BCC 362 – Sistemas Distribuídos

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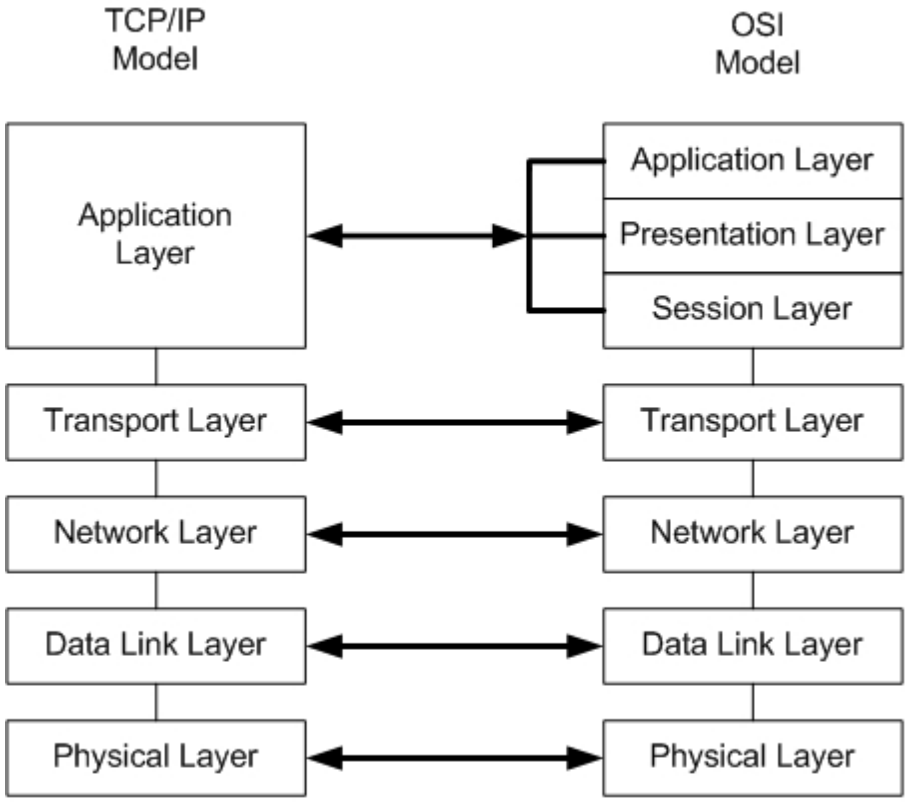
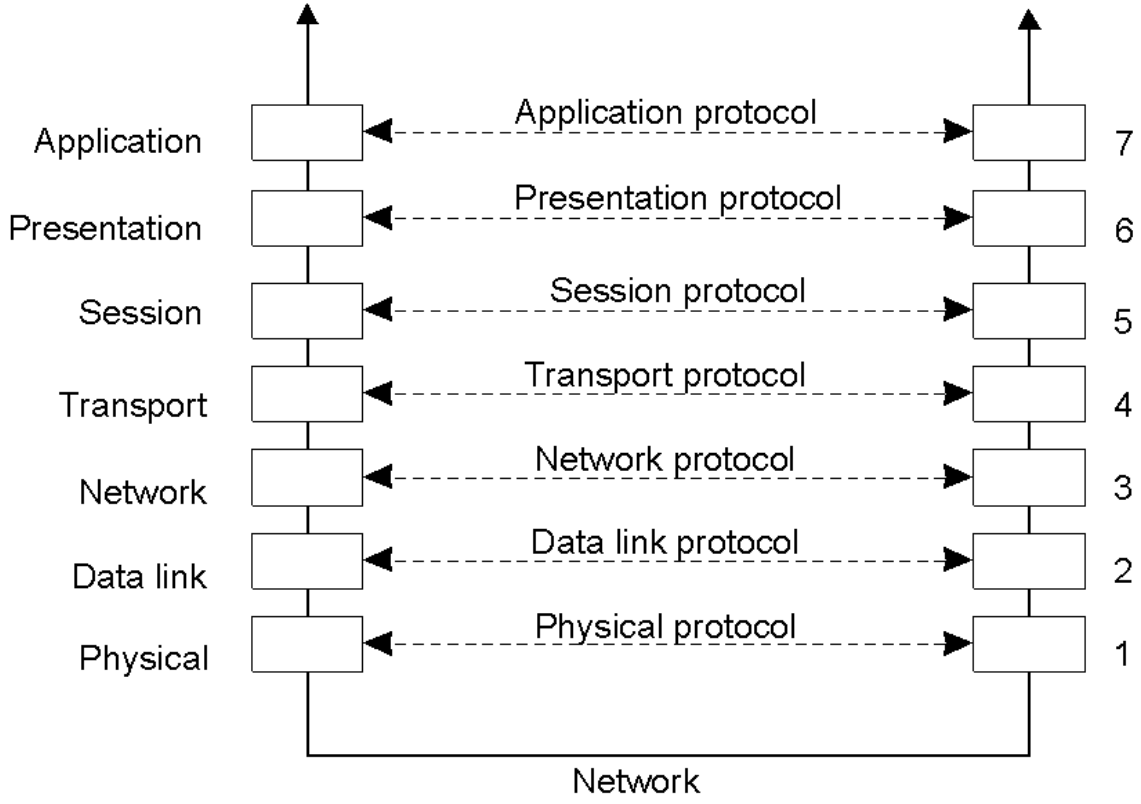
UFOP

Comunicação

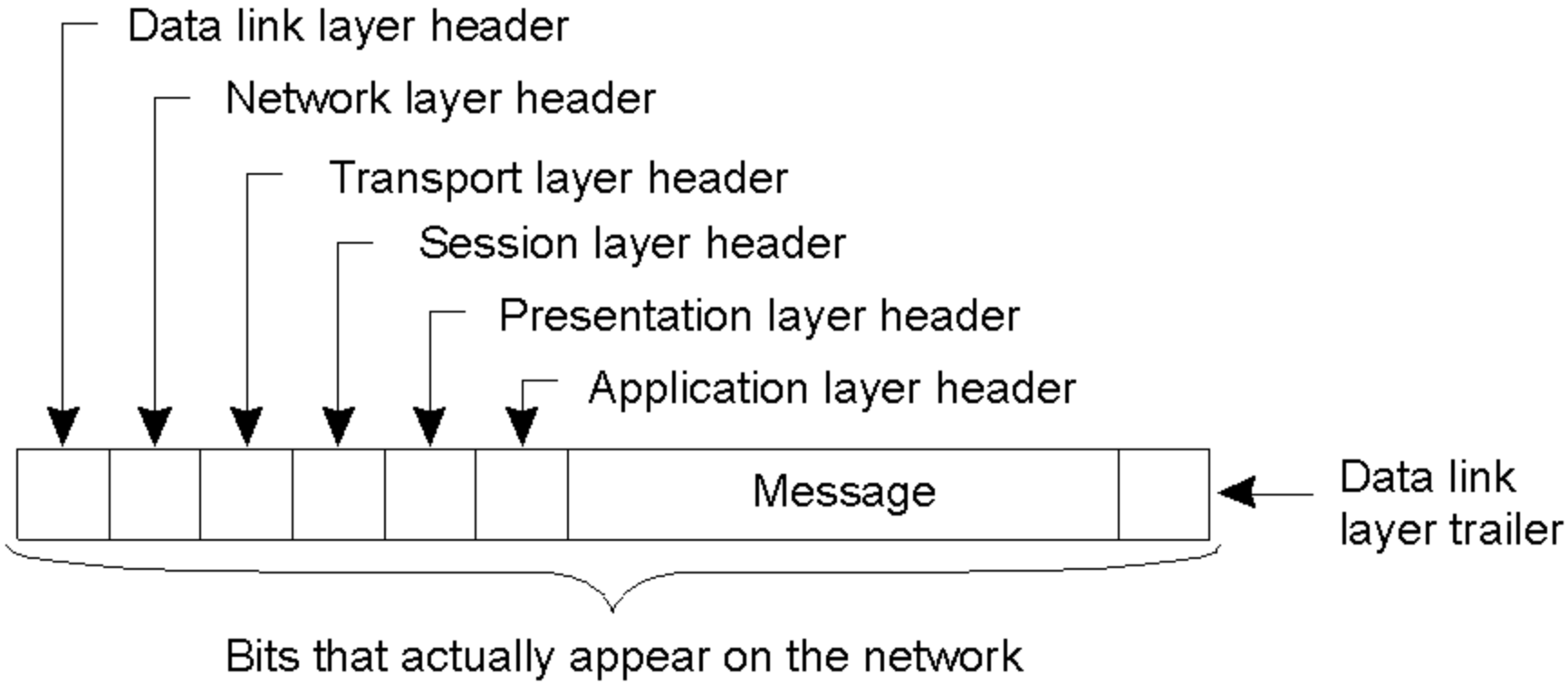


Layered Protocols: OSI Model



Layers, interfaces, and protocols in the OSI model.

Layered Protocols: Message



A typical message as it appears on the network.

** Lower-Level Protocols

These layers implement the basic functions that encompass a computer network:

Physical: It deals with standardizing the electrical, mechanical, and signaling interfaces.

Data link: It is responsible to detect

and correct errors.

Network: It chooses the best path/route between two nodes, i.e, it is responsible to made the routing.

** Transport protocols

The job of the transport layer is to provide reliability to application messages.

Some transport protocols examples:

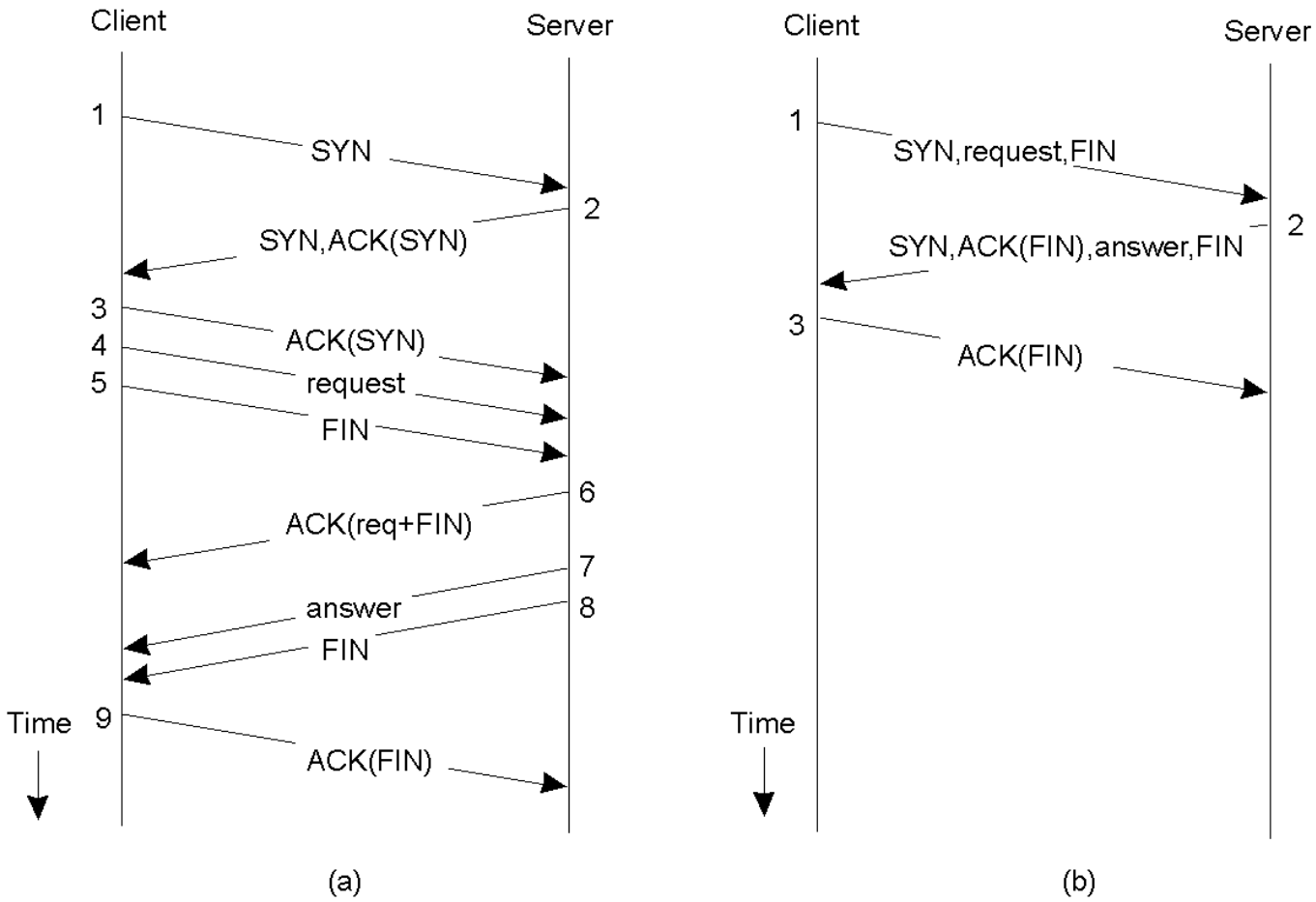
Transmission Control Protocol – TCP,

Universal Datagram Protocol – UDP ,

Official ISO transport protocols TP0-TP4,

Real-time Transport Protocol – RTP.

TCP: Client-Server example



a) Normal operation of TCP.

b) Transactional TCP.

** Higher-Level Protocols

These layers implements the function applications:

Session: It provides dialog control, to keep track of which party is currently talking, and it provides synchronizations facilities.

Presentation: It follows to define records containing fields like name, address and job.

Application: All distributed systems are just applications. For example, FTP and HTTP.

RPC: Steps of a Remote Procedure Call

1. Client procedure calls client stub in normal way
2. Client stub builds message, calls local OS
3. Client's OS sends message to remote OS
4. Remote OS gives message to server stub
5. Server stub unpacks parameters, calls server
6. Server does work, returns result to the stub
7. Server stub packs it in message, calls local OS
8. Server's OS sends message to client's OS
9. Client's OS gives message to client stub
10. Stub unpacks result, returns to client

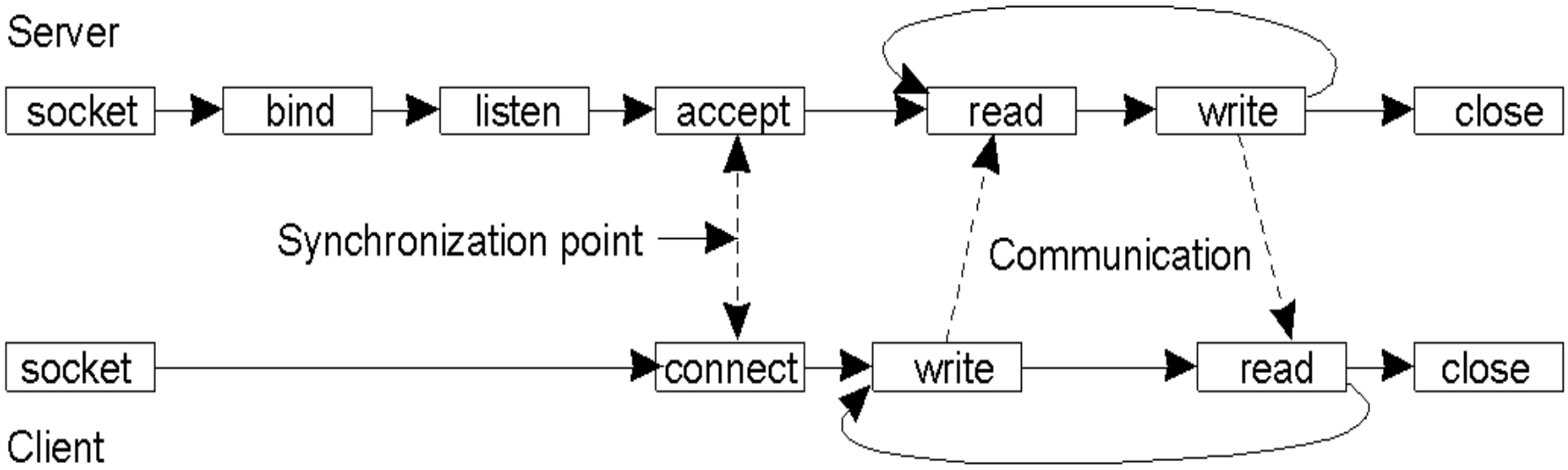
Transient communication: Sockets (1)

Socket is a communication endpoint to which an application can write/read data over the network.

Primitive	Meaning
Socket	Create a new communication endpoint
Bind	Attach a local address to a socket
Listen	Announce willingness to accept connections
Accept	Block caller until a connection request arrives
Connect	Actively attempt to establish a connection
Send	Send some data over the connection
Receive	Receive some data over the connection
Close	Release the connection

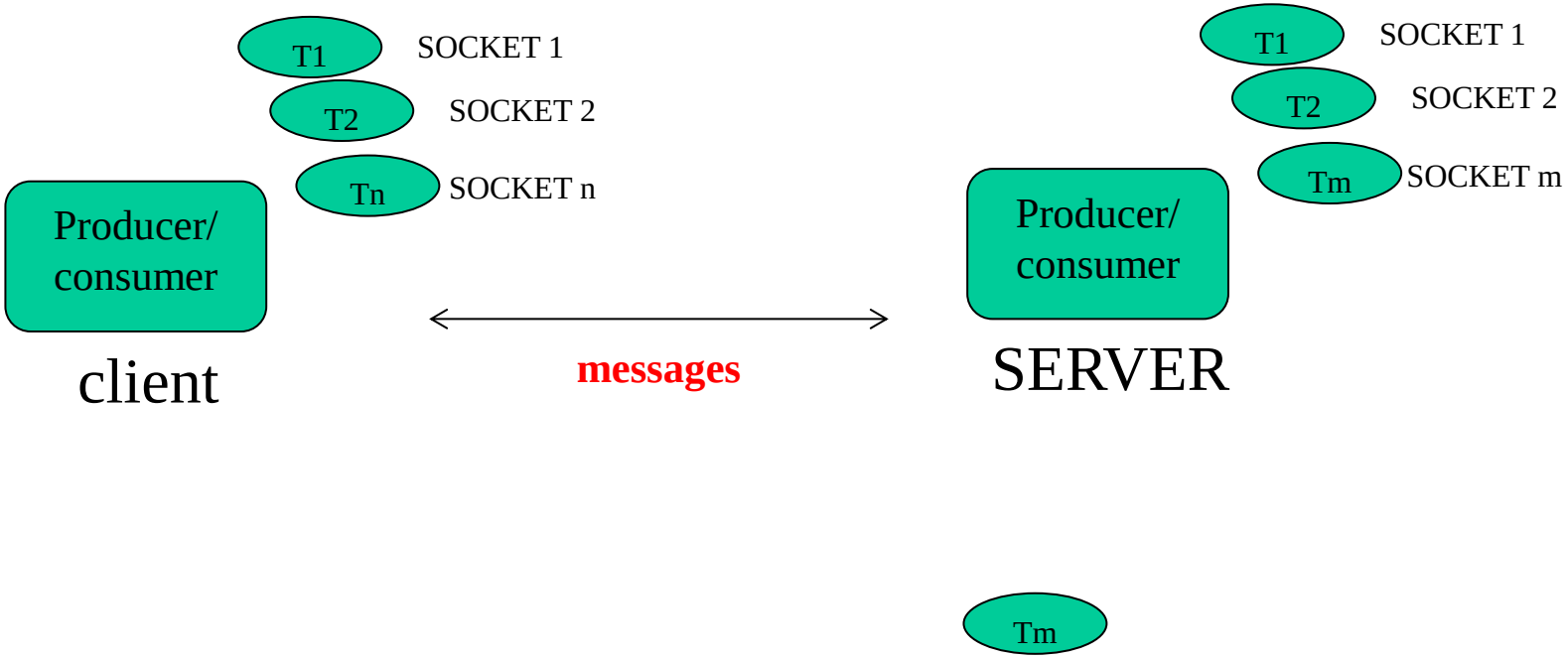
Socket primitives for TCP/IP.

Transient communication: Sockets (2)



Connection-oriented communication pattern using sockets.

Sockets



Cada thread no SERVER decodifica a mensagem,
Processa o algoritmo almejado e
Monta ou codifica mensagem de resposta

SOCKETS

Código Java.....