

# Internet Protocol Version 4 (IPv4) Practice Test (Sample)

## Study Guide



**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

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- 1. How do you determine the broadcast address for a given IPv4 subnet?**
  - A. Set all host bits to 1 within the subnet; e.g., 192.168.1.0/24 broadcast is 192.168.1.255.**
  - B. Set the network address to all ones.**
  - C. Use the gateway address as the broadcast.**
  - D. Broadcast address is always the highest address in the private range.**
  
- 2. If a fragment offset field contains the value 2, what is the fragment's offset in bytes from the start of the original datagram?**
  - A. 16 bytes**
  - B. 8 bytes**
  - C. 32 bytes**
  - D. 64 bytes**
  
- 3. Which statement about NAT is true?**
  - A. It eliminates the need for private addresses.**
  - B. NAT translates between private and public addresses to allow private networks to access the public internet.**
  - C. NAT increases the number of available public IP addresses.**
  - D. NAT changes DNS records to route traffic.**
  
- 4. Which protocol resolves an IPv4 address to a MAC address on the local network?**
  - A. ARP**
  - B. DNS**
  - C. ICMP**
  - D. SNMP**
  
- 5. In a Class A network, what is the broadcast address?**
  - A. The address with all host bits on, e.g., 10.255.255.255**
  - B. The address with all network bits on**
  - C. The address 255.255.255.0**
  - D. The address 127.0.0.1**

- 6. What is the default subnet mask for a Class A address?**
- A. 255.255.0.0**
  - B. 255.0.0.0**
  - C. 255.255.255.0**
  - D. 255.255.255.255**
- 7. The IPv4 header checksum is computed over which portion of the IPv4 packet?**
- A. payload only**
  - B. header and payload**
  - C. entire datagram**
  - D. header only**
- 8. In an IPv4 address, what does an octet represent?**
- A. A 16-bit block**
  - B. An 8-bit value**
  - C. A 32-bit value**
  - D. A 4-bit nibble**
- 9. What does the host address portion of an IP address do?**
- A. Identifies the network**
  - B. Identifies the gateway**
  - C. Uniquely identifies each machine on a network**
  - D. Identifies the subnet**
- 10. What is the valid host address range in a Class C network?**
- A. 192.168.100.0 through 192.168.100.255**
  - B. 192.168.100.1 through 192.168.100.254**
  - C. 192.168.0.1 through 192.168.0.254**
  - D. 192.168.100.2 through 192.168.100.253**

## Answers

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

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## **Explanations**

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**1. How do you determine the broadcast address for a given IPv4 subnet?**

**A. Set all host bits to 1 within the subnet; e.g., 192.168.1.0/24 broadcast is 192.168.1.255.**

**B. Set the network address to all ones.**

**C. Use the gateway address as the broadcast.**

**D. Broadcast address is always the highest address in the private range.**

In IPv4 subnetting, the broadcast address is formed by setting all host bits to 1 within the subnet. The network address uses all host bits as 0, so the broadcast is the last address in that subnet range. You can think of it as the result of OR-ing the network address with the host mask (the part of the address that varies for hosts). For example, with 192.168.1.0/24, the network portion is 192.168.1 and the host portion is the last octet. Setting the host bits to 1 gives 192.168.1.255. This broadcast address is used to send a message to all devices in that subnet. It isn't the gateway address, and it isn't determined by private-range rules—it's defined by the subnet mask.

**2. If a fragment offset field contains the value 2, what is the fragment's offset in bytes from the start of the original datagram?**

**A. 16 bytes**

**B. 8 bytes**

**C. 32 bytes**

**D. 64 bytes**

In IPv4 fragmentation, the fragment offset is measured in 8-byte blocks, not in bytes directly. To get the actual byte offset, multiply the field value by 8. So a value of 2 means the fragment's data starts  $2 \times 8 = 16$  bytes from the start of the original datagram, with the offset referring to the data portion (headers are not included).

### 3. Which statement about NAT is true?

- A. It eliminates the need for private addresses.
- B. NAT translates between private and public addresses to allow private networks to access the public internet.**
- C. NAT increases the number of available public IP addresses.
- D. NAT changes DNS records to route traffic.

The main idea being tested is how NAT translates private addresses to public ones so a private network can reach the Internet. NAT takes the private, non-routable addresses inside your network and maps them to a publicly reachable address on the edge router. It can use a single public IP with different port numbers to keep many internal connections separate, allowing multiple devices to share that one public address while still receiving responses back correctly. This is the mechanism that makes private networks able to access the public Internet without needing a unique public IP for every device, and it explains why NAT is about address translation between private and public ranges. This isn't about eliminating private addresses—that remains the internal, non-routable space used inside your network. It also doesn't create more public IPs; in fact, it conserves them by letting many devices share the same public address. And NAT doesn't modify DNS records to route traffic; DNS resolves names to IPs, while NAT deals with translating addresses in the actual packets as they pass through the gateway.

### 4. Which protocol resolves an IPv4 address to a MAC address on the local network?

- A. ARP**
- B. DNS
- C. ICMP
- D. SNMP

Local address resolution is handled by ARP. When a device on a LAN needs to send an IPv4 packet to another host on the same network, it must know the destination's MAC address to place in the Ethernet frame. ARP fills this gap by broadcasting a request asking who has the specific IPv4 address, and the device that owns that IP replies with its MAC address. The requester stores this mapping in an ARP cache for quick reuse, so future packets can be sent without repeating the discovery. If the destination is outside the local network, ARP is still used, but only to reach the gateway's MAC address on the local segment—the router then takes over to forward the packet onward. DNS, ICMP, and SNMP don't resolve MAC addresses: DNS maps domain names to IPs, ICMP handles error messages and diagnostic traffic, and SNMP is for network management.

**5. In a Class A network, what is the broadcast address?**

- A. The address with all host bits on, e.g., 10.255.255.255**
- B. The address with all network bits on**
- C. The address 255.255.255.0**
- D. The address 127.0.0.1**

In IPv4, the broadcast address is the address within a subnet where all host bits are set to 1. For a Class A network, the default mask is 255.0.0.0, so the network portion is the first octet and the remaining 24 bits are hosts. The broadcast address is found by setting all those host bits to 1, giving an example like 10.255.255.255 for the 10.0.0.0/8 network. This address is used to reach all hosts in that subnet. The other options don't fit because 255.255.255.0 is a subnet mask, not a host address; 127.0.0.1 is the loopback address for the local host; and an address with all network bits on would specify the network part as all 1s, which does not represent the broadcast for a Class A subnet.

**6. What is the default subnet mask for a Class A address?**

- A. 255.255.0.0**
- B. 255.0.0.0**
- C. 255.255.255.0**
- D. 255.255.255.255**

In classful IPv4 addressing, each address class has a predefined default subnet mask that determines which part of the address identifies the network versus the hosts. For Class A, the first octet represents the network while the remaining three octets identify hosts, so 8 bits for the network and 24 bits for hosts. This makes the default subnet mask 255.0.0.0 (binary 11111111.00000000.00000000.00000000), allowing about 16 million hosts within one Class A network. The value 255.255.255.255 is not a subnet mask; it's the limited broadcast address used to reach all hosts on the local network. The other masks correspond to Class B and Class C defaults, which are not correct for Class A.

**7. The IPv4 header checksum is computed over which portion of the IPv4 packet?**

- A. payload only**
- B. header and payload**
- C. entire datagram**
- D. header only**

The main point is that the IPv4 header checksum protects just the header, not the payload. It's computed as the 16-bit one's complement of the one's complement sum of all 16-bit words in the header, with the checksum field itself set to zero during calculation. Because routers may modify header fields on every hop (for example, TTL decreases, fragmentation-related fields can change with each fragment), the checksum must be recalculated for the header after any change so the header can be verified for integrity at each hop. The payload isn't included in this calculation, which is why the ISP or intermediary devices can't rely on the IP header checksum to detect payload corruption. Payload integrity is handled by higher-layer protocols (like TCP or UDP) through their own checksums. If the question asks which portion is covered by the IPv4 header checksum, the correct answer is the header only, since that's exactly what the IP header checksum is designed to protect.

**8. In an IPv4 address, what does an octet represent?**

- A. A 16-bit block
- B. An 8-bit value**
- C. A 32-bit value
- D. A 4-bit nibble

An octet represents 8 bits in an IPv4 address. An IPv4 address is 32 bits long, written as four octets separated by dots, like 192.168.0.1. Each octet stores one 8-bit value, which can range from 0 to 255 in decimal. Since 8 bits can represent  $2^8 = 256$  values, the maximum for an octet is 255. The term octet emphasizes that each part of the address is a chunk of eight bits, and the whole address is four of these, totaling 32 bits. A 16-bit block would be two octets, a 32-bit value would be the entire address, and a 4-bit nibble is only half a byte.

**9. What does the host address portion of an IP address do?**

- A. Identifies the network
- B. Identifies the gateway
- C. Uniquely identifies each machine on a network**
- D. Identifies the subnet

The host address portion identifies the specific device on the local network. In IPv4, an address is split into a network part and a host part (as defined by the subnet mask). The network part tells routers which network the device belongs to, while the host part differentiates each device within that network. This separation ensures every device on the same network has a unique host identifier, so packets can be delivered to the correct machine. For example, on a 192.168.1.0/24 network, 192.168.1.42 uses 192.168.1 as the network portion and 42 as the host portion, uniquely identifying that single device on the network. The gateway's address is simply the router's address on that network, used to reach other networks, not a function of the host portion itself. The subnet is determined by the network portion and the mask, not by the host portion.

**10. What is the valid host address range in a Class C network?**

- A. 192.168.100.0 through 192.168.100.255
- B. 192.168.100.1 through 192.168.100.254**
- C. 192.168.0.1 through 192.168.0.254
- D. 192.168.100.2 through 192.168.100.253

In a Class C network using the default /24 mask, the network is defined by the first three octets and the last octet identifies hosts. For the network 192.168.100.0 with 255.255.255.0, the network address is 192.168.100.0 and the broadcast address is 192.168.100.255. The usable host addresses lie between them, from 192.168.100.1 to 192.168.100.254. Therefore, the valid host address range is 192.168.100.1 through 192.168.100.254. The other options either include the network or broadcast address, refer to a different network, or omit valid hosts.

# 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://ipv4.examzify.com>**

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

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