CCST Networking – Module 8 Quiz

Questions

1. With IPv4, Address Resolution Protocol (ARP) is used to learn the MAC address of a known IPv4 address. However, ARP uses a broadcast. Since IPv6 doesn't support broadcasts, what is the IPv6 alternative to ARP?

    a. Unspecified Address
    b. Solicited-Node Multicast Address
    c. Unique Local Address
    d. Link Local Address

2. What IPv6 address can be used to reach all routers (and only routers) on a local link?

    a. FE80::2
    b. FF02::1
    c. FE80::1
    d. FF02::2

3. IPv4 uses an address of 127.0.0.1 as a local loopback. What is the IPv6 local loopback address?

    a. ::1
    b. ::
    c. FF::
    d. FE80::1

4. An IPv6 link local address communicates only on one network segment. Which of the following is a valid IPv6 link local address?

    a. FF02::1
    b. FD00::1
    c. FE80::1
    d. 2001::1

Questions and Answers

1. With IPv4, Address Resolution Protocol (ARP) is used to learn the MAC address of a known IPv4 address. However, ARP uses a broadcast. Since IPv6 doesn't support broadcasts, what is the IPv6 alternative to ARP?

    a. Unspecified Address
    b. Solicited-Node Multicast Address
    c. Unique Local Address
    d. Link Local Address

    Answer: b

    Explanation: An IPv6 solicited-node multicast address ends with the last 24 bits of a corresponding IPv6 address. When an IPv6 device needs to learn the MAC address of a known IPv6 address, it can send a solicited-node multicast to ask for the MAC address information.

    Also, a solicited-node multicast address can be used to make sure no other device on a network is using a specific IPv6 address. This process is called Duplicate Address Detection (DAD).

    Video Reference: IPv6 Solicited-Node Multicast

2. What IPv6 address can be used to reach all routers (and only routers) on a local link?

    a. FE80::2
    b. FF02::1
    c. FE80::1
    d. FF02::2

    Answer: d

    Explanation: An IPv6 multicast address always begins with the hexadecimal digits of FF. A couple of commonly used IPv6 multicast addresses include: FF02::1 (which can be used to reach all nodes in a link-local scope) and FF02::2 (which can be used to reach all routers in a link-local scope).

    Video Reference: IPv6 Multicast

3. IPv4 uses an address of 127.0.0.1 as a local loopback. What is the IPv6 local loopback address?

    a. ::1
    b. ::
    c. FF::
    d. FE80::1

    Answer: a

    Explanation: An IPv6 local loopback address is also known as the "localhost" address. The loopback address can be used to verify that the IPv6 stack is operating on a device. In binary, it equates to 127 zeros followed by a one, which can be abbreviated as ::1

    Video Reference: IPv6 Loopback

4. An IPv6 link local address communicates only on one network segment. Which of the following is a valid IPv6 link local address?

    a. FF02::1
    b. FD00::1
    c. FE80::1
    d. 2001::1

    Answer: c

    Explanation: Link local addressing starts with FE80::/10. Therefore, of the above choices, only FE80::1 could be an IPv6 link local address.

    If an IPv6 address begins with an FF, then it is an IPv6 multicast address. Therefore, the FF02::1 address is an IPv6 multicast address.

    An IPv6 unique local address (which can be routed locally but not over the public Internet) starts with FC00::/7. Therefore, the FD00::1 address is an IPv6 unique local. Note that an IPv6 unique local address can begin with either an FC or FD, because the FC00::/7 requirement only mandates what the first seven bits must be. However, the eighth bit could be either a 0 or a 1, resulting in the first two hexadecimal values of an IPv6 unique local address being either FC or FD.

    An IPv6 global unicast address (which can be routed on the public Internet) begins with 2000::/3. Therefore, the 2001::1 address is an IPv6 global unicast address. Note that an IPv6 global unicast address could have either a 2 or a 3 as its first hexadecimal digit, because the 2000::/3 requirement only mandates what the first three bits must be.

However, the fourth bit could be either a 0 or a 1, resulting in the first two hexadecimal values of an IPv6 global unicast address being either 2 or 3.

Video Reference: IPv6 Link Local