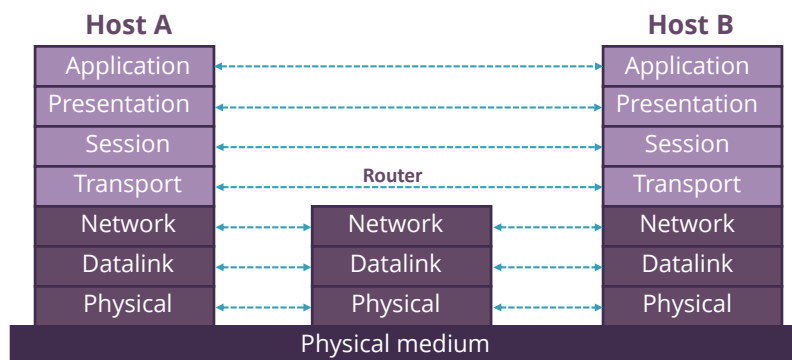# Internet Architecture Part 3

MCIT 595
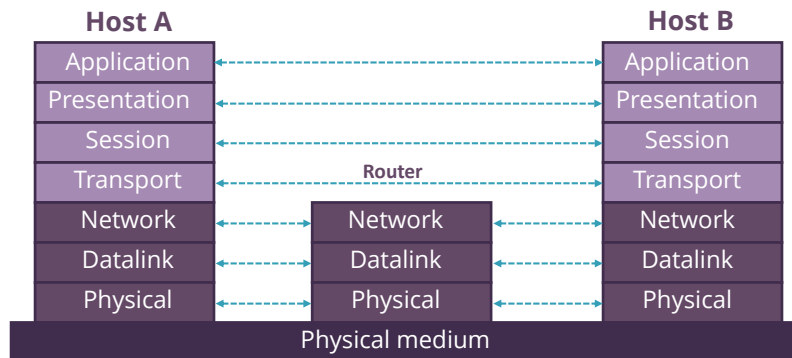

Who Does What?

- Seven layers
  - Lower three layers are implemented everywhere
  - Next four layers are implemented only at hosts

Host A		Host B
Application		Application
Presentation		Presentation
Session		Session
Transport	Router	Transport
Network	Network	Network
Datalink	Datalink	Datalink
Physical	Physical	Physical
	Physical medium	

Logical Communication

- Layers interacts with corresponding layer on peer

Host A		Host B
Application		Application
Presentation		Presentation
Session		Session
Transport	Router	Transport
Network	Network	Network
Datalink	Datalink	Datalink
Physical	Physical	Physical
	Physical medium	

# Physical Communication

- Communication goes down to physical network, then to peer, then up to relevant layer

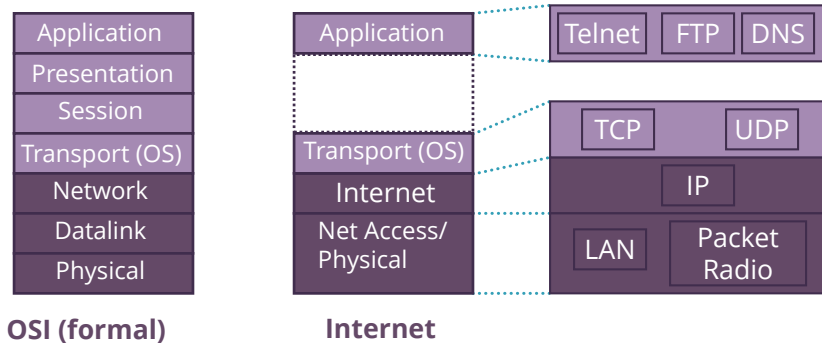| Host A		Host B
Application		Application
Presentation		Presentation
Session		Session
Transport	Router	Transport
Network	Network	Network
Datalink	Datalink	Datalink
Physical	Physical	Physical
	Physical medium	
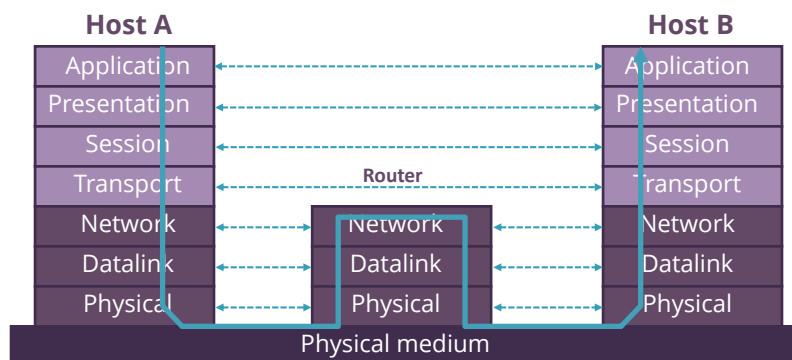
Encapsulation

- A layer can use **only** the service provided by the layer immediate below it
- Each layer may change and add a header to data packet
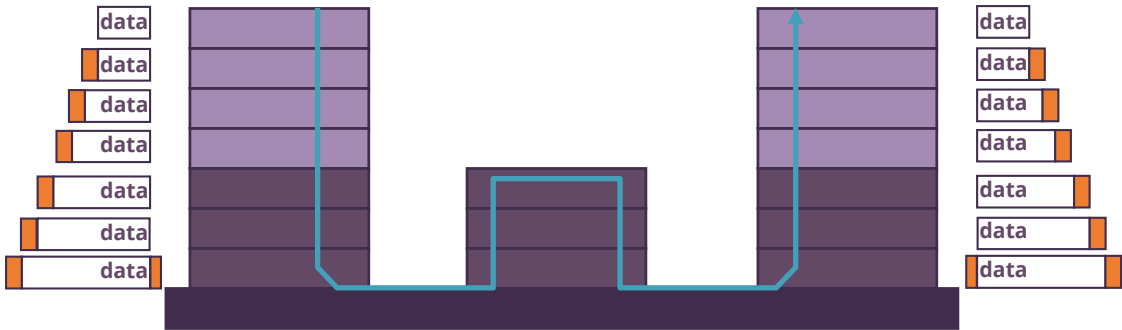
OSI vs. Internet

- OSI: conceptually define services, interfaces, protocols
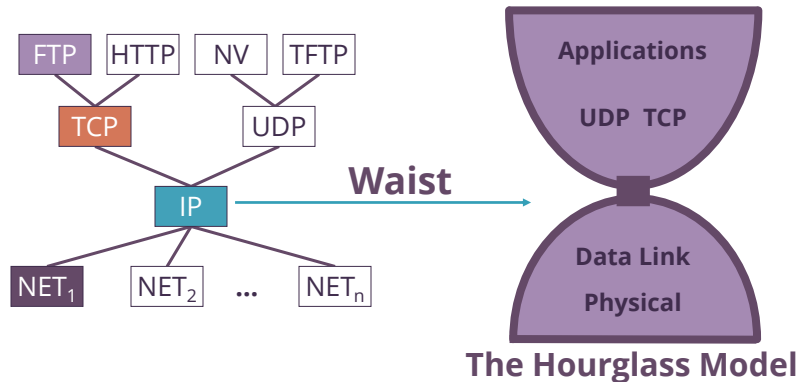- Internet: provide a successful implementation

OSI (formal)
Application
Presentation
Session
Transport (OS)
Network
Datalink
Physical

Internet: Application, Transport (OS), Internet, Net Access/Physical — Telnet, FTP, DNS, TCP, UDP, IP, LAN, Packet Radio

Hourglass

The waist facilitates interoperability

The Hourglass Model

Implications of Hourglass

- Allows networks to interoperate
  - Any network technology that supports IP can exchange packets
- Allows applications to function on all networks
  - Applications that can run on IP can use any network
  - Simultaneous developments above and below IP