Lecture: 7
TCP IP

:

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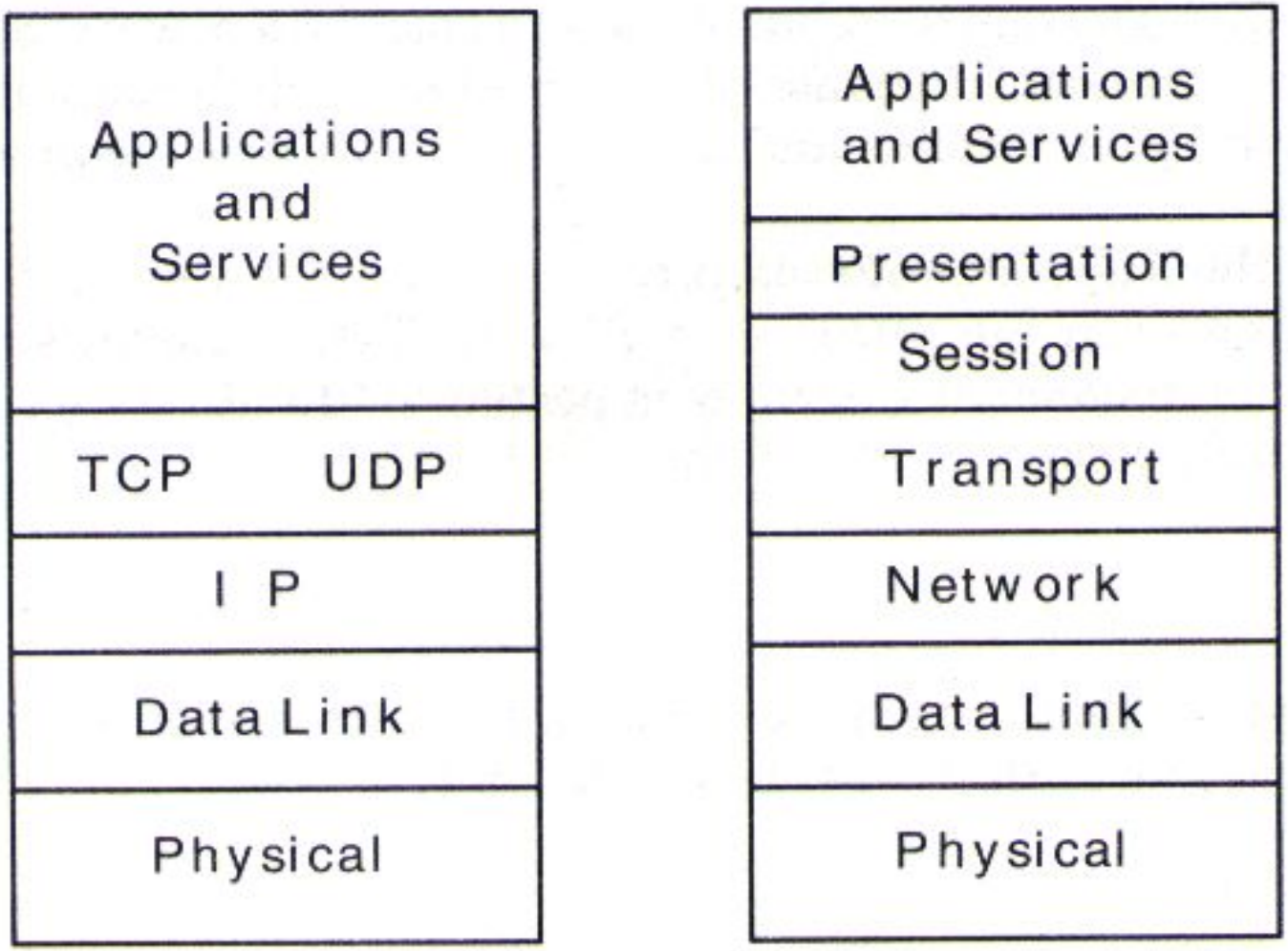
- The TCPIIP protocol suite was developed prior to the OSI model.
- Therefore, the layers in the TCP/IP protocol suite do not exactly match those in the OSI model.
- The original TCP/IP protocol suite was defined as having four layers: host-to-network, internet, transport, and application.
- However, when TCP/IP is compared to OSI, we can say that the host-to-network layer is equivalent to the combination of the physical and
- data link layers.

- The internet layer is equivalent to the network layer, and the application layer is roughly doing the job of the session, presentation, and application layers with the transport layer in TCP/IP taking care of part of the duties of the session layer.

- We will assume that the TCP/IP protocol suite is made of five layers: physical, data link, network, transport, and application. The first four layers provide physical standards, network interfaces, internetworking, and transport functions that correspond to the first four layers of the OSI model.
- The three topmost layers in the OSI model, however, are represented in TCPIIP by a single layer called the *application layer (see* Figure 2.16).

TCP/IP vs OSI


Applications and Services
TCP UDP
I P
Data Link
Physical
Applications and Services
Presentation
Session
Transport
Network
Data Link
Physical

Physical and Data Link Layers

- At the physical and data link layers, *TCPIIP does not define any specific protocol. It* supports all the standard and proprietary protocols. A network in a *TCPIIP internetwork* can be a local-area network or a wide-area network.

Network Layer

- At the network layer (or, more accurately, the internetwork layer), *TCP/IP supports* the Internetworking Protocol. IP, in turn, uses four supporting protocols: ARP, RARP, ICMP, and IGMP.

Transport Layer

- Traditionally the transport layer was represented in *TCP/IP by two protocols:*
- *TCP*
- *and* UDP.

- IP is a host-to-host protocol, meaning that it can deliver a packet from one physical device to another.
- UDP and TCP are transport level protocols responsible for delivery of a message from a process (running program) to another process.
- A new transport layer protocol, SCTP, has been devised to meet the needs of some newer applications.

Application Layer

- The *application layer in TCP/IP is equivalent to the combined session, presentation,* and application layers in the OSI model Many protocols are defined at this layer.