

CSCI 460
Networks and Communications

**Network Protocols and
Reference Models**

Humayun Kabir

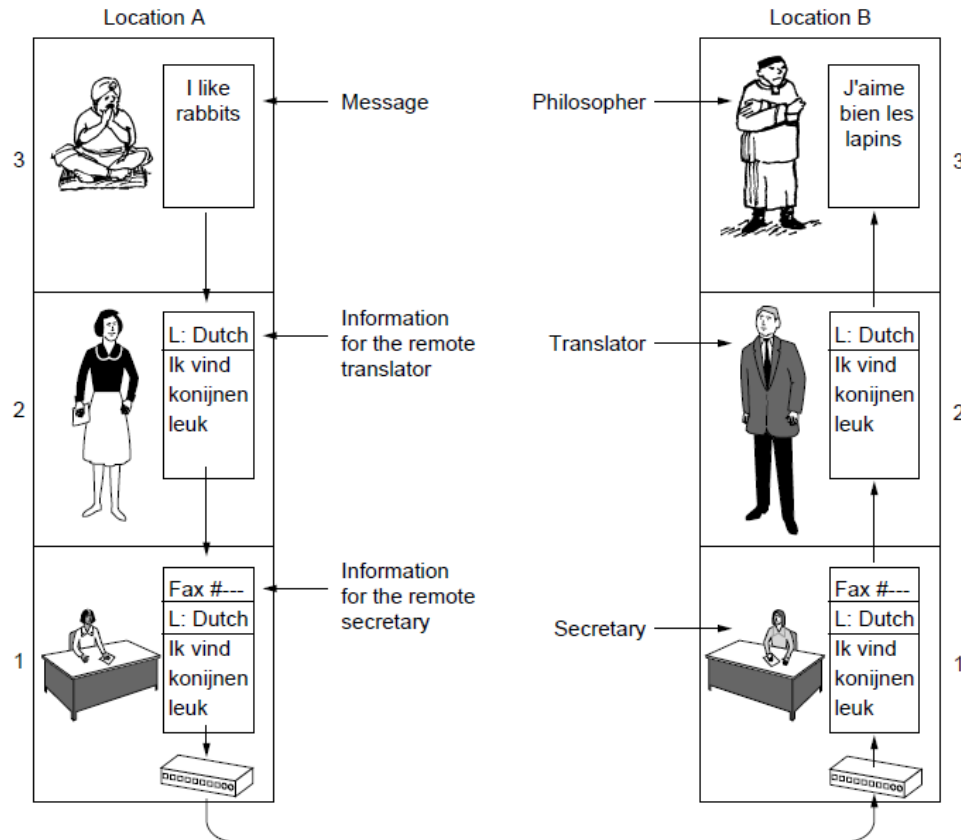
Professor, CS, Vancouver Island University, BC, Canada

Outline

- Network Protocols and Layers
- Network Reference Models
 - OSI Reference Model
 - TCP/IP Reference Model

Protocol Layers

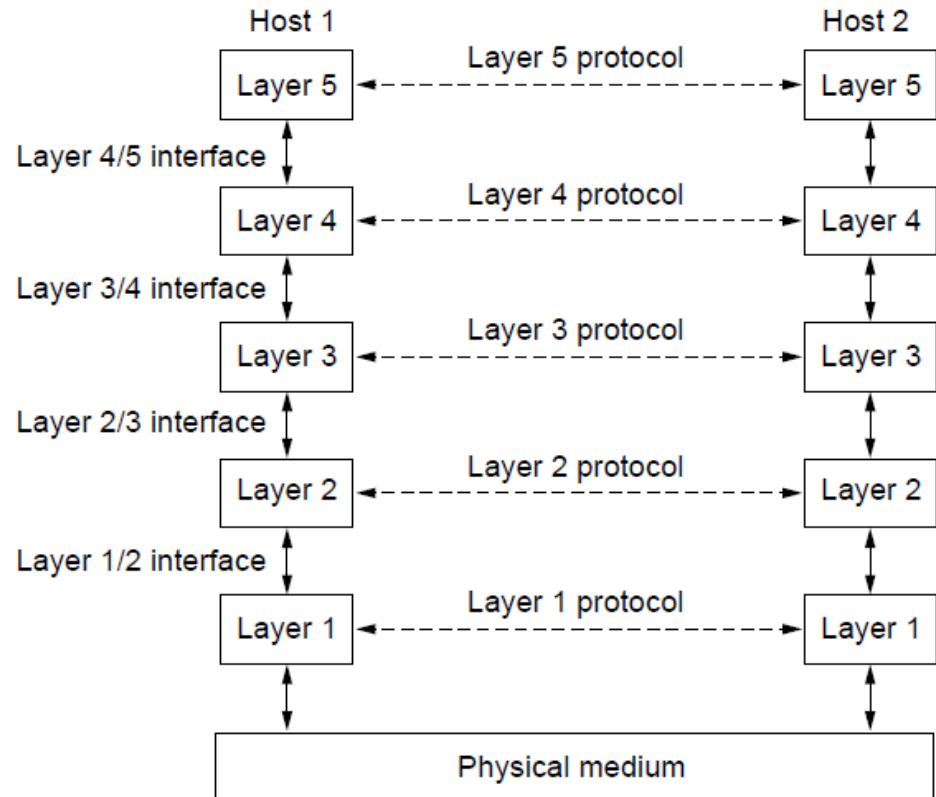
- Example: the philosopher-translator-secretary architecture
- Each protocol at different layers serves a different purpose



Protocol Layers

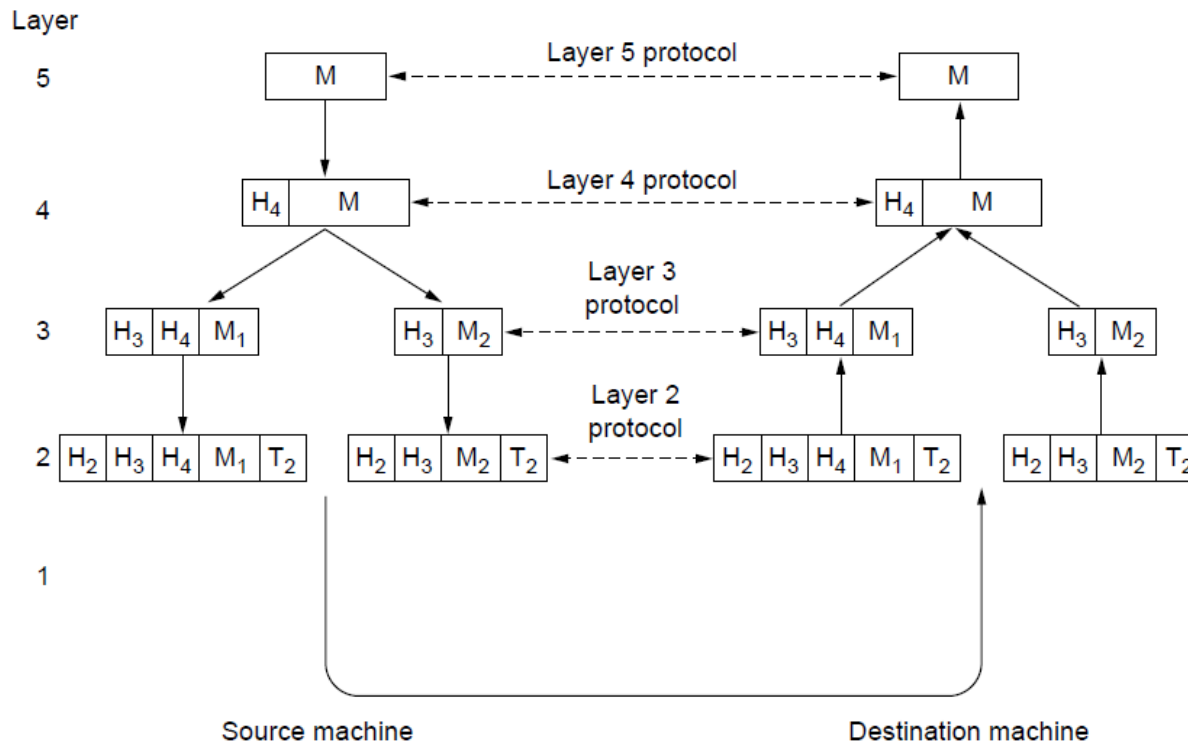
Protocol layering is the main structuring method used to divide up network functionality.

- Each protocol instance talks virtually to its peer
- Each layer communicates only by using the one below
- Lower layer services are accessed by an interface
- At bottom, messages are carried by the medium



Protocol Layers

- Each layer adds its own header (with control information) to the message to transmit and removes it on receive
- Layers may also split and join messages, etc.

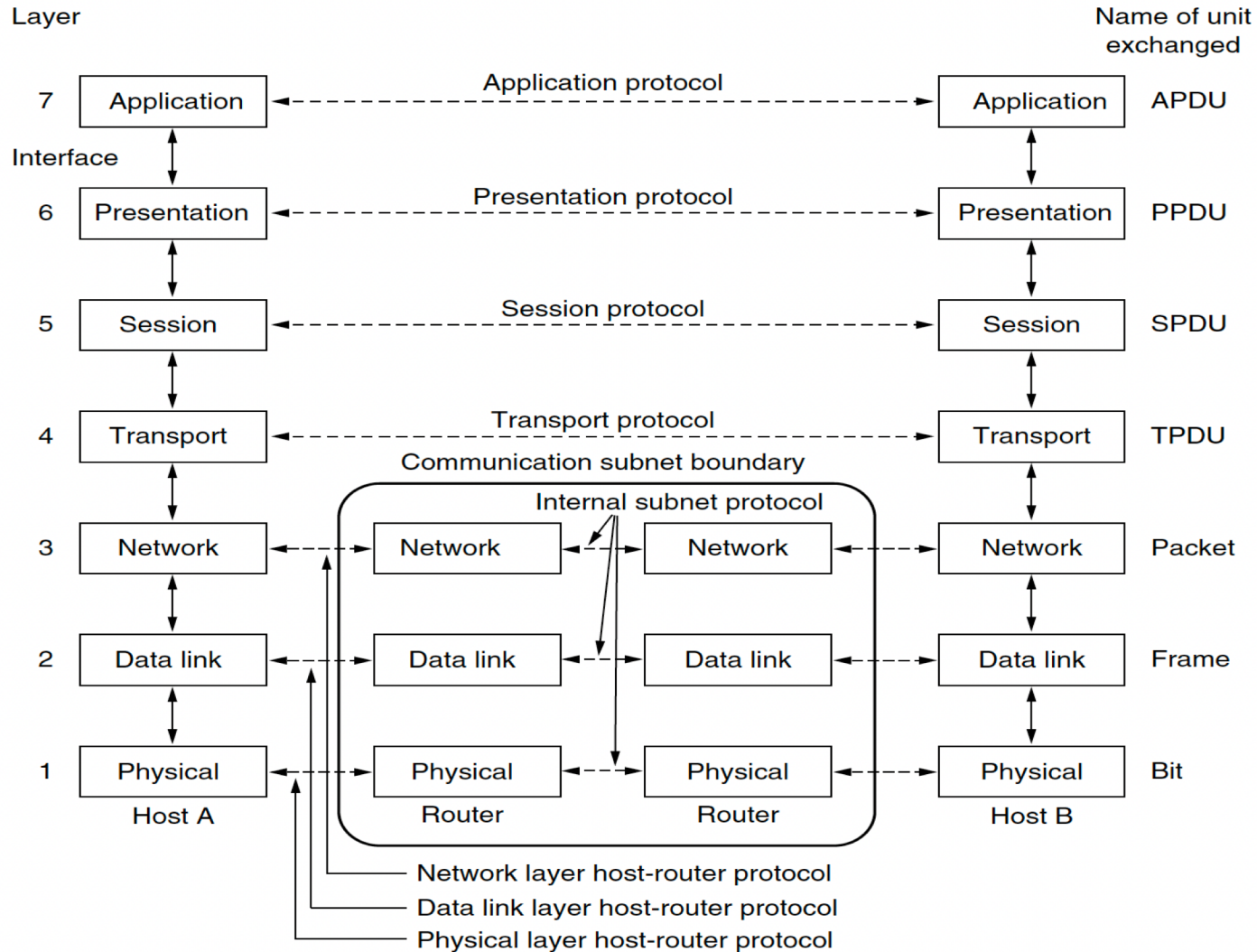


OSI Reference Model

A principled, international standard, seven layer model to connect different systems

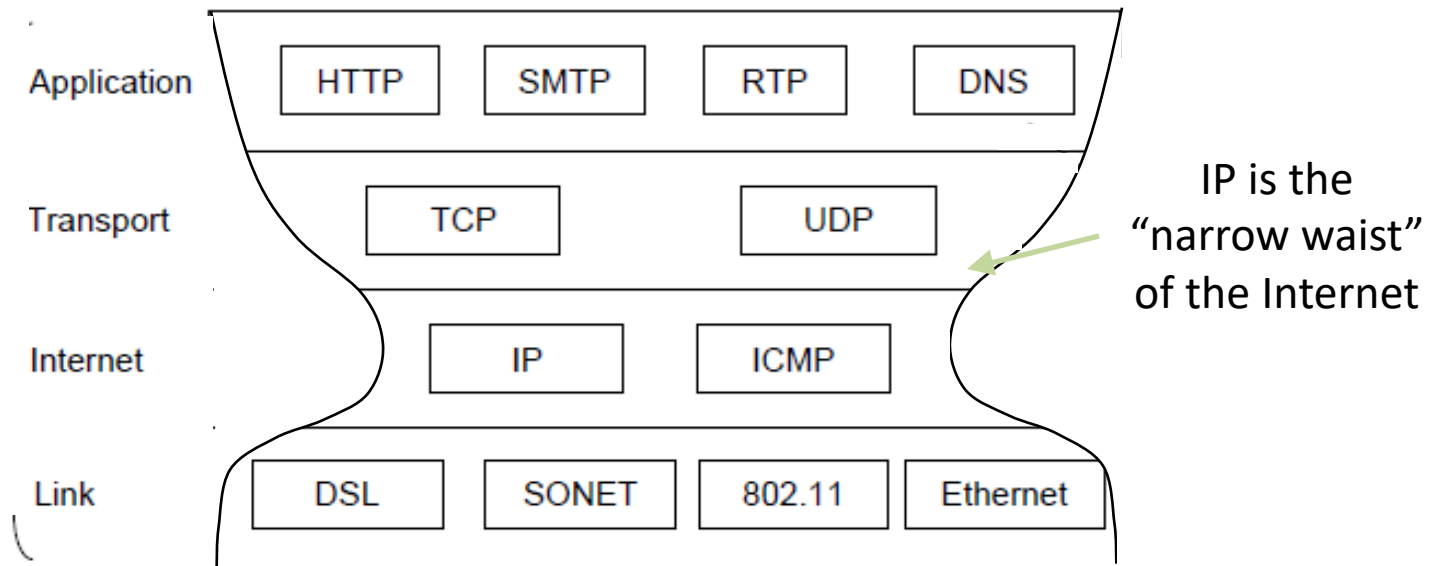
7	Application	– Provides functions needed by users
6	Presentation	– Converts different representations
5	Session	– Manages task dialogs (multiple messages)
4	Transport	– Provides host-to-host delivery of message
3	Network	– Routes datagrams over multiple hops
2	Data link	– Sends frames of information over single hop
1	Physical	– Sends bits as signals over physical media

OSI Reference Model



TCP/IP Reference Model

A four layer model derived from experimentation; omits some OSI layers and uses the IP as the network layer.



Protocols are shown in their respective layers

Summary

- Network Protocols and Layers
- Network Reference Models
 - OSI Reference Model
 - TCP/IP Reference Model