Introduction

Chapter 1

Reference Models

- OSI reference model
- TCP/IP reference model
- Model used for this text
- Comparison of OSI and TCP/IP
- Critique of OSI model and protocols
- Critique of TCP/IP model

The OSI Reference Model

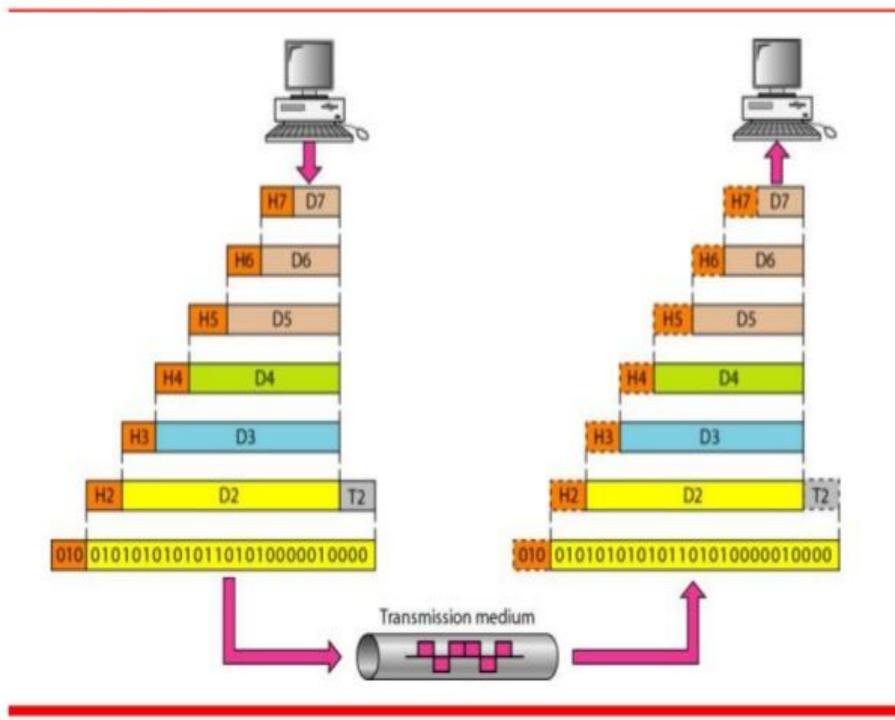
Principles for the seven layers

- Layers created for different abstractions
- Each layer performs well-defined function
- Function of layer chosen with definition of international standard protocols in mind
- Minimize information flow across interfaces between boundaries
- Number of layers optimum

Name of unit Layer exchanged Application protocol 7 Application Application **APDU** Interface Presentation protocol Presentation Presentation **PPDU** 6 Session protocol SPDU 5 Session Session Transport protocol **TPDU** 4 Transport Transport Communication subnet boundary Internal subnet protocol 3 Network Network Network Network Packet 2 Data link Data link Data link Data link Frame Physical Physical Physical Physical Bit Router Router Host A Host B Network layer host-router protocol

> Data link layer host-router protocol Physical layer host-router protocol

The OSI reference model.



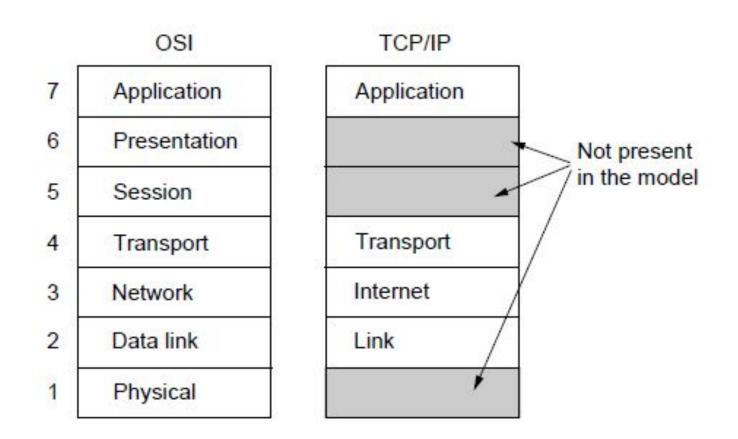
OSI Reference Model Layers

- Physical layer
- Data link layer
- Network layer
- Transport layer
- Session layer
- Presentation layer
- Application layer

The TCP/IP Reference Model Layers

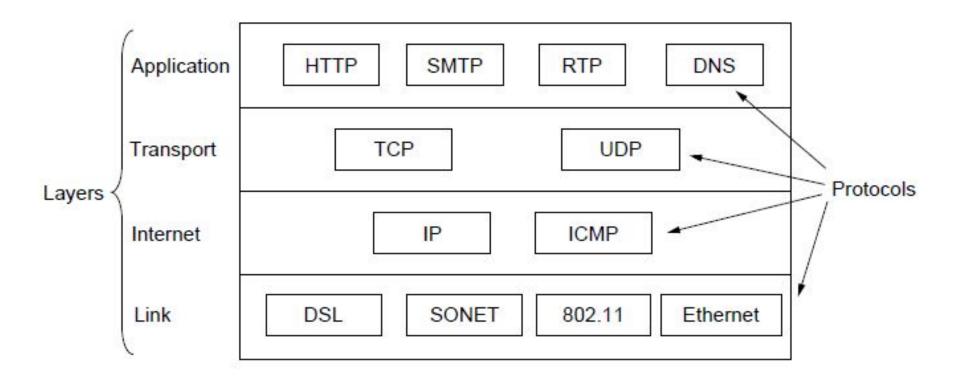
- Host to network layer
- Internet layer
- Transport layer
- Application layer

The TCP/IP Reference Model (1)



The TCP/IP reference model

The TCP/IP Reference Model (2)



The TCP/IP reference model with some protocols we will study

The Model Used in this Book

5	Application
4	Transport
3	Network
2	Link
1	Physical

The reference model used in this book.

Comparison of the OSI and TCP/IP Reference Models

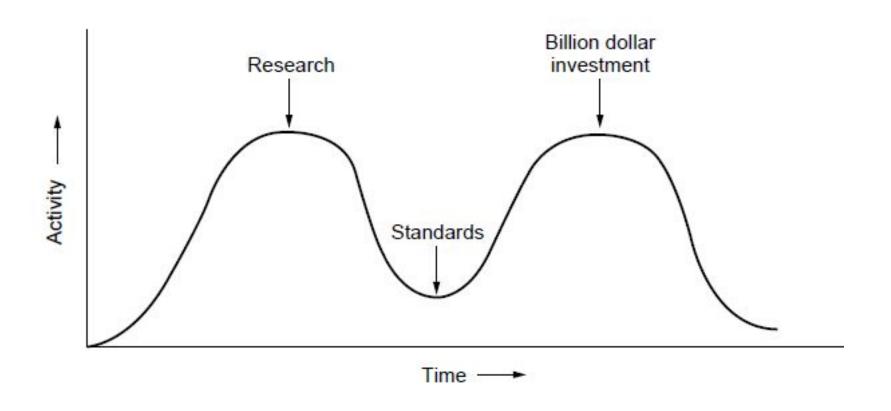
Concepts central to OSI model

- Services
- Interfaces
- Protocols

Critique of the OSI Model and Protocols

- Bad timing.
- Bad technology.
- Bad implementations.
- Bad politics.

OSI Model Bad Timing



The apocalypse of the two elephants.

A Critique of the TCP/IP Reference Model

Problems:

- Service, interface, and protocol not distinguished
- Not a general model
- Host-to-network "layer" not really a layer (is an interface)
- No mention of physical and data link layers
- Minor protocols deeply entrenched, hard to replace
 (The virtual terminal protocol, TELNET, was designed for mechanical teletype terminal)

Hybrid Model

5	Application layer
4	Transport layer
3	Network layer
2	Data link layer
1	Physical layer

The hybrid reference model to be used in this book.