OSI MODEL

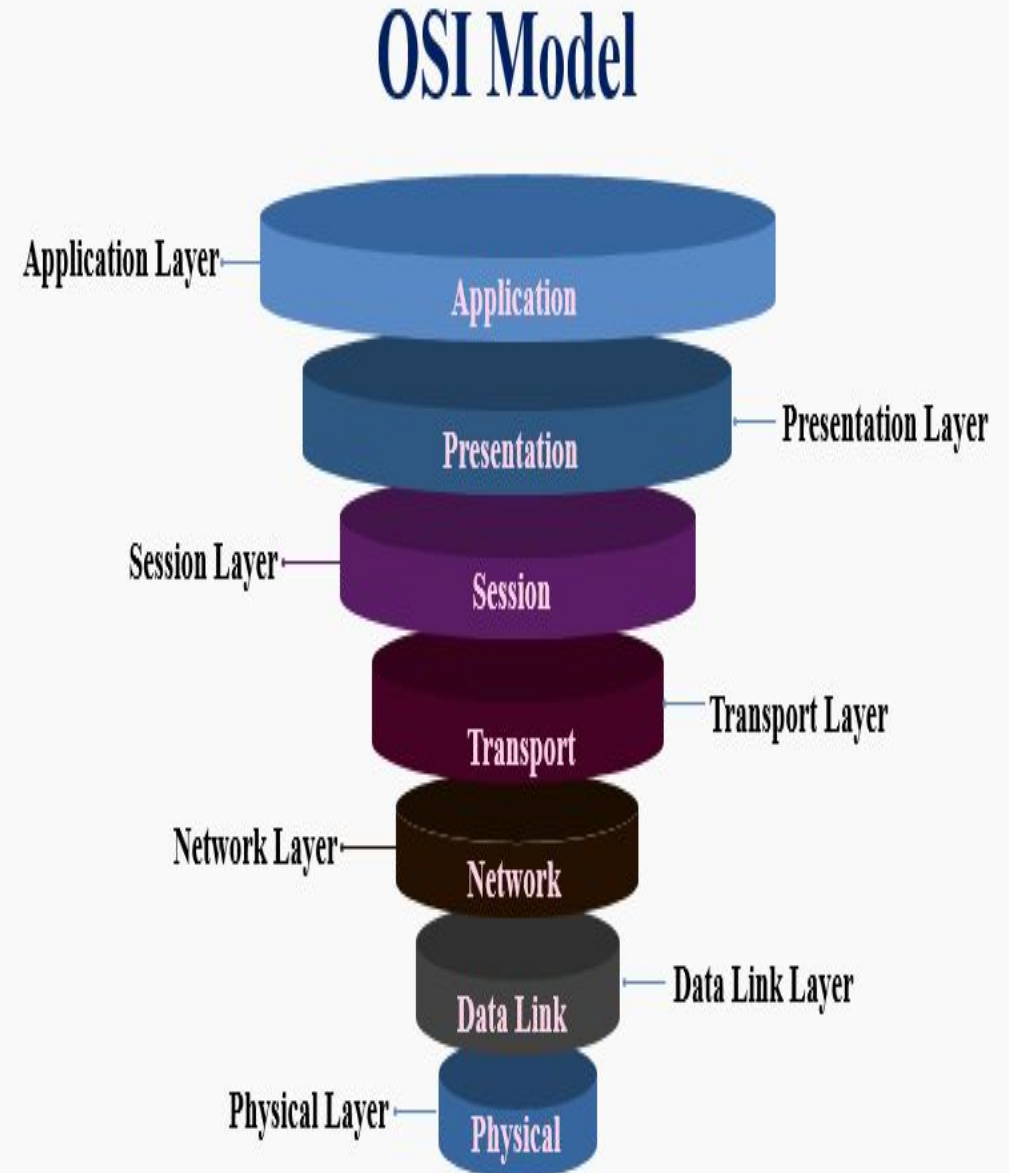# Open System Interconnection

OSI MODEL
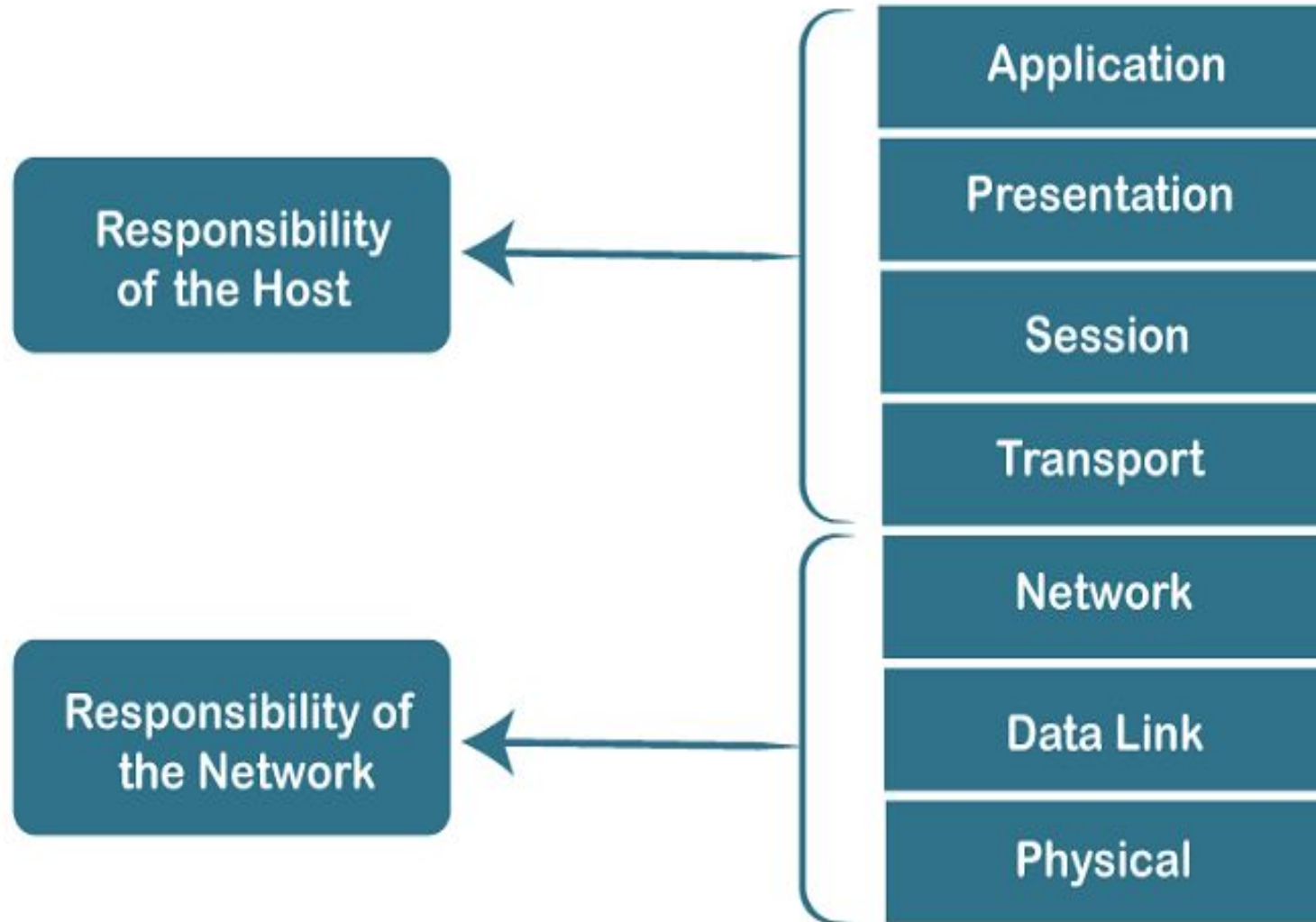
- OSI means Open Sytem Interconnect Model.

- Developed by the International Organization for Standardization in 1974.

- It consists of seven layers.

- Each layer has a different but specific processing function.

Layers of OSI model.

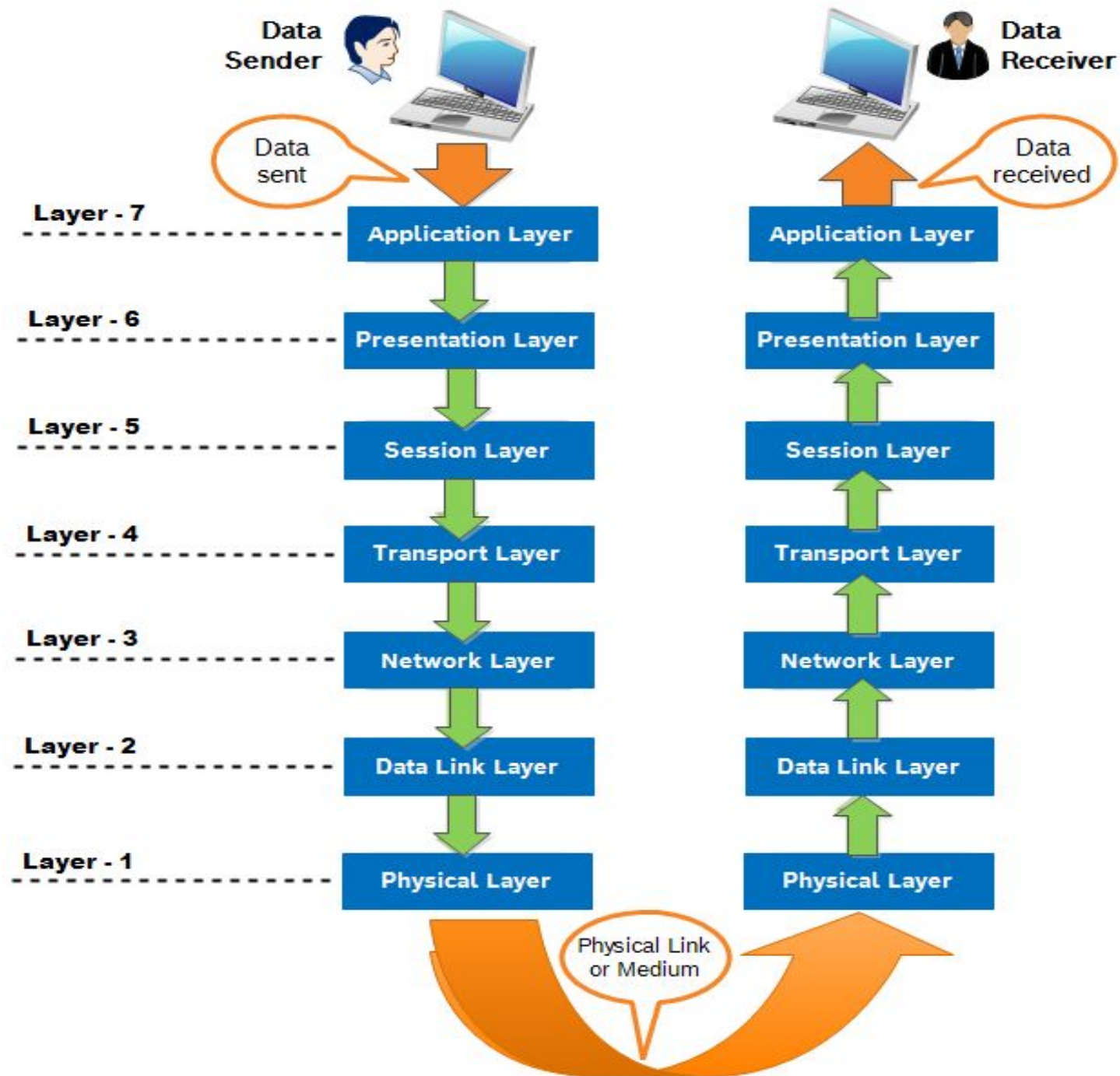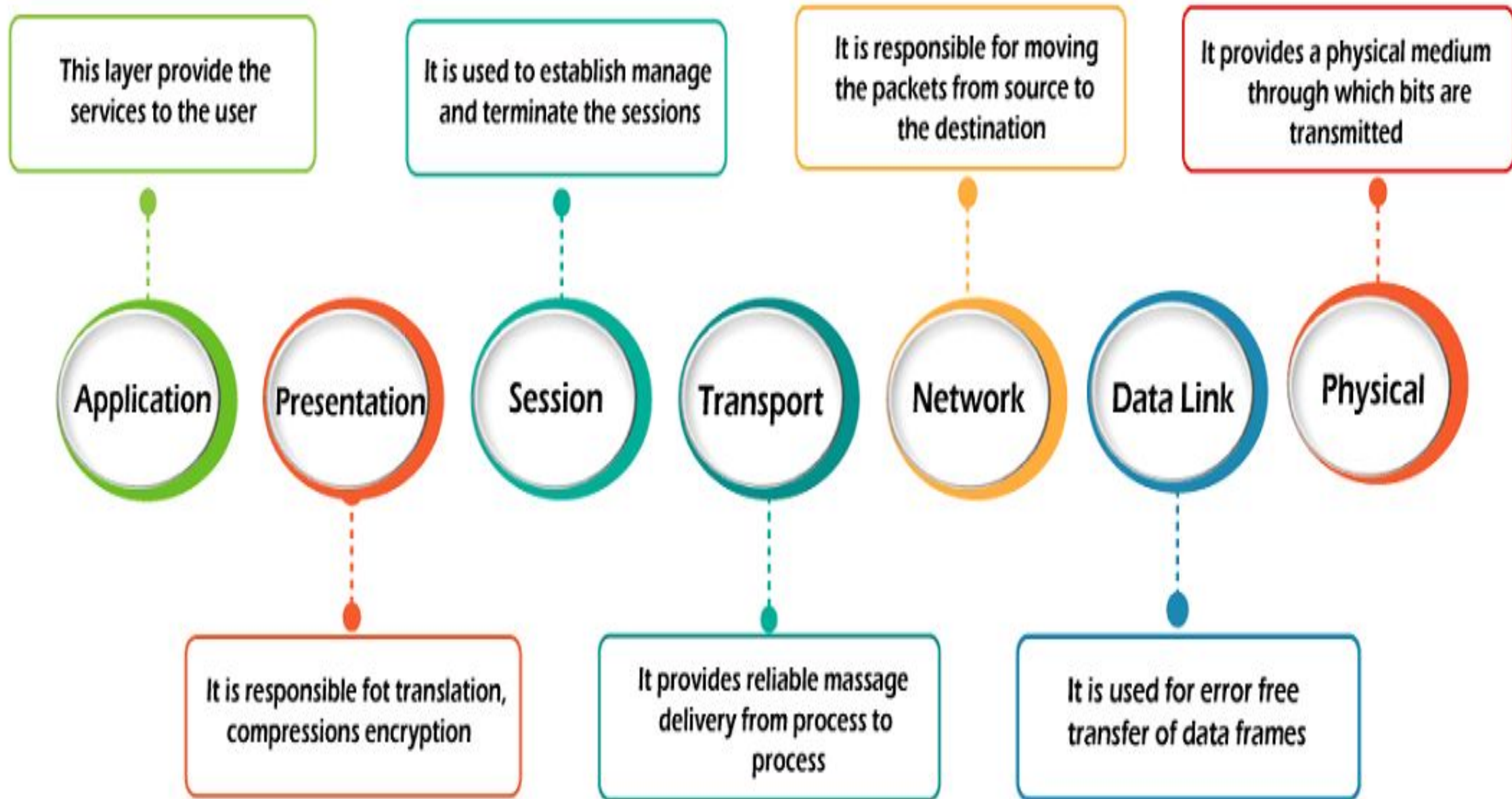It consists of a total of 7 layers.

Characteristics of OSI Model

	Application
Responsibility of the Host	Presentation
	Session
	Transport
	Network
Responsibility of the Network	Data Link
	Physical

Application Layer :-

The Application Layer is responsible for providing Networking Services to the user.
It is also known as Desktop Layer.

Identification of Services is done using Port Numbers.

Ports are Entry and Exit Points to the Layer

Total No. Ports – 65535

Reserved Ports – 1023

Open Client Ports 1024 – 65535

7 Layers of the OSI Model

7. Application
- End User layer
- HTTP, FTP, IRC, SSH, DNS

6. Presentation
- Syntax layer
- SSL, SSH, IMAP, FTP, MPEG, JPEG

5. Session
- Synch & send to port
- API's, Sockets, WinSock

4. Transport
- End-to-end connections
- TCP, UDP

3. Network
- Packets
- IP, ICMP, IPSec, IGMP

2. Data Link
- Frames
- Ethernet, PPP, Switch, Bridge

1. Physical
- Physical structure
- Coax, Fiber, Wireless, Hubs, Repeaters

bmc
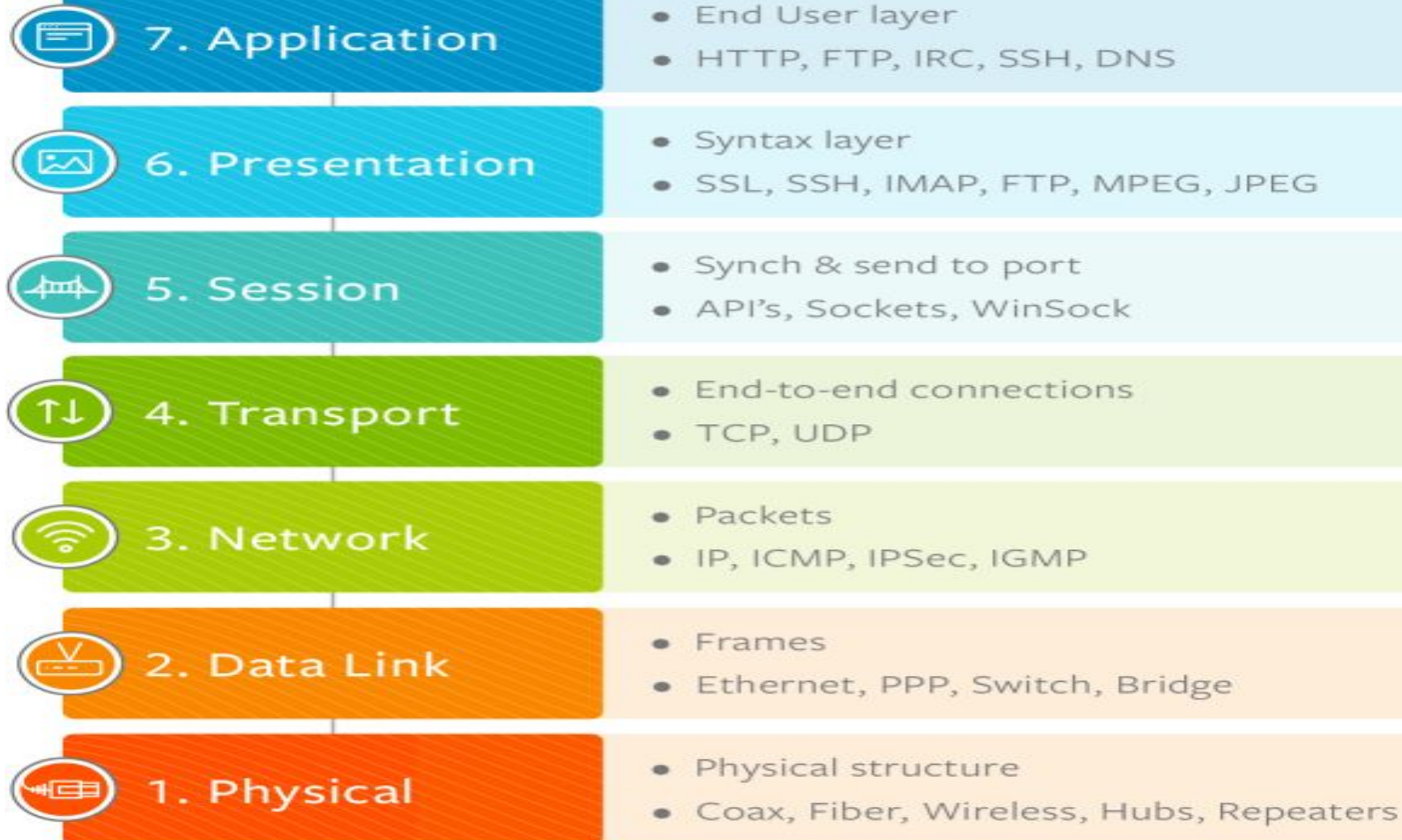
Presentation Layer

Presentation Layer is responsible for converting data into a standard format.

Examples: ASCII, EBCDIC, JPEG, MPEG, BMP, MIDI, WAV, MP3

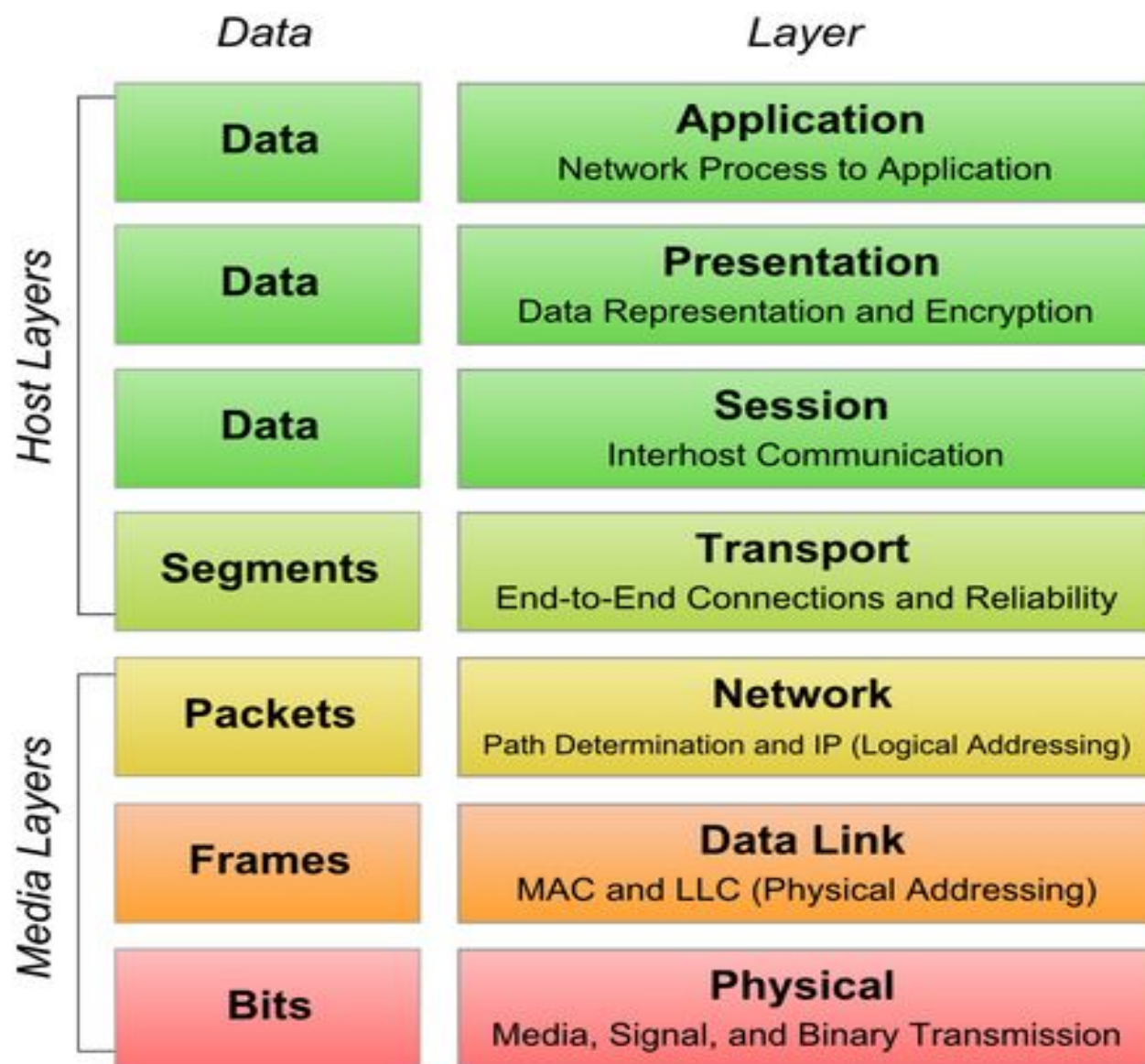The following tasks are performed at the Presentation layer :

Encoding – Decoding

Encryption – Decryption

Compression – Decompression

Presentation The presentation

OSI Model

Data	Layer
Data	**Application** Network Process to Application
Data	**Presentation** Data Representation and Encryption
Data	**Session** Interhost Communication
Segments	**Transport** End-to-End Connections and Reliability
Packets	**Network** Path Determination and IP (Logical Addressing)
Frames	**Data Link** MAC and LLC (Physical Addressing)
Bits	**Physical** Media, Signal, and Binary Transmission

Host Layers — Application, Presentation, Session, Transport

Media Layers — Network, Data Link, Physical

Session Layer

The Session Layer is responsible for establishing, maintaining, and terminating sessions.

Session ID works at Session Layer.

Examples :

RPC 🗆 Remote Procedure Call
SQL 🗆 Structured Query Language
NFS 🗆 Network File System
Session

Transport Layer

❖ Transport Layer is responsible for end-to-end connectivity.

It is also known as the heart of OSI Layers.

The following tasks are performed at the Transport Layer: -

- Identifying Service
- Multiplexing & De-multiplexing
- Segmentation
- Sequencing & Reassembling
- Error Correction
- Flow Control
- TransportThe transport

MODELS:-

Difference between OSI and TCP/ IP Model.

OSI MODEL	Protocols & Services	TCP/IP Model	
Application	HTTP, HTTPS, FTP, DHCP, TELNET, DNS, SNMP, SMTP	Application	Data
Presentation			
Session			
Transport	TCP, UDP	Transport	Segment
Network	IP, ARP, ICMP, IGMP	Internet	Packet
Datalink	Ethernet, ATM, Token Ring	Host to Network	Frame
Physical			

OSI AND TCP/IP MODEL

Parameters	OSI Model	TCP/IP Model
No. of Layers	There are 7 layers.	There are 4 layers.
Acronyms	OSI stands for open system interconnection.	TCP/IP stands for transmission control protocol/internet protocol
Developed by	ISO	Department of Defense (DoD)
Layer Separation	OSI model has a separate Presentation layer and Session layer.	TCP/IP does not have a separate Presentation layer or Session layer.
Protocol implementation	Model was defined before implementation takes place.	Model defines after protocol were implemented.
Model Concept	based on three concept i.e. Service, interface and protocol.	It did not distinguish between service, interface and protocol.
Reliable delivery	It gives guarantee of reliable delivery of packet.	It does not give guarantee of reliable delivery of packet.
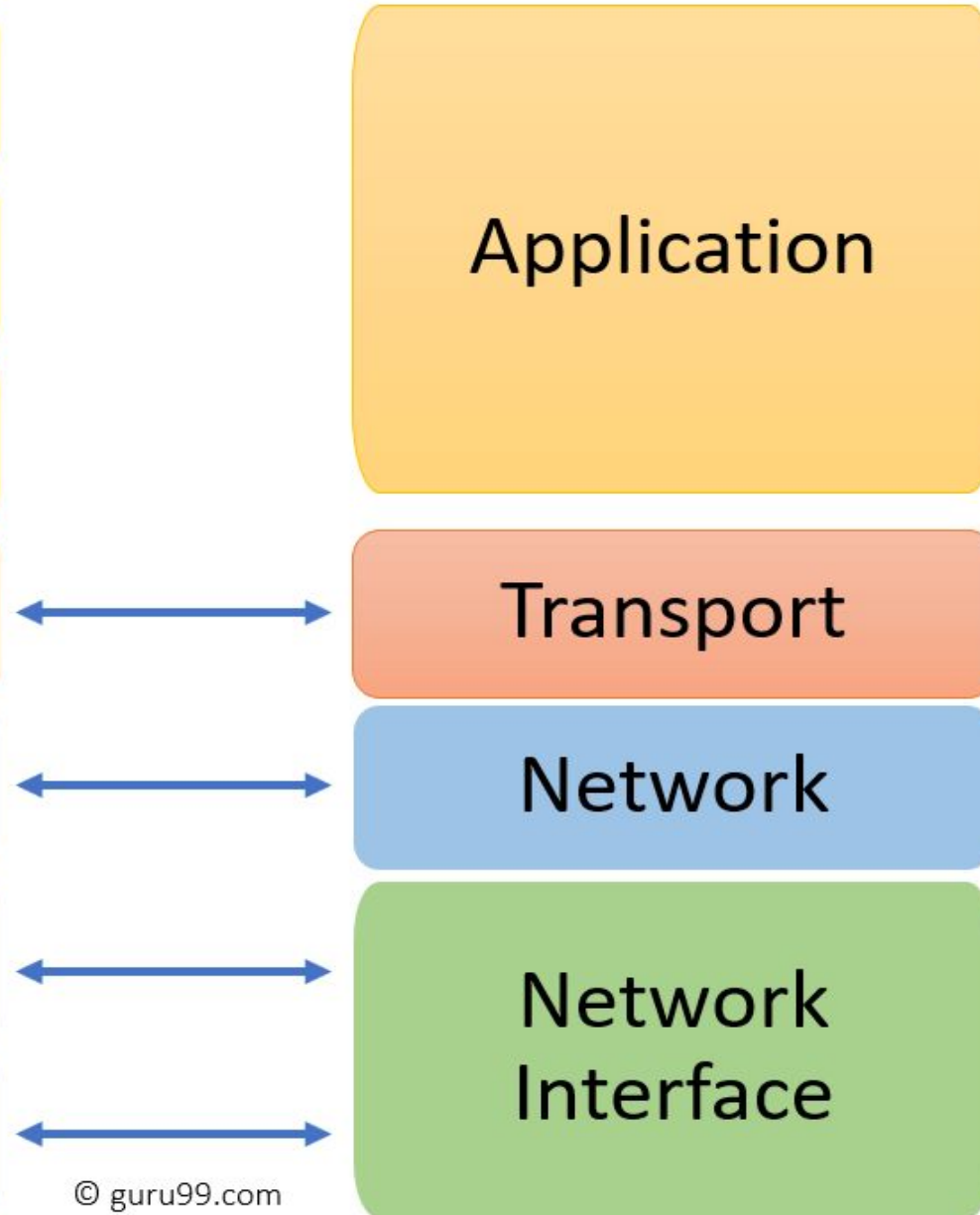
Applications of models.

❑ The OSI Model is a logical and conceptual model that defines network communication used by systems open to interconnection and communication with other systems.

On the other hand,

❑ TCP/IP helps you to determine how a specific computer should be connected to the internet and how it can be transmitted between them.