 Each host and router has an ARP table in its memory. What are the contents of this table?

Step 1:

When only the host's IP address is available, the Address Resolution Protocol (ARP) is used to determine the host's Link Layer (MAC) address. Each MAC address is correlated with its matching IP address using the ARP table.

Step 2:

The IP address and MAC address of the devices are recorded in the ARP Table (source and destination device). The IP address and MAC address of the source and destination devices must both be recorded in an ARP table in order for two devices to communicate.

The MAC and IP address pairings of the network's devices make up the majority of the information in an ARP table. Additionally, it contains other important details like how long the ARP entry should be kept in the database and the exact interface a MAC address is attached to.

The Ethernet frame begins with an 8-byte preamble field. The purpose of the first 7 bytes is to “wake up” the receiving adapters and to synchronize their clocks to that of the sender’s clock. What are the contents of the 8 bytes? What is the purpose of the last byte?

Step 1:

An Ethernet header, which has the source and destination MAC addresses as its first two fields, comes before every Ethernet transmission. Any headers for other protocols (like Internet Protocol) that are carried in the frame are included in the payload data in the centre region of the frame.

Step 2:

Preamble (8 bytes) (8 bytes). There is an 8-byte preamble field at the start of the Ethernet frame. The preamble's first seven bytes all have the value 10101010, while its final byte has the value 10101011. The purpose of the preamble's initial seven bytes is to "wake up" the receiving adapters and synchronise them with the sender's clock. Remember that depending on the type of Ethernet LAN, adapter A intends to send the frame at 10 Mbps, 100 Mbps, or 1 Gbps. There will always be some drift from the target rate, which the other adapters on the LAN are unaware of because nothing is entirely flawless, therefore adapter A will not transmit the frame at the target rate exactly. A receiving adapter can lock onto the bits in the first 7 bytes of the preamble and lock onto adapter A's clock. Adapter B is informed that the "essential stuff" will soon begin by the first two consecutive 1s in the last two bits of the eighth byte of the preamble.