

Assignment: 7

WRC078BEI040

1. How long is an IPV6 header?

An IPv6 address is 128 bits long. This length allows for a vastly larger number of unique IP addresses compared to the 32-bit IPv4 addresses. IPv6 addresses are usually represented as eight groups of four hexadecimal digits, separated by colons. For example:

2001:0db8:85a3:0000:0000:8a2e:0370:7334

To simplify, consecutive sections of zeros can be abbreviated with '::', but this can only be done.

2. What are the different fields in the header? What is the purpose of each header field?

Version (4 bits): Indicates the IP version (6 for IPv6).

Purpose: Ensures that the packet is processed according to IPv6 rules.

Traffic Class (8 bits): Used for QoS (Quality of Service) to prioritize certain types of traffic.

Purpose: Manages packet priority for quality of service.

Flow Label (20 bits): Used for special handling of packets requiring specific processing by routers.

Purpose: Facilitates the handling of packets that require special processing.

Payload Length (16 bits): Indicates the length of the payload (data) following the header.

Purpose: Specifies the size of the data portion of the packet.

Next Header (8 bits): Identifies the type of header immediately following the IPv6 header (e.g., TCP, UDP).

Purpose: Identifies the type of content carried after the IPv6 header.

Hop Limit (8 bits): Specifies the maximum number of hops (routers) a packet can pass through. Similar to the TTL field in IPv4.

Purpose: Prevents packets from circulating indefinitely by limiting their lifespan.

Source Address (128 bits): The IPv6 address of the sender.

Purpose: Identifies the origin of the packet.

Destination Address (128 bits): The IPv6 address of the receiver.

Purpose: Identifies the intended recipient of the packet.