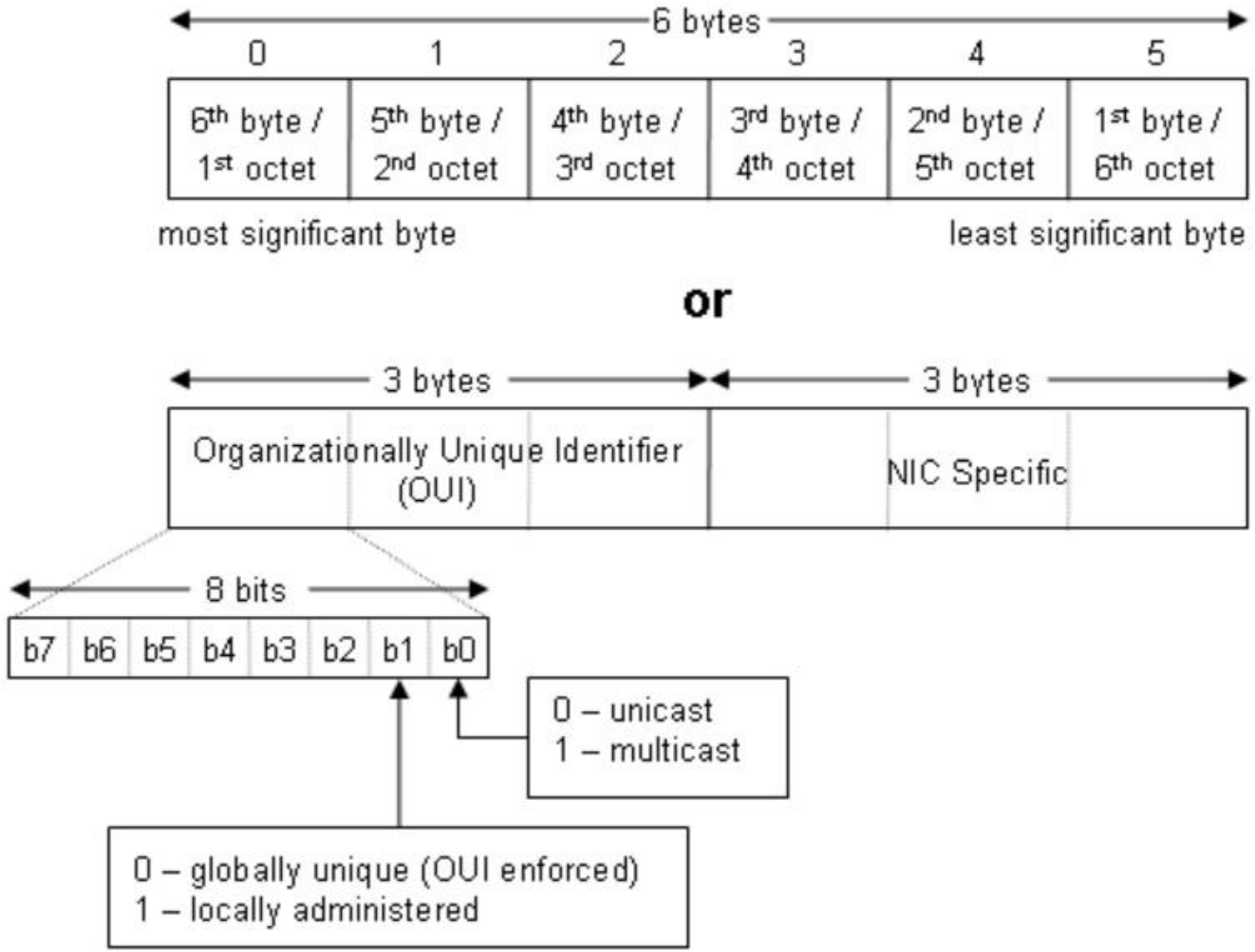
MAC Address

Media Access Control Address is a physical address which works at Data Link Layer. In this article, we will discuss about addressing in DLL, which is MAC Address.

MAC Addresses are unique 48-bits hardware number of a computer, which is embedded into network card (known as Network Interface Card) during the time of manufacturing. MAC Address is also known as Physical Address of a network device. In IEEE 802 standard, Data Link Layer is divided into two sublayers –

- **Logical Link Control(LLC) Sublayer**
- **Media Access Control(MAC) Sublayer**

MAC address is used by Media Access Control (MAC) sublayer of Data-Link Layer. MAC Address is word wide unique, since millions of network devices exists and we need to uniquely identify each.



Hypen-Hexadecimal notation

00-0a-83-b1-c0-8e

Colon-Hexadecimal notation

00:0a:83:b1:c0:8e

Period-separated hexadecimal notation

000.a83.b1c.08e

Examples of OUI:

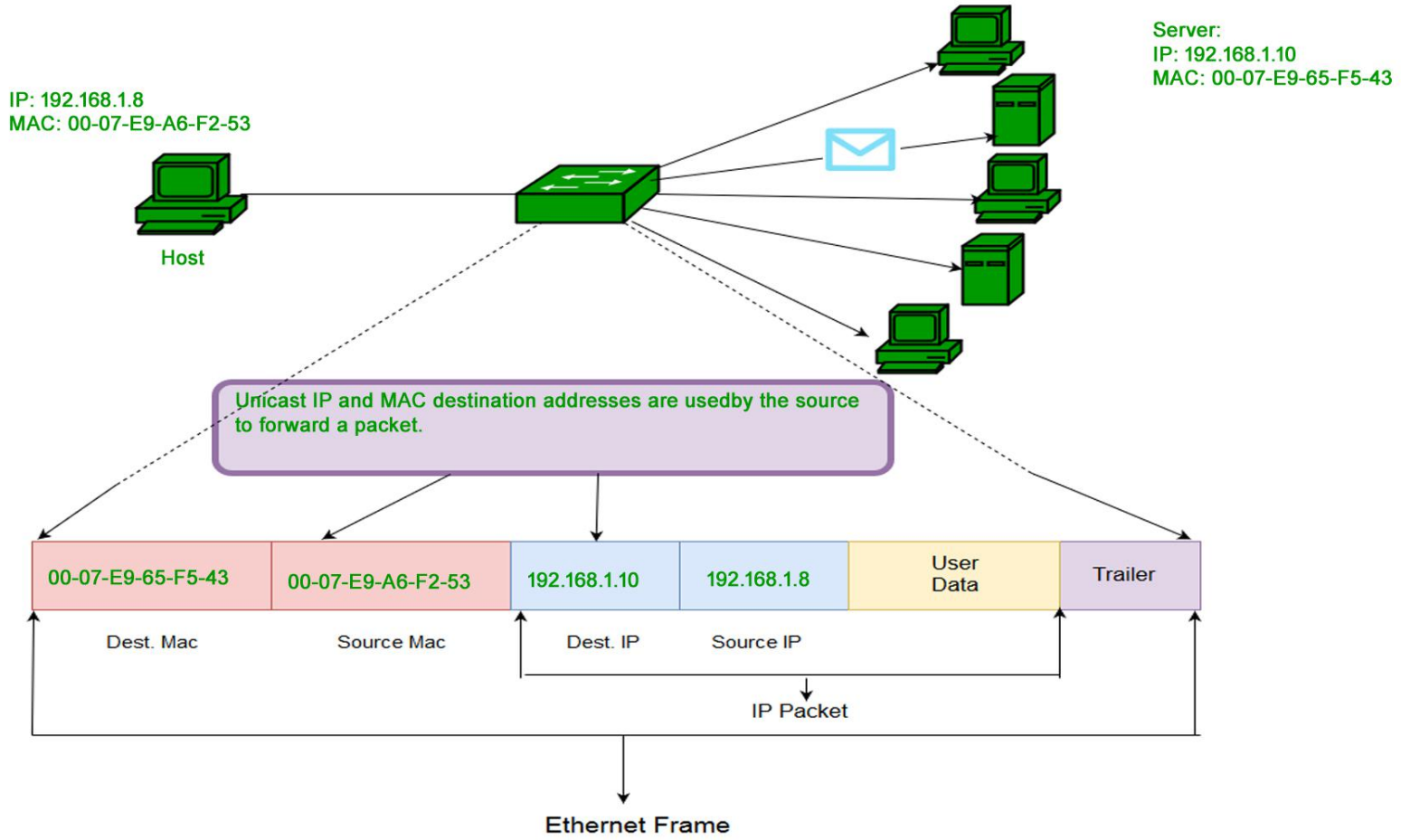
CC:46:D6 - Cisco

3C:5A:B4 - Google, Inc.

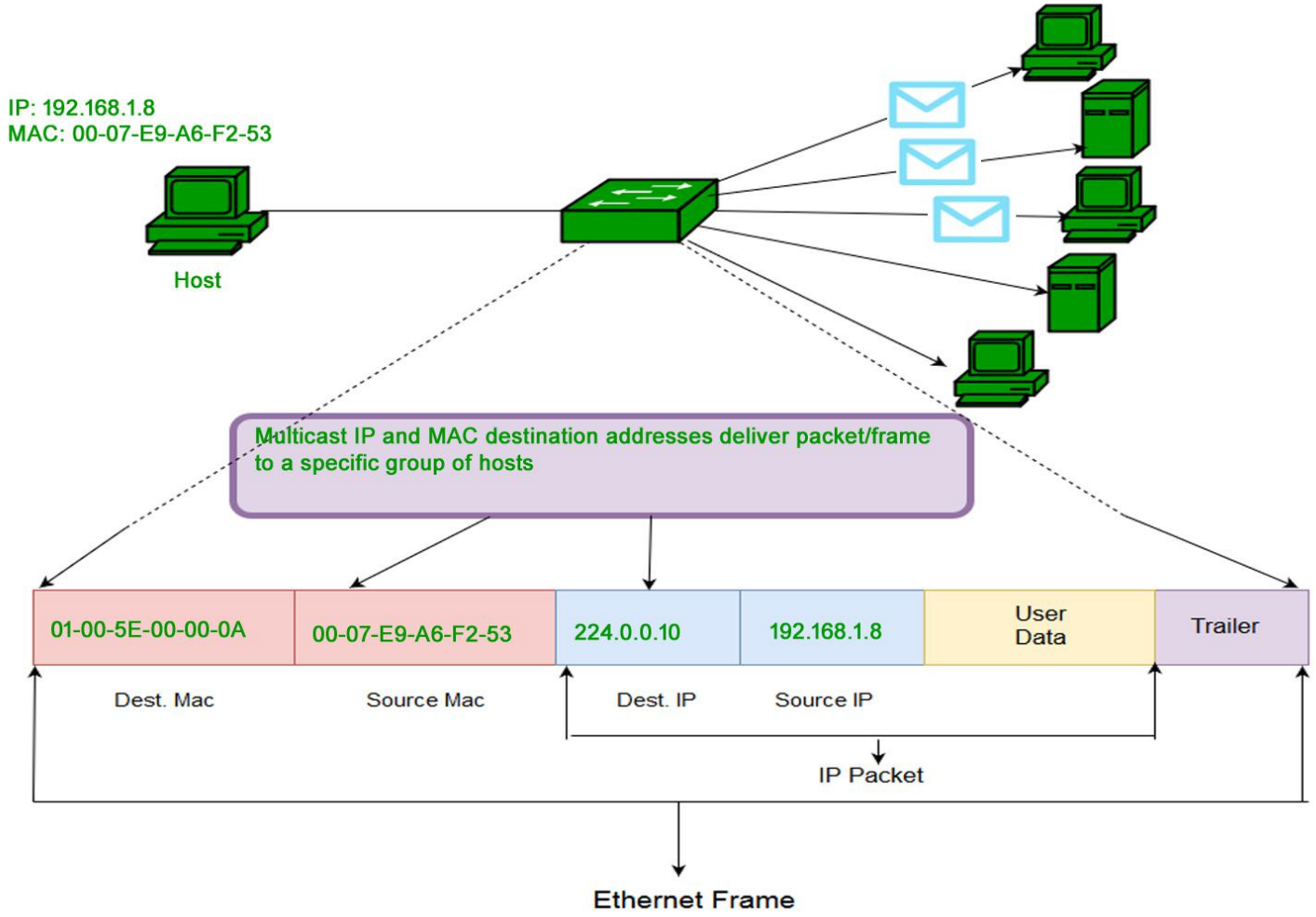
3C:D9:2B - Hewlett Packard

Types of MAC Address :

1. Unicast – A Unicast addressed frame is only sent out to the interface leading to specific NIC. If the LSB (least significant bit) of first octet of an address is set to zero, the frame is meant to reach only one receiving NIC.



2. Multicast – Multicast address allow the source to send a frame to group of devices. In Layer-2 (Ethernet) Multicast address, LSB (least significant bit) of first octet of an address is set to one. IEEE has allocated the address block 01-80-C2-xx-xx-xx (01-80-C2-00-00-00 to 01-80-C2-FF-FF-FF) for group addresses for use by standard protocols.



3. Broadcast – Broadcast is also possible on underlying layer(Data Link Layer). Ethernet frames with ones in all bits of the destination address (FF-FF-FF-FF-FF-FF) are referred as broadcast address. Frames which are destined with MAC address FF-FF-FF-FF-FF-FF will reach to every computer belong to that LAN segment.