





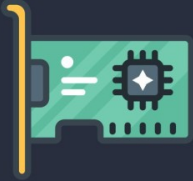
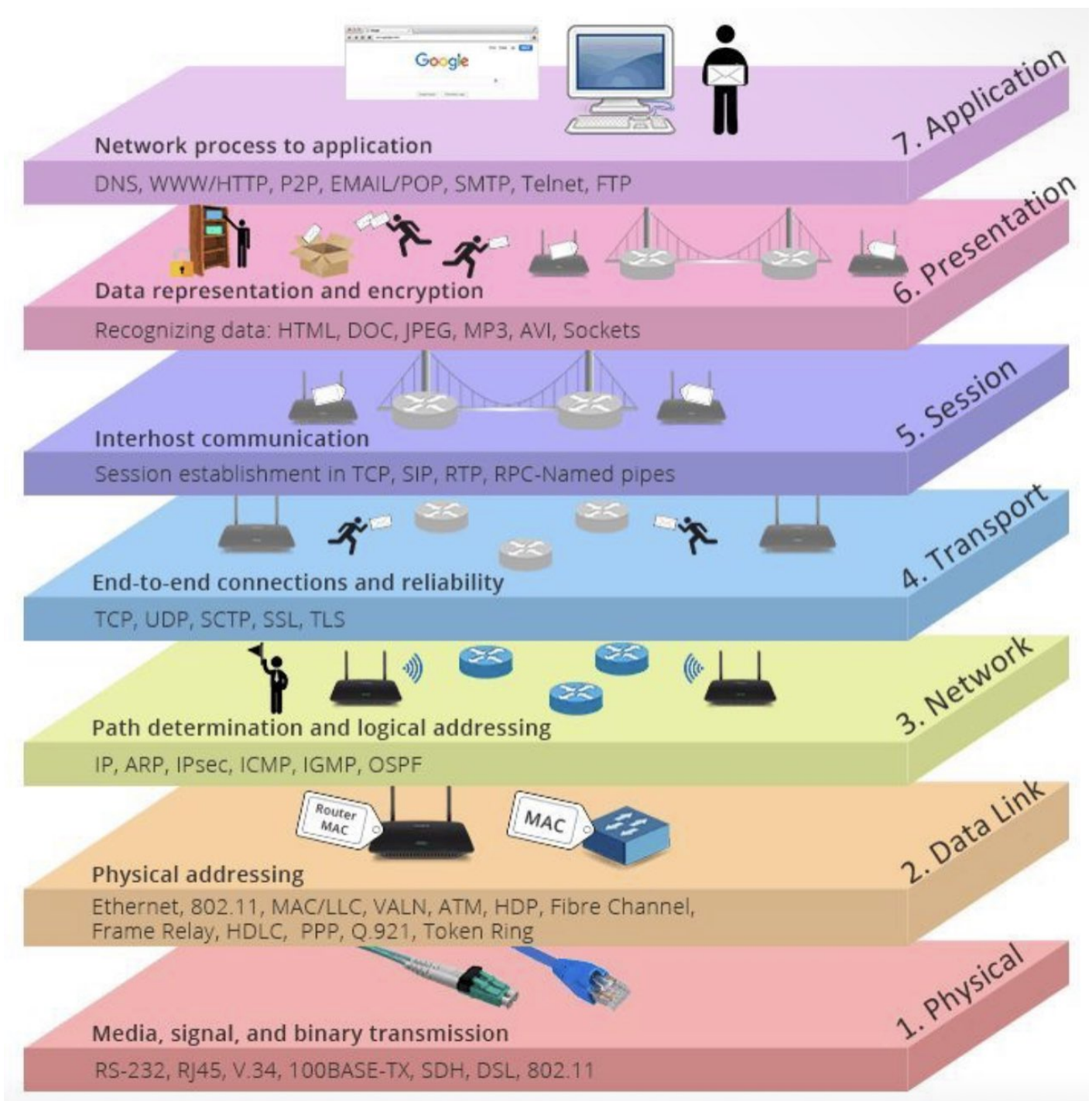


Diagrams

OSI Model

OSI Model vs TCP/IP Model

	OSI Model Layers	Function	TCP/IP Model Layers	PDUs	Hardware	Protocols
7.	Application 	<p>Closest to the end user. This is the layer through which the application and the user communicate.</p> <p>For communication between web browsers and web server, application-specific protocols such as HTTP (Hyper Text Transfer Protocol) are utilized at this layer.</p>	Application	Data	Gateways, Proxy Servers, Load Balancers, PCs, mobile phones	DNS, FTP, SNMP, DHCP, SSH, SMTP, POP3, LDAP, SMB, SSL, TLS, NetBIOS, HTTP, FTP, NFS, NTP, Telnet, IMAP, SSL, AFP, NetBIOS, RPC, SMB
6.	Presentation 	<p>This layer formats the data so that it may be understood by the receiving application. This layer can also encrypt data as it is sent and decrypt it as it is received, ensuring that only the intended recipient can read it.</p>				
5.	Session 	<p>This layer controls host-to-host communication (sessions). It creates, manages, and destroys connections between a local application (such as your web browser) and a remote application (for example, youtube).</p>				
4.	Transport 	<p>To ensure that no data is lost, the transport layer is employed for error handling and sequencing. This layer also provides host-to-host communication also known as end-to-end communication.</p>	Transport	Segment	Routers, Layer 3 Switches, Brouters	TCP, UDP, RTP, SCTP, DCCP
3.	Network 	<p>The Network layer connects end hosts on different networks (i.e. outside of your LAN). This layer handles logical addressing using IP addresses.</p>	Internet	Packet		ICMP, IGMP, IPsec, NAT
2.	Data Link 	<p>This layer facilitates node-to-node communication and data transfer (for example, pc to switch, switch to router and router to router). The physical address (MAC Address) is appended to the data at this layer, this includes the source and destination MAC addresses.</p>	Network Access Or Link Layer	Frame	Switches, Bridges, WiFi Access Points	ARP, Ethernet, Token Ring, PPP, ATM, SLIP, Wi-Fi (IEEE 802.11), Frame relay, MAC, PPP, LLDP, L2TP, VLAN, VTP, Bluetooth, ISDN
1.	Physical 	<p>The physical layer is the OSI model's bottom layer. It specifies the physical properties of a medium that is used to carry data between devices. For example, Voltage levels, maximum transmission distances, physical connectors, and so forth. Digital bits are transformed to electrical signals for wired connections and radio signals for wireless transmission at this layer.</p>		Bits	Network Cables (e.g. ethernet, fiber, copper) Hubs, Repeaters, Network Interface Cards (NICs)	



OSI MODEL

Layer 7: Application Layer

- Defines interface to user processes
- Provides standardized network services

Layer 6: Presentation Layer

- Specifies architecture-independent data transfer format
- Encodes and decodes data; Encrypts and decrypts data; Compresses and decompresses data

Layer 5: Session Layer

- Manages user sessions and dialogues
- Controls establishment and termination of logical links between users

Layer 4:

Transport Layer

- Provides reliable and sequential end-to-end packet delivery
- Provides connectionless oriented packet delivery

Layer 3: Network Layer

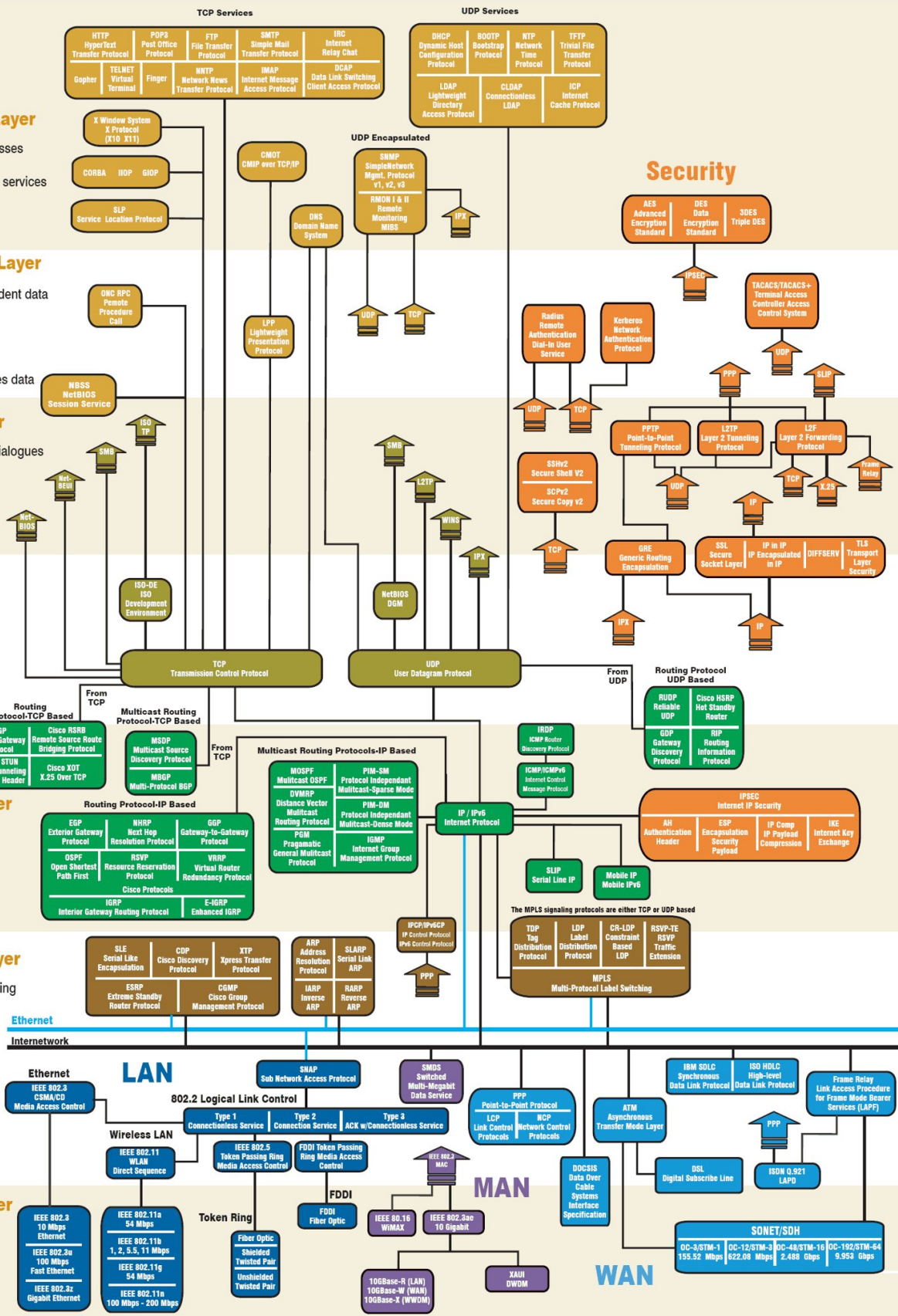
- Routes packets according to unique network addresses

Layer 2: Data Link Layer

- Defines procedures for operating the communication link
- Provides framing and sequencing

Layer 1: Physical Layer

- Defines physical means of sending data over network devices



people



Javvin



Power over Ethernet (PoE)



Created by @dan_nanni on Instagram



PoE Network Switch

Data + Power



PoE Device

PoE Injector



Non-PoE Network Switch

Data Only



Data + Power



PoE Device



PoE Network Switch

Data + Power



PoE Splitter

Data Only

Power Cable



Non-PoE Device



Non-PoE Network Switch

Data Only



PoE Injector

Data + Power

PoE Splitter

Data Only

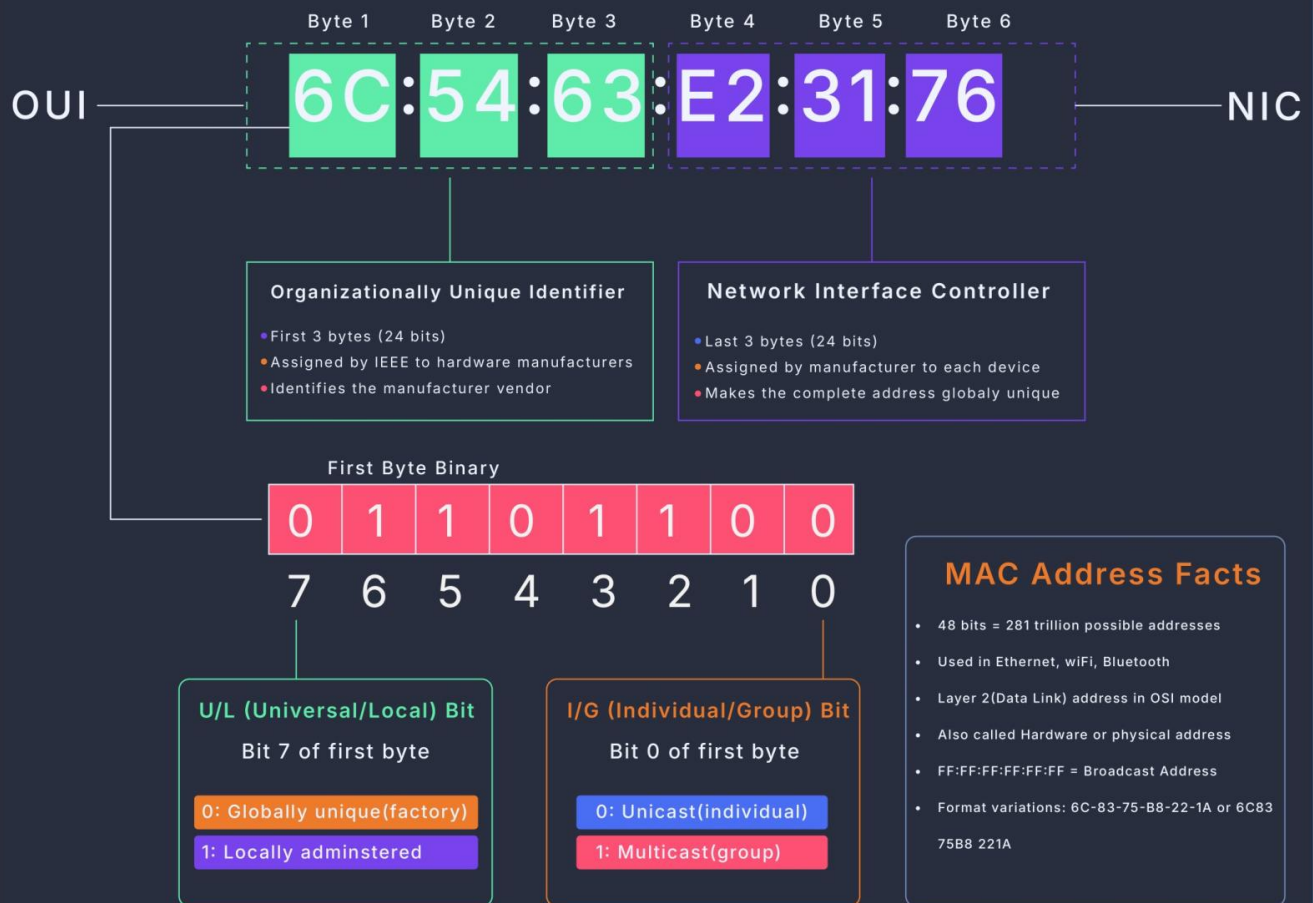


Non-PoE Device

MAC Address

MAC Addresss

6C:54:63:E2:31:76



sysxplore.com

Ethernet Cable Types



Ethernet LAN Cable Types



Created by **Dan Nanni** at study-notes.org



CAT 1

1 Mbps

1 MHz

Not Ethernet



CAT 2

4 Mbps

4 MHz

Not Ethernet



CAT 3

10 Mbps

16 MHz

100m



CAT 4

16 Mbps

20 MHz

100m



CAT 5

100 Mbps

100 MHz

100m



CAT 5e

1 Gbps

100 MHz

100m



CAT 6

1 Gbps

250 MHz

100m



CAT 6A

10 Gbps

500 MHz

100m



CAT 7

10 Gbps

600 MHz

100m



CAT 7A

10 Gbps

1000 MHz

100m



CAT 8.1

25 Gbps

2000 MHz

30m



CAT 8.2

40 Gbps

2000 MHz

30m

(10Gbps ≤55m)

Revision #6

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