

CCNA 1 v7.0 Modules 11 - 13: IP Addressing Exam Answers 2020

1. What is the prefix length notation for the subnet mask 255.255.255.224?

/25

/26

/27*

/28

Explanation: The binary format for 255.255.255.224 is 11111111.11111111.11111111.11100000. The prefix length is the number of consecutive 1s in the subnet mask. Therefore, the prefix length is /27.

2. How many valid host addresses are available on an IPv4 subnet that is configured with a /26 mask?

254

190

192

62*

64

3. Which subnet mask would be used if 5 host bits are available?

255.255.255.0

255.255.255.128

255.255.255.224*

255.255.255.240

4. A network administrator subnets the 192.168.10.0/24 network into subnets with /26 masks. How many equal-sized subnets are created?

1

2

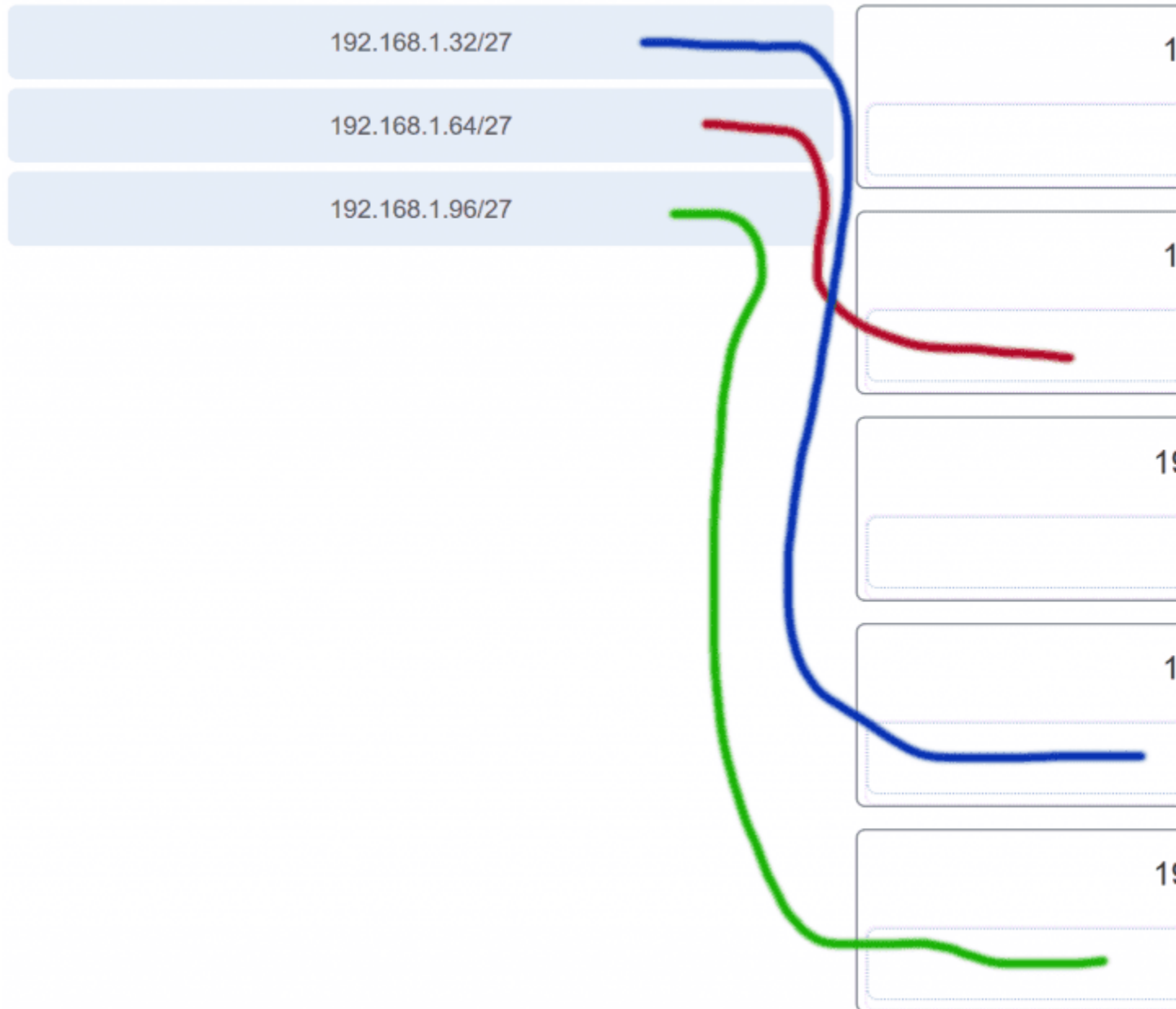
4*

8

16

64

5. Match the subnetwork to a host address that would be included within the subnetwork. (Not all options are used.)



6. An administrator wants to create four subnetworks from the network address 192.168.1.0/24. What is the network address and subnet mask of the second useable subnet?

subnet 192.168.1.64
subnet mask 255.255.255.192**

subnet 192.168.1.32
subnet mask 255.255.255.240

subnet 192.168.1.64
subnet mask 255.255.255.240

subnet 192.168.1.128
subnet mask 255.255.255.192

subnet 192.168.1.8
subnet mask 255.255.255.224

7. How many bits must be borrowed from the host portion of an address to accommodate a router with five connected networks?

two
three*
four
five

Explanation: Each network that is directly connected to an interface on a router requires its own subnet. The formula 2^n , where n is the number of bits borrowed, is used to calculate the available number of subnets when borrowing a specific number of bits.

8. How many host addresses are available on the 192.168.10.128/26 network?

30
32
60
62*
64

Explanation: A /26 prefix gives 6 host bits, which provides a total of 64 addresses, because $2^6 = 64$. Subtracting the network and broadcast addresses leaves 62 usable host addresses.

9. How many host addresses are available on the network 172.16.128.0 with a subnet mask of 255.255.252.0?

510

512

1022*

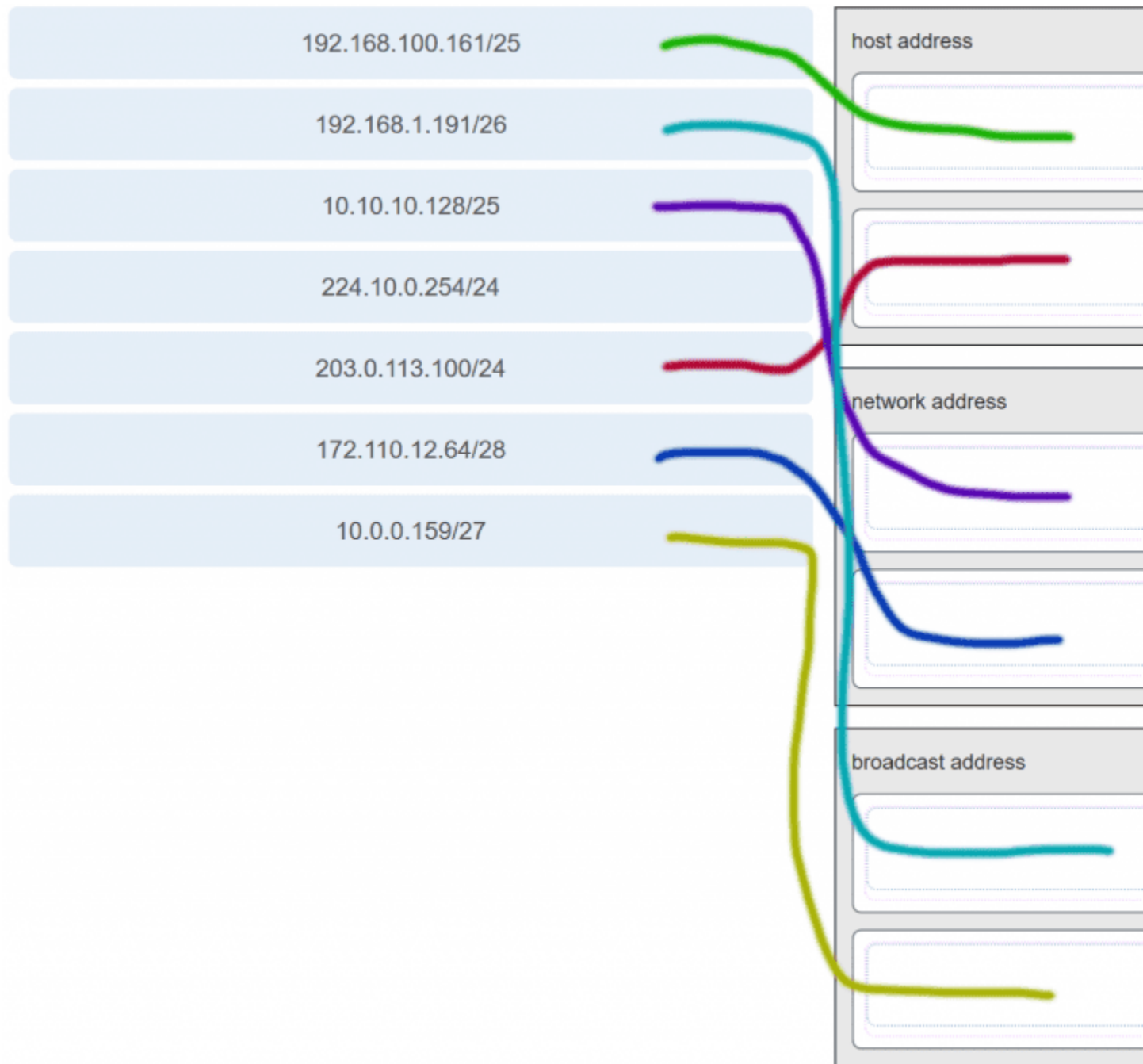
1024

2046

2048

Explanation: A mask of 255.255.252.0 is equal to a prefix of /22. A /22 prefix provides 22 bits for the network portion and leaves 10 bits for the host portion. The 10 bits in the host portion will provide 1022 usable IP addresses ($2^{10} - 2 = 1022$).

10. Match each IPv4 address to the appropriate address category. (Not all options are used.)



11. What three blocks of addresses are defined by RFC 1918 for private network use? (Choose three.)

10.0.0.0/8*

172.16.0.0/12*

192.168.0.0/16*

100.64.0.0/14

169.254.0.0/16

239.0.0.0/8

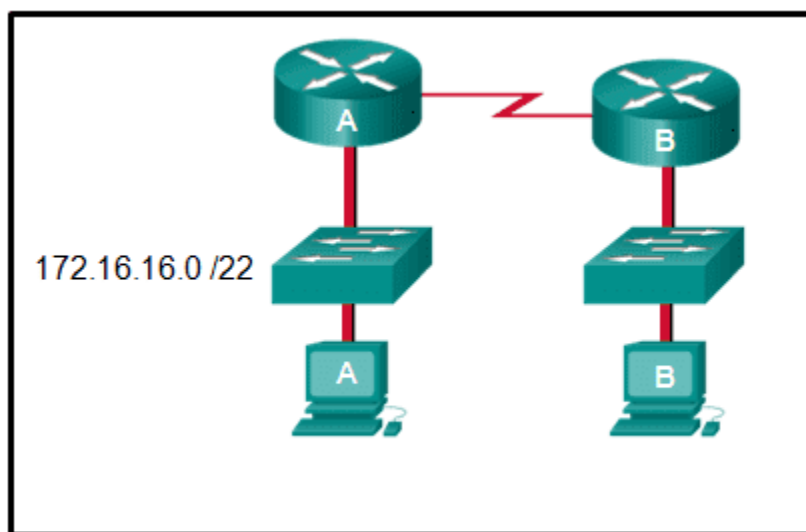
Explanation: RFC 1918, Address Allocation for Private Internets, defines three blocks of IPv4 address for private networks that should not be routable on the public Internet.

10.0.0.0/8

172.16.0.0/12

192.168.0.0/16

12. Refer to the exhibit.



An administrator must send a message to everyone on the router A network. What is the broadcast address for network 172.16.16.0/22?

172.16.16.255

172.16.20.255

172.16.19.255*

172.16.23.255

172.16.255.255

Explanation: The 172.16.16.0/22 network has 22 bits in the network portion and 10 bits in the host portion. Converting the network address to binary yields a subnet mask of 255.255.252.0. The range of addresses in this network will end with the last address available before 172.16.20.0. Valid host addresses for this network range from 172.16.16.1-172.16.19.254, making 172.16.19.255 the broadcast address.

13. A site administrator has been told that a particular network at the site must accommodate 126 hosts. Which subnet mask would be used that contains the required number of host bits?

255.255.255.0

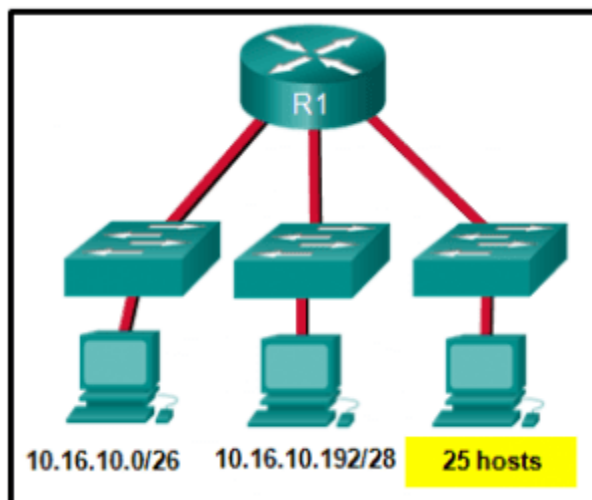
255.255.255.128*

255.255.255.224

255.255.255.240

Explanation: The subnet mask of 255.255.255.0 has 8 host bits. The mask of 255.255.255.128 results in 7 host bits. The mask of 255.255.255.224 has 5 host bits. Finally, 255.255.255.240 represents 4 host bits.

14. Refer to the exhibit.



Considering the addresses already used and having to remain within the 10.16.10.0/24 network range, which subnet address could be assigned to the network containing 25 hosts?

10.16.10.160/26

10.16.10.128/28

10.16.10.64/27*

10.16.10.224/26

10.16.10.240/27

10.16.10.240/28

Explanation: Addresses 10.16.10.0 through 10.16.10.63 are taken for the leftmost network. Addresses 10.16.10.192 through 10.16.10.207 are used by the center network. The address space from 208-255 assumes a /28 mask, which does not allow enough host bits to accommodate 25 host addresses. The address ranges that are available include 10.16.10.64/26 and 10.16.10.128/26. To accommodate 25 hosts, 5 host bits are needed, so a /27 mask is necessary. Four possible /27 subnets could be created from the available addresses between 10.16.10.64 and 10.16.10.191:

10.16.10.64/27
10.16.10.96/27
10.16.10.128/27
10.16.10.160/27

15. What is the usable number of host IP addresses on a network that has a /26 mask?

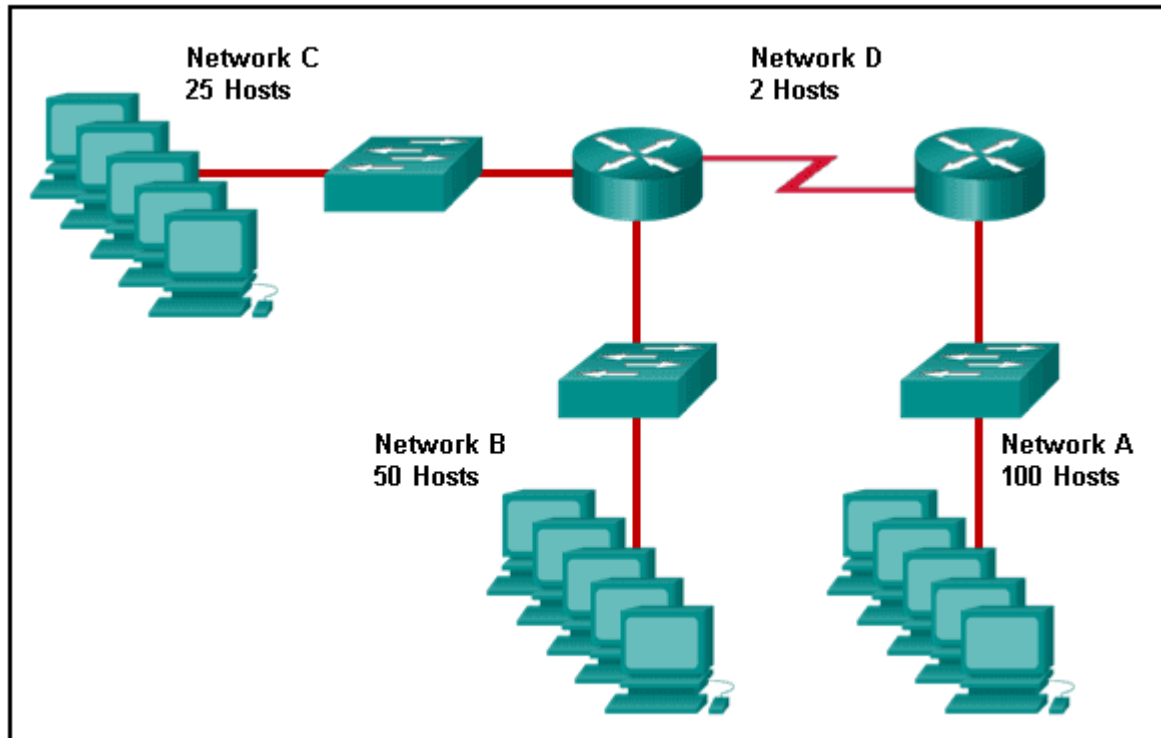
256
254
64
62*
32
16

Explanation: A /26 mask is the same as 255.255.255.192. The mask leaves 6 host bits. With 6 host bits, 64 IP addresses are possible. One address represents the subnet number and one address represents the broadcast address, which means that 62 addresses can then be used to assign to network devices.

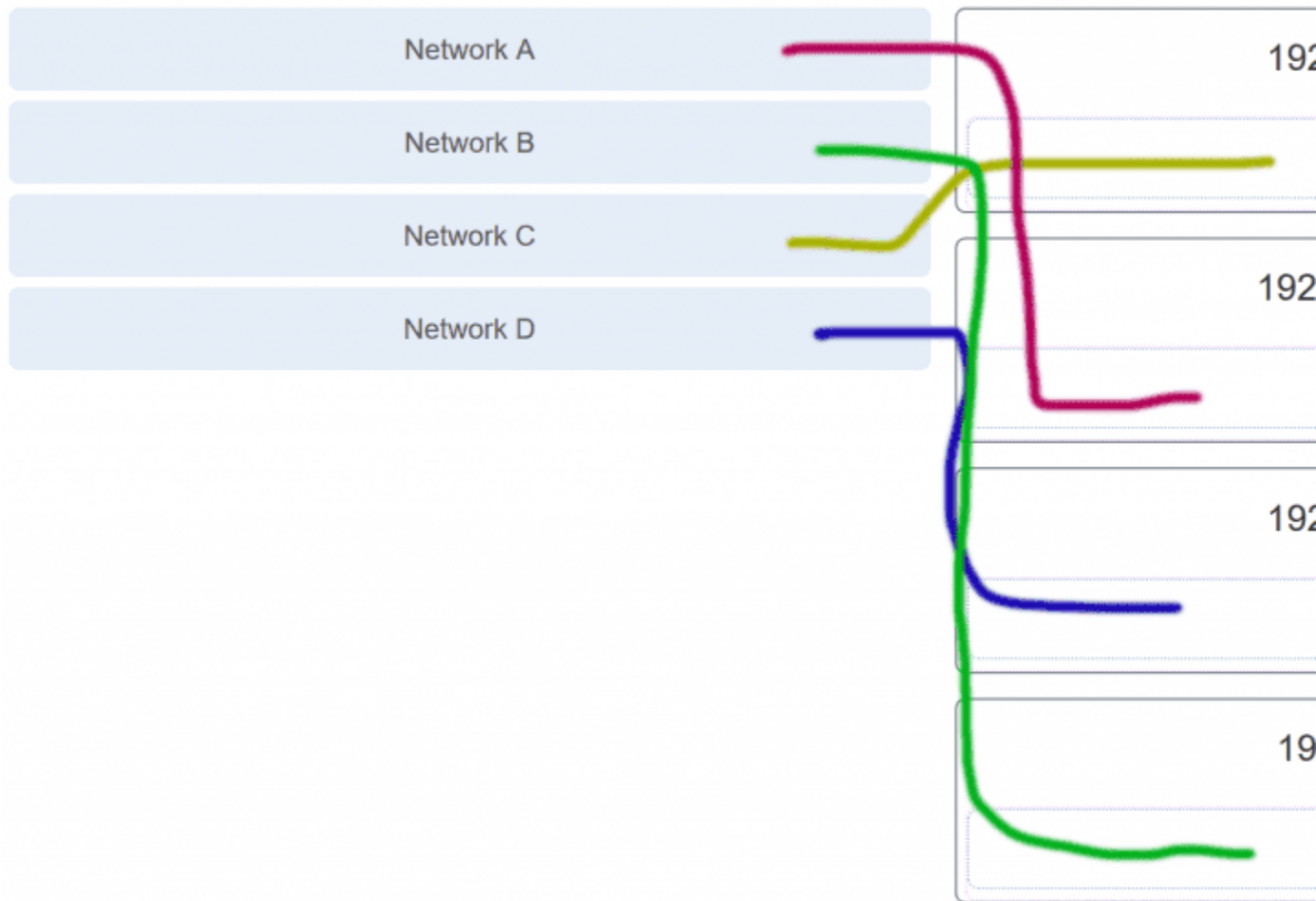
16. Which address prefix range is reserved for IPv4 multicast?

240.0.0.0 - 254.255.255.255
224.0.0.0 - 239.255.255.255*
169.254.0.0 - 169.254.255.255
127.0.0.0 - 127.255.255.255

17. Refer to the exhibit.



Match the network with the correct IP address and prefix that will satisfy the usable host addressing requirements for each network.



Explanation: Network A needs to use 192.168.0.128 /25, which yields 128 host addresses.

Network B needs to use 192.168.0.0 /26, which yields 64 host addresses.

Network C needs to use 192.168.0.96 /27, which yields 32 host addresses.

Network D needs to use 192.168.0.80/30, which yields 4 host addresses.

18. A high school in New York (school A) is using videoconferencing technology to establish student interactions with another high school (school B) in Russia. The videoconferencing is conducted between two end devices through the Internet. The network administrator of school A configures the

end device with the IP address 209.165.201.10. The administrator sends a request for the IP address for the end device in school B and the response is 192.168.25.10. Neither school is using a VPN. The administrator knows immediately that this IP will not work. Why?

This is a loopback address.

This is a link-local address.

This is a private IP address.*

There is an IP address conflict.

19. Which three addresses are valid public addresses? (Choose three.)

198.133.219.17*

192.168.1.245

10.15.250.5

128.107.12.117*

172.31.1.25

64.104.78.227*

Explanation: The ranges of private IPv4 addresses are as follows:

10.0.0.0 – 10.255.255.255

172.16.0.0 – 172.31.255.255

192.168.0.0 – 192.168.255.255

20. A message is sent to all hosts on a remote network. Which type of message is it?

limited broadcast

multicast

directed broadcast*

unicast

Explanation: A directed broadcast is a message sent to all hosts on a specific network. It is useful for sending a broadcast to all hosts on a nonlocal network. A multicast message is a message sent to a selected group of hosts that are part of a subscribing multicast group. A limited broadcast is used for a communication that is limited to the hosts on the local network. A unicast message is a message sent from one host to another.

21. A company has a network address of 192.168.1.64 with a subnet mask of 255.255.255.192. The company wants to create two subnetworks that would contain 10 hosts and 18 hosts respectively. Which two networks would achieve that? (Choose two.)

192.168.1.16/28
192.168.1.64/27*
192.168.1.128/27
192.168.1.96/28*
192.168.1.192/28

22. Which address is a valid IPv6 link-local unicast address?

FEC8:1::FFFF
FD80::1:1234
FE80::1:4545:6578:ABC1*
FE0A::100:7788:998F
FC90:5678:4251:FFFF

Explanation: IPv6 LLAs are in the fe80::/10 range. The /10 indicates that the first 10 bits are 1111 1110 10xx xxxx. The first hextet has a range of 1111 1110 1000 0000 (fe80) to 1111 1110 1011 1111 (febf).

23. Which of these addresses is the shortest abbreviation for the IP address: 3FFE:1044:0000:0000:00AB:0000:0000:0057?

3FFE:1044::AB::57
3FFE:1044::00AB::0057
3FFE:1044:0:0:AB::57*
3FFE:1044:0:0:00AB::0057
3FFE:1044:0000:0000:00AB::57
3FFE:1044:0000:0000:00AB::0057

Explanation: The rules for reducing the notation of IPv6 addresses are:
1. Omit any leading 0s (zeros) in any hextet.
2. Replace any single, contiguous string of one or more 16-bit hextets consisting of all zeros with a double colon (::) .
3. The double colon (::) can only be used once within an address.

24. A network administrator has received the IPv6 prefix 2001:DB8::/48 for subnetting. Assuming the administrator does not subnet into the interface ID portion of the address space, how many subnets can the administrator create from the /48 prefix?

16

256

4096

65536*

Explanation: With a network prefix of 48, there will be 16 bits available for subnetting because the interface ID starts at bit 64. Sixteen bits will yield 65536 subnets.

25. Given IPv6 address prefix 2001:db8::/48, what will be the last subnet that is created if the subnet prefix is changed to /52?

2001:db8:0:f00::/52

2001:db8:0:8000::/52

2001:db8:0:f::/52

2001:db8:0:f000::/52*

Explanation: Prefix 2001:db8::/48 has 48 network bits. If we subnet to a /52, we are moving the network boundary four bits to the right and creating 16 subnets. The first subnet is 2001:db8::/52 the last subnet is 2001:db8:0:f000::/52.

26. Consider the following range of addresses:

2001:0DB8:BC15:00A0:0000::

2001:0DB8:BC15:00A1:0000::

2001:0DB8:BC15:00A2:0000::

...

2001:0DB8:BC15:00AF:0000::

The prefix-length for the range of addresses is **/60**.

Explanation: All the addresses have the part 2001:0DB8:BC15:00A in common. Each number or letter in the address represents 4 bits, so the prefix-length is /60.

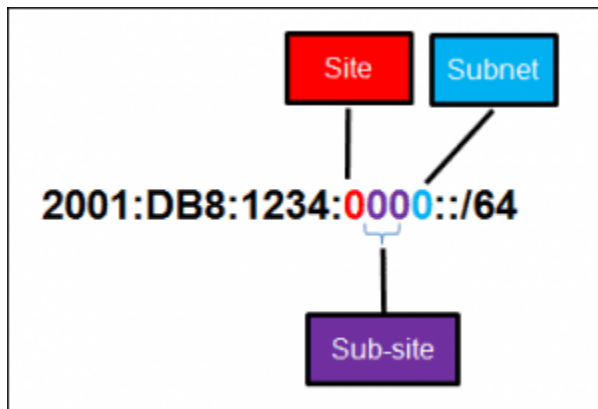
27. What type of IPv6 address is FE80::1?

loopback

link-local*

multicast
global unicast

28. Refer to the exhibit.



A company is deploying an IPv6 addressing scheme for its network. The company design document indicates that the subnet portion of the IPv6 addresses is used for the new hierarchical network design, with the site subsection to represent multiple geographical sites of the company, the sub-site section to represent multiple campuses at each site, and the subnet section to indicate each network segment separated by routers. With such a scheme, what is the maximum number of subnets achieved per sub-site?

0

4

16*

256

Explanation: Because only one hexadecimal character is used to represent the subnet, that one character can represent 16 different values 0 through F.

29. What is used in the EUI-64 process to create an IPv6 interface ID on an IPv6 enabled interface?

the MAC address of the IPv6 enabled interface*

a randomly generated 64-bit hexadecimal address

an IPv6 address that is provided by a DHCPv6 server
an IPv4 address that is configured on the interface

Explanation: The EUI-64 process uses the MAC address of an interface to construct an interface ID (IID). Because the MAC address is only 48 bits in length, 16 additional bits (FF:FE) must be added to the MAC address to create the full 64-bit interface ID.

30. What is the prefix for the host address 2001:DB8:BC15:A:12AB::1/64?

2001:DB8:BC15

2001:DB8:BC15:A*

2001:DB8:BC15:A:1

2001:DB8:BC15:A:12

31. An IPv6 enabled device sends a data packet with the destination address of FF02::1. What is the target of this packet?

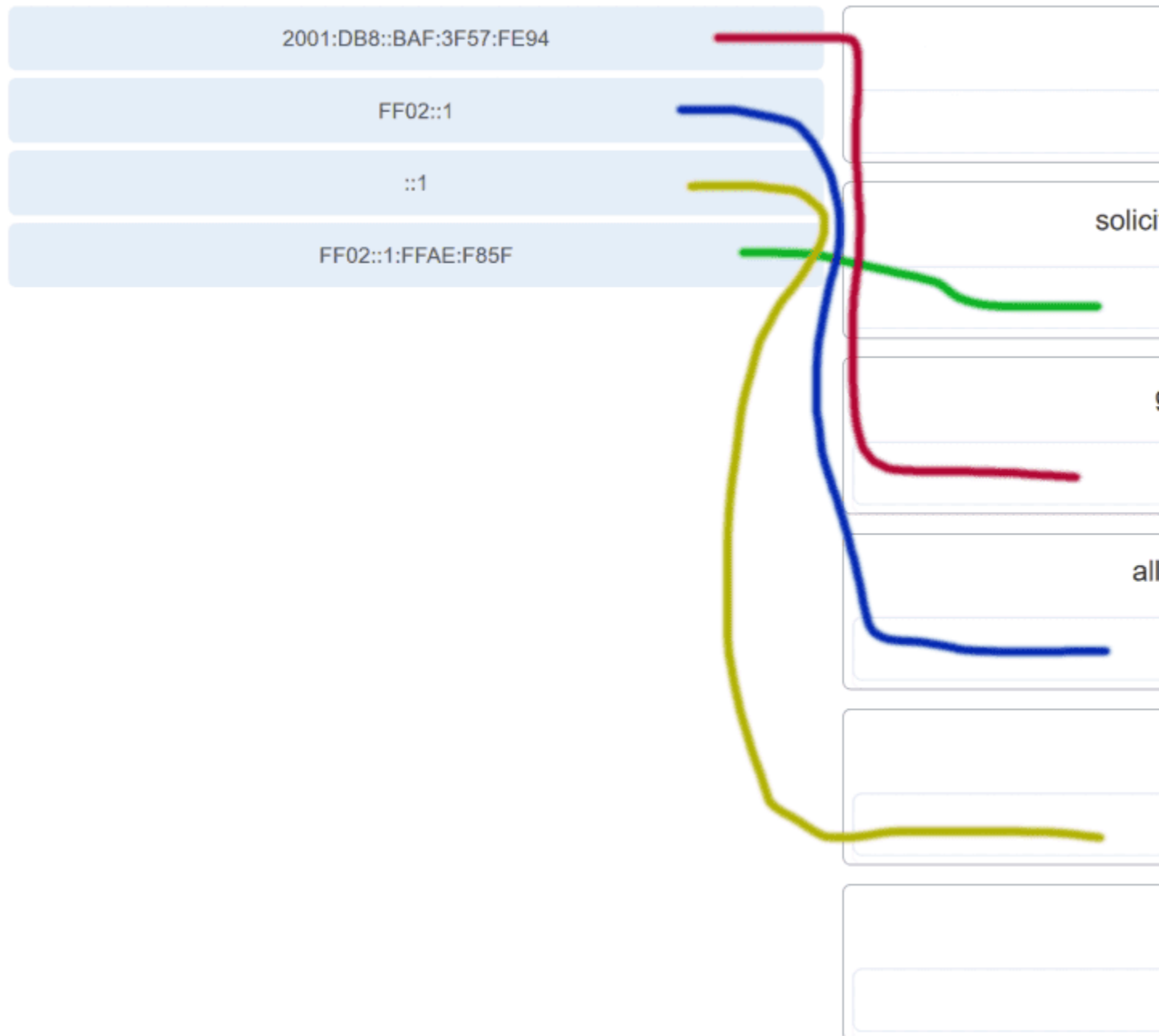
the one IPv6 device on the link that has been uniquely configured with this address

all IPv6 enabled devices on the local link or network*

only IPv6 DHCP servers

only IPv6 configured routers

32. Match the IPv6 address with the IPv6 address type. (Not all options are used.)



Explanation: FF02::1:FFAE:F85F is a solicited node multicast address. 2001:DB8::BAF:3F57:FE94 is a global unicast address. FF02::1 is the all node multicast address. Packets sent to this address will be received by all IPv6 hosts on the local link. ::1 is the IPv6 loopback address. There are no examples of link local or unique local addresses provided.

33. Which IPv6 prefix is reserved for communication between devices on the same link?

FC00::/7
2001::/32
FE80::/10*
FDFF::/7

Explanation: IPv6 link-local unicast addresses are in the FE80::/10 prefix range and are not routable. They are used only for communications between devices on the same link.

34. Which type of IPv6 address refers to any unicast address that is assigned to multiple hosts?

unique local
global unicast
link-local

anycast*

35. What are two types of IPv6 unicast addresses? (Choose two.)

multicast
loopback*
link-local*

anycast
broadcast

Explanation: Multicast, anycast, and unicast are types of IPv6 addresses. There is no broadcast address in IPv6. Loopback and link-local are specific types of unicast addresses.

36. Which service provides dynamic global IPv6 addressing to end devices without using a server that keeps a record of available IPv6 addresses?

stateful DHCPv6
SLAAC*
static IPv6 addressing
stateless DHCPv6

Explanation: Using stateless address autoconfiguration (SLAAC), a PC can solicit a router and receive the prefix length of the network. From this information the PC can then create its own IPv6 global unicast address.

37. Which protocol supports Stateless Address Autoconfiguration (SLAAC) for dynamic assignment of IPv6 addresses to a host?

ARIPv6

DHCPv6

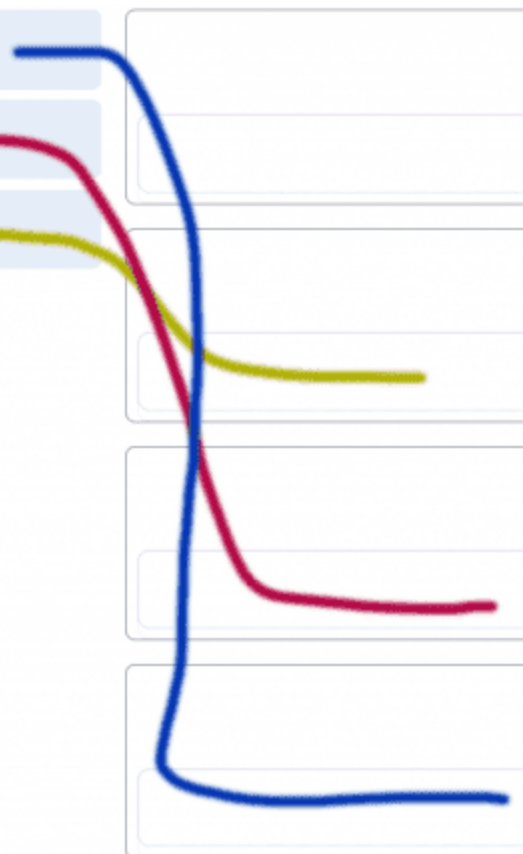
ICMPv6*

UDP

Explanation: SLAAC uses ICMPv6 messages when dynamically assigning an IPv6 address to a host. DHCPv6 is an alternate method of assigning an IPv6 addresses to a host. ARIPv6 does not exist. Neighbor Discovery Protocol (NDP) provides the functionality of ARP for IPv6 networks. UDP is the transport layer protocol used by DHCPv6.

38. Three methods allow IPv6 and IPv4 to co-exist. Match each method with its description. (Not all options are used.)

The IPv4 packets and IPv6 packets coexist in the same network.	<input type="checkbox"/>
The IPv6 packet is transported inside an IPv4 packet.	<input type="checkbox"/>
IPv6 packets are converted into IPv4 packets, and vice versa.	<input type="checkbox"/>
	<input type="checkbox"/>
	<input type="checkbox"/>
	<input type="checkbox"/>



39. A technician uses the ping 127.0.0.1 command. What is the technician testing?

the TCP/IP stack on a network host*

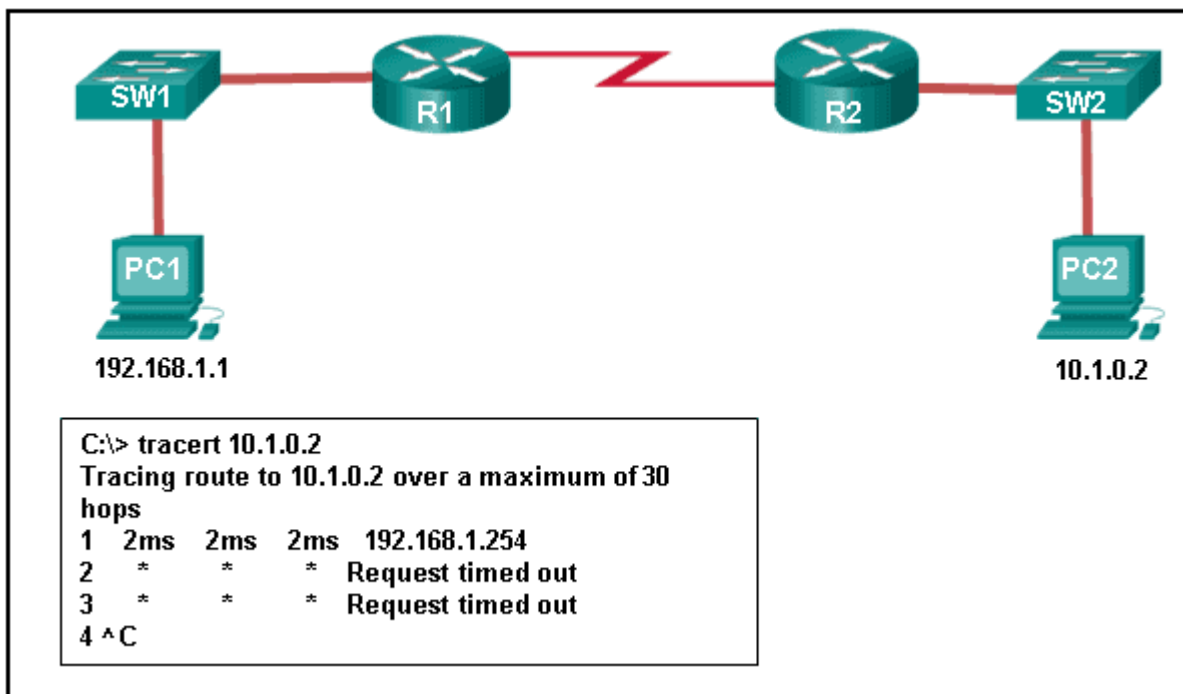
connectivity between two adjacent Cisco devices

connectivity between a PC and the default gateway

connectivity between two PCs on the same network

physical connectivity of a particular PC and the network

40. Refer to the exhibit.



An administrator is trying to troubleshoot connectivity between PC1 and PC2 and uses the tracert command from PC1 to do it. Based on the displayed output, where should the administrator begin troubleshooting?

PC2

R1*

SW2

R2

SW1

41. Which protocol is used by the traceroute command to send and receive echo-requests and echo-replies?

SNMP

ICMP*

Telnet

TCP

Explanation: Traceroute uses the ICMP (Internet Control Message Protocol) to send and receive echo-request and echo-reply messages.

42. Which ICMPv6 message is sent when the IPv6 hop limit field of a packet is decremented to zero and the packet cannot be forwarded?

network unreachable

time exceeded*

protocol unreachable

port unreachable

43. A user executes a traceroute over IPv6. At what point would a router in the path to the destination device drop the packet?

when the value of the Hop Limit field reaches 255

when the value of the Hop Limit field reaches zero*

when the router receives an ICMP time exceeded message

when the target host responds with an ICMP echo reply message

44. What is the purpose of ICMP messages?

to inform routers about network topology changes

to ensure the delivery of an IP packet

to provide feedback of IP packet transmissions*

to monitor the process of a domain name to IP address resolution

Explanation: The purpose of ICMP messages is to provide feedback about issues that are related to the processing of IP packets.

45. What source IP address does a router use by default when the traceroute command is issued?

the highest configured IP address on the router

a loopback IP address

the IP address of the outbound interface*

the lowest configured IP address on the router

Explanation: When sending an echo request message, a router will use the IP address of the exit interface as the source IP address. This default behavior can be changed by using an extended ping and specifying a specific source IP address.

46. Match each description with an appropriate IP address. (Not all options are used.)

a private address	
a loopback address	
an experimental address	
a TEST-NET address	
a link-local address	

Explanation: Link-Local addresses are assigned automatically by the OS environment and are located in the block 169.254.0.0/16. The private addresses ranges are 10.0.0.0/8, 172.16.0.0/12, and 192.168.0.0/16. TEST-NET addresses belong to the range 192.0.2.0/24. The addresses in the block 240.0.0.0 to 255.255.255.254 are reserved as experimental addresses. Loopback addresses belong to the block 127.0.0.0/8.

47. A user issues a ping 192.135.250.103 command and receives a response that includes a code of 1. What does this code represent?

host unreachable*

protocol unreachable

port unreachable

network unreachable

48. Which subnet would include the address 192.168.1.96 as a usable host address?

192.168.1.64/26*

192.168.1.32/27

192.168.1.32/28

192.168.1.64/29

Explanation: For the subnet of 192.168.1.64/26, there are 6 bits for host addresses, yielding 64 possible addresses. However, the first and last subnets are the network and broadcast addresses for this subnet. Therefore, the range of host addresses for this subnet is 192.168.1.65 to 192.168.1.126. The other subnets do not contain the address 192.168.1.96 as a valid host address.

49. Open the PT Activity. Perform the tasks in the activity instructions and then answer the question.



PT Activity: 00:00:50

Open the command prompt on PC2 and use the **ipv6config** command to note the IPv6 address of PC2.

Open the command prompt on PC1 and trace the route to PC2.

What are the three IPv6 addresses displayed when the route from PC1 to PC2 is traced? (Choose three.)

Return to the assessment to answer the question.

What are the three IPv6 addresses displayed when the route from PC1 to PC2 is traced? (Choose three.)

2001:DB8:1:1::1*

2001:DB8:1:1::A

2001:DB8:1:2::2

2001:DB8:1:2::1*

2001:DB8:1:3::1

2001:DB8:1:3::2*

2001:DB8:1:4::1

Explanation: Using the `ipv6config` command on PC2 displays the IPv6 address of PC2, which is 2001:DB8:1:4::A. The IPV6 link-local address, FE80::260:70FF:FE34:6930, is not used in route tracing. Using the `tracert 2001:DB8:1:4::A` command on PC1 displays four addresses: 2001:DB8:1:1::1, 2001:DB8:1:2::1, 2001:DB8:1:3::2, and 2001:DB8:1:4::A.

50. A host is transmitting a broadcast. Which host or hosts will receive it?

all hosts in the same subnet*

a specially defined group of hosts

the closest neighbor on the same network
all hosts on the Internet

51. A host is transmitting a unicast. Which host or hosts will receive it?

one specific host*

a specially defined group of hosts
all hosts on the Internet
the closest neighbor on the same network

52. A user issues a ping 2001:db8:FACE:39::10 command and receives a response that includes a code of 3. What does this code represent?

address unreachable*

network unreachable
host unreachable
protocol unreachable

53. A host is transmitting a multicast. Which host or hosts will receive it?

a specially defined group of hosts*

one specific host
all hosts with the same IP address
the closest neighbor on the same network

54. A host is transmitting a multicast. Which host or hosts will receive it?

a specially defined group of hosts*

one specific host
directly connected network devices
the closest neighbor on the same network

55. A host is transmitting a multicast. Which host or hosts will receive it?

a specially defined group of hosts*

one specific host
all hosts with the same IP address
all hosts on the Internet

56. A host is transmitting a multicast. Which host or hosts will receive it?

a specially defined group of hosts*

one specific host

directly connected network devices

all hosts on the Internet

57. A host is transmitting a multicast. Which host or hosts will receive it?

a specially defined group of hosts*

all hosts in the same subnet

directly connected network devices

the closest neighbor on the same network

58. A host is transmitting a broadcast. Which host or hosts will receive it?

all hosts in the same subnet*

one specific host

the closest neighbor on the same network

directly connected network devices

59. A host is transmitting a broadcast. Which host or hosts will receive it?

all hosts in the same subnet*

one specific host

all hosts on the Internet

directly connected network devices

60. Which is the compressed format of the IPv6 address

2001:0db8:0000:0000:0000:a0b0:0008:0001?

2001:db8::a0b0:8:1*

2001:db8::ab8:1:0:1000

2001:db80:0:1::80:1

2001:db80:::1::80:1

61. Which is the compressed format of the IPv6 address

fe80:09ea:0000:2200:0000:0000:0fe0:0290?

fe80:9ea:0:2200::fe0:290*

fe80:9:20::b000:290

fe80:9ea0::2020:0:bf:e0:9290

fe80:9ea0::2020::bf:e0:9290

62. Which is the compressed format of the IPv6 address

2002:0042:0010:c400:0000:0000:0000:0909?

2002:42:10:c400::909*

200:420:110:c4b::910:0:90

2002:4200::25:1090:0:99

2002:42::25:1090:0:99

63. Which is the compressed format of the IPv6 address

2001:0db8:0000:0000:0ab8:0001:0000:1000?

2001:db8::ab8:1:0:1000*

2001:db8::a0b0:8:1

2001:db8:1::ab8:0:1

2001:db8:0:1::8:1

64. Which is the compressed format of the IPv6 address

2002:0420:00c4:1008:0025:0190:0000:0990?

2002:420:c4:1008:25:190::990*

2002:42:10:c400::909

2002:4200::25:1090:0:99

2002:42::25:1090:0:99

65. Which is the compressed format of the IPv6 address

2001:0db8:0000:0000:0000:a0b0:0008:0001?

2001:db8::a0b0:8:1*

2001:db8:1::ab8:0:1

2001:db8::ab8:1:0:1000

2001:db8:0:1::8:1

66. Which is the compressed format of the IPv6 address

fe80:0000:0000:0000:0220:0b3f:f0e0:0029?

fe80::220:b3f:f0e0:29*

fe80:9ea:0:2200::fe0:290

fe80:9ea0::2020:0:bf:e0:9290

fe80:9ea0::2020::bf:e0:9290

67. Which is the compressed format of the IPv6 address

2001:0db8:0000:0000:0000:a0b0:0008:0001?

2001:db8::a0b0:8:1*

2001:db8::ab8:1:0:1000

2001:db80:0:1::80:1

2001:db8:0:1::8:1

68. Which is the compressed format of the IPv6 address

2002:0042:0010:c400:0000:0000:0000:0909?

2002:42:10:c400::909*

2002:4200::25:1090:0:99

2002:420:c4:1008:25:190::990

2002:42::25:1090:0:99

69. Which is the compressed format of the IPv6 address

fe80:09ea:0000:2200:0000:0000:0fe0:0290?

fe80:9ea:0:2200::fe0:290*

fe80:9ea0::2020:0:bf:e0:9290

fe80::220:b3f:f0e0:29

fe80::0220:0b3f:f0e0:0029

70. A user issues a ping 2001:db8:FACE:39::10 command and receives a response that includes a code of 2 . What does this code represent?

beyond scope of the source address*

communication with the destination administratively prohibited

address unreachable

no route to destination

71. A user issues a ping 192.135.250.103 command and receives a response that includes a code of 1. What does this code represent?

host unreachable*

beyond scope of the source address

address unreachable

communication with the destination administratively prohibited

72. A user issues a ping fe80:65ab:dcc1::100 command and receives a response that includes a code of 3. What does this code represent?

address unreachable*

communication with the destination administratively prohibited
beyond scope of the source address
no route to destination

73. A user issues a ping 10.10.14.67 command and receives a response that includes a code of 0. What does this code represent?

network unreachable*

protocol unreachable
port unreachable
host unreachable

74. A user issues a ping fe80:65ab:dcc1::100 command and receives a response that includes a code of 4. What does this code represent?

port unreachable*

host unreachable
protocol unreachable
network unreachable

75. A user issues a ping 198.133.219.8 command and receives a response that includes a code of 0. What does this code represent?

network unreachable*

protocol unreachable
port unreachable
host unreachable

76. A user issues a ping 2001:db8:3040:114::88 command and receives a response that includes a code of 4. What does this code represent?

port unreachable*

host unreachable
protocol unreachable
network unreachable

77. A user issues a ping 2001:db8:FACE:39::10 command and receives a response that includes a code of 2. What does this code represent?

beyond scope of the source address*

host unreachable

protocol unreachable

network unreachable

Modules 11 - 13: IP Addressing Exam

Answers (Additional)

1. What is the prefix length notation for the subnet mask 255.255.255.224?

/25

/26

/27*

/28

2. How many valid host addresses are available on an IPv4 subnet that is configured with a /26 mask?

254

190

192

62*

64

3. Which subnet mask would be used if 5 host bits are available?

255.255.255.0

255.255.255.128

255.255.255.224*

255.255.255.240

4. A network administrator subnets the 192.168.10.0/24 network into subnets with /26 masks. How many equal-sized subnets are created?

1

2

4*

8

16

64

5. What subnet mask is represented by the slash notation /20?

255.255.255.248

255.255.224.0

255.255.240.0*

255.255.255.0

255.255.255.192

6. Which statement is true about variable-length subnet masking?

Each subnet is the same size.

The size of each subnet may be different, depending on requirements.*

Subnets may only be subnetted one additional time.

Bits are returned, rather than borrowed, to create additional subnets.

7. Why does a Layer 3 device perform the ANDing process on a destination IP address and subnet mask?

to identify the broadcast address of the destination network

to identify the host address of the destination host

to identify faulty frames

to identify the network address of the destination network*

8. How many usable IP addresses are available on the 192.168.1.0/27 network?

256

254

62

30*

16

32

9. Which subnet mask would be used if exactly 4 host bits are available?

255.255.255.224

255.255.255.128

255.255.255.240*

255.255.255.248

10. Which two parts are components of an IPv4 address? (Choose two.)

subnet portion

network portion*

logical portion

host portion*

physical portion

broadcast portion

11. If a network device has a mask of /26, how many IP addresses are available for hosts on this network?

64

30

62*

32

16

14

12. What does the IP address 172.17.4.250/24 represent?

network address

multicast address

host address*

broadcast address

13. If a network device has a mask of /28, how many IP addresses are available for hosts on this network?

256

254

62

32

16

14*

14. What is the purpose of the subnet mask in conjunction with an IP address?

to uniquely identify a host on a network
to identify whether the address is public or private
to determine the subnet to which the host belongs*
to mask the IP address to outsiders

15. A network administrator is variably subnetting a network. The smallest subnet has a mask of 255.255.255.224. How many usable host addresses will this subnet provide?

2
6
14
30*
62

16. What is indicated by a successful ping to the ::1 IPv6 address?

The host is cabled properly.
The default gateway address is correctly configured.
All hosts on the local link are available.
The link-local address is correctly configured.

IP is properly installed on the host.*

17. What is the most compressed representation of the IPv6 address 2001:0000:0000:abcd:0000:0000:0000:0001?

2001:0:abcd::1
2001:0:0:abcd::1*
2001::abcd::1
2001:0000:abcd::1
2001::abcd:0:1

18. What is the purpose of the command ping ::1?

It tests the internal configuration of an IPv6 host.*

It tests the broadcast capability of all hosts on the subnet.
It tests the multicast connectivity to all hosts on the subnet.
It tests the reachability of the default gateway for the network.

19. At a minimum, which address is required on IPv6-enabled interfaces?

link-local*

unique local

site local

global unicast

20. What is the interface ID of the IPv6 address 2001:DB8::1000:A9CD:47FF:FE57:FE94/64?

FE94

FE57:FE94

47FF:FE57:FE94

A9CD:47FF:FE57:FE94*

1000:A9CD:47FF:FE57:FE94

21. What are three parts of an IPv6 global unicast address? (Choose three.)

an interface ID that is used to identify the local network for a particular host

a global routing prefix that is used to identify the network portion of the address that has been provided by an ISP*

a subnet ID that is used to identify networks inside of the local enterprise site*

a global routing prefix that is used to identify the portion of the network address provided by a local administrator

an interface ID that is used to identify the local host on the network*

22. What is the valid most compressed format possible of the IPv6 address

2001:0DB8:0000:AB00:0000:0000:0000:1234?

2001:DB8:0:AB00::1234*

2001:DB8:0:AB::1234

2001:DB8::AB00::1234

2001:DB8:0:AB:0:1234

23. What is the prefix associated with the IPv6 address 2001:CA48:D15:EA:CC44::1/64?

2001::/64

2001:CA48::/64

2001:CA48:D15:EA::/64*

2001:CA48:D15:EA:CC44::/64

24. What type of address is automatically assigned to an interface when IPv6 is enabled on that interface?

global unicast

link-local*

loopback

unique local

25. Which IPv6 network prefix is only intended for local links and can not be routed?

2001::/3

FC00::/7

FE80::/10*

FEC0::/10

26. Your organization is issued the IPv6 prefix of 2001:0000:130F::/48 by your service provider. With this prefix, how many bits are available for your organization to create subnetworks if interface ID bits are not borrowed?

8

16*

80

128

27. What is the subnet address for the IPv6 address 2001:D12:AA04:B5::1/64?

2001::/64

2001:D12::/64

2001:D12:AA04::/64

2001:D12:AA04:B5::/64*

28. Which type of IPv6 address is not routable and used only for communication on a single subnet?

global unicast address

link-local address*

loopback address

unique local address

unspecified address

29. Which address type is not supported in IPv6?

private
multicast
unicast

broadcast*

30. What is the minimum configuration for a router interface that is participating in IPv6 routing?

to have only a link-local IPv6 address*

to have both an IPv4 and an IPv6 address
to have a self-generated loopback address
to have both a link-local and a global unicast IPv6 address
to have only an automatically generated multicast IPv6 address

31. A user calls to report that a PC cannot access the internet. The network technician asks the user to issue the command ping 127.0.0.1 in a command prompt window. The user reports that the result is four positive replies. What conclusion can be drawn based on this connectivity test?

The PC can access the network. The problem exists beyond the local network.

The IP address obtained from the DHCP server is correct.

The PC can access the Internet. However, the web browser may not work.

The TCP/IP implementation is functional.*

32. Which command can be used to test connectivity between two devices using echo request and echo reply messages?

netstat
tracert
ICMP

Ping*

33. What field content is used by ICMPv6 to determine that a packet has expired?

TTL field
CRC field

Hop Limit field*

Time Exceeded field

34. Which protocol provides feedback from the destination host to the source host about errors in packet delivery?

ARP

BOOTP

DNS

ICMP*

35. Which utility uses the Internet Control Messaging Protocol (ICMP)?

RIP

DNS

Ping*

NTP

36. A network administrator can successfully ping the server at www.cisco.com, but cannot ping the company web server located at an ISP in another city. Which tool or command would help identify the specific router where the packet was lost or delayed?

ipconfig

netstat

telnet

tracert*

37. Which protocol is used by IPv4 and IPv6 to provide error messaging?

ICMP*

NDP

ARP

DHCP

38. What message is sent by a host to check the uniqueness of an IPv6 address before using that address?

neighbor solicitation*

ARP request

echo request

router solicitation

39. A technician is troubleshooting a network where it is suspected that a defective node in the network path is causing packets to be dropped. The technician only has the IP address of the end point device and does not have any details of the intermediate devices. What command can the technician use to identify the faulty node?

Tracert*

ping

ipconfig /flushdns

ipconfig /displaydns

40. A user who is unable to connect to the file server contacts the help desk. The helpdesk technician asks the user to ping the IP address of the default gateway that is configured on the workstation. What is the purpose for this ping command?

to obtain a dynamic IP address from the server

to request that gateway forward the connection request to the file server

to test that the host has the capability to reach hosts on other networks*

to resolve the domain name of the file server to its IP address

41. What is a function of the tracert command that differs from the ping command when they are used on a workstation?

The tracert command reaches the destination faster.

The tracert command shows the information of routers in the path.*

The tracert command sends one ICMP message to each hop in the path.

The tracert command is used to test the connectivity between two devices.

42. Which ICMP message is used by the traceroute utility during the process of finding the path between two end hosts?

redirect

ping

time exceeded*

destination unreachable

43. Which two things can be determined by using the ping command? (Choose two.)

the number of routers between the source and destination device

the IP address of the router nearest the destination device

the average time it takes a packet to reach the destination and for the response to return to the source*

the destination device is reachable through the network*

the average time it takes each router in the path between source and destination to respond

44. Which statement describes a characteristic of the traceroute utility?

It sends four Echo Request messages.

It utilizes the ICMP Source Quench messages.

It is primarily used to test connectivity between two hosts.

It identifies the routers in the path from a source host to a destination host.*