for testing and managing the host's own networking stack: developers and system services can send traffic to 127.0.0.1 to verify that the networking code, applications, and configurations on the device are functioning correctly without needing any external network access. Because the loopback traffic never leaves the device, it's not used for external WAN connectivity, it doesn't bridge LAN segments, and it isn't involved in port forwarding (which deals with routing traffic from one network to another, often via NAT). That's why testing and management of the host's own networking behavior is the best-fit purpose for the loopback interface.*

**7. Which device typically acts as the route for traffic destined for destinations outside the local network?**

**A. Default Gateway**

- B. DNS Server
- C. DHCP Server
- D. Switch

*When hosts on a local network need to reach destinations outside that network, they send those packets to a single next-hop device configured for that purpose—the default gateway. This gateway knows how to reach remote networks and is typically the router's interface on the local LAN, often using a default route like 0.0.0.0/0 to forward any unknown destination onward toward the internet or other networks. The DNS server, by contrast, is for translating domain names to IP addresses and doesn't route traffic. The DHCP server assigns IP addresses and configuration to clients, not routing decisions. A switch moves frames within the local network; it doesn't route traffic to destinations outside the local subnet unless it's a specialized Layer 3 switch. So the device that handles traffic destined for outside the local network is the default gateway.*

**8. Which mechanism reduces convergence time by sending an immediate update when a route changes?**

**A. Triggered Updates**

- B. Split Horizon
- C. Hold-Down Timers
- D. Route Poisoning

*Immediate propagation of routing changes is provided by triggered updates. When a route changes, a triggered update is sent right away instead of waiting for the next scheduled update. This brings faster awareness to neighboring routers, allowing them to adjust their routing tables quickly and converge sooner on a consistent view of the network. Split horizon helps prevent loops by not advertising a route back on the same interface, but it doesn't accelerate update propagation. Hold-down timers intentionally delay accepting changes to avoid flapping, which slows convergence. Route poisoning advertises an unusable route with an infinite metric to hasten removal, but it's not the mechanism that delivers an immediate update upon a change.*

**9. What is RIP's maximum hop count and what does a hop count of 16 indicate?**

**A. Maximum is 15; 16 indicates the destination is unreachable.**

- B. Maximum is 20; 21 indicates unreachable.
- C. Maximum is 255; 256 indicates unreachable.
- D. Maximum is 1; 2 indicates unreachable.

*RIP uses hop count as its distance metric, and the hop count field is an 8-bit value where 16 is reserved to mean infinity. That means a route is considered reachable only if it has a hop count from 1 to 15; a hop count of 16 signals that the destination cannot be reached via RIP. So the maximum valid hop count is 15, and a value of 16 indicates the destination is unreachable. The other numbers shown don't fit RIP's metric rules: they're not the defined maximum, and a smaller value like 1 would simply mean the destination is one hop away, not the maximum.*

10. In IPv6, which statement correctly describes how link-local addresses are used?

- A. They are globally routable.
- B. They are used for neighbor discovery and essential control plane communications on the local link.**
- C. They must be unique across the Internet.
- D. They are only used for multicast communication.

*Link-local addresses in IPv6 are meant to work only on the same physical or logical link. They provide the addressing needed for neighbor discovery and other essential control-plane communications on that local segment, such as the ICMPv6 messages used to find and talk to neighboring devices and routers. Because their scope is limited to the local link, they are not routable beyond that link, so they don't have to be unique across the Internet. They are unicast addresses (fe80::/10), not multicast, which is why they're not used for multicast communication themselves. These addresses are typically auto-configured and serve as a reliable way for devices to discover each other and perform on-link setup and maintenance before any globally routable addresses are in use.*

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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](mailto:hello@examzify.com).

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

<https://routerroutingbasics.examzify.com>

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

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