UNIT-4

The Transport Layer

Berkeley Sockets

Socket primitives are another set of transport primitives used in Berkeley UNIX for TCP. These primitives are widely used foe internet programming.

Berkeley Sockets

Primitive	Meaning
SOCKET	Create a new communication end point
BIND	Attach a local address to a socket
LISTEN	Announce willingness to accept connections; give queue size
ACCEPT	Block the caller until a connection attempt arrives
CONNECT	Actively attempt to establish a connection
SEND	Send some data over the connection
RECEIVE	Receive some data from the connection
CLOSE	Release the connection

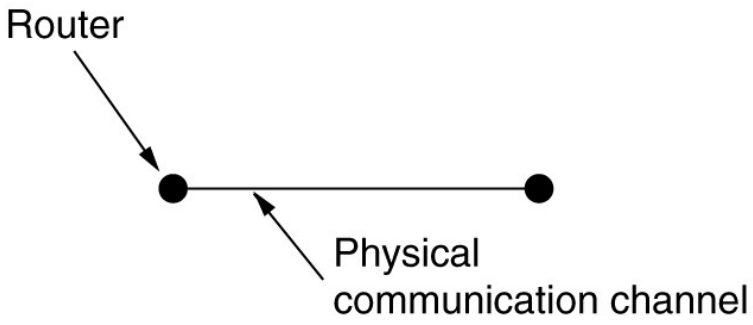
1st four on server .All other at client side.

The socket primitives for TCP.

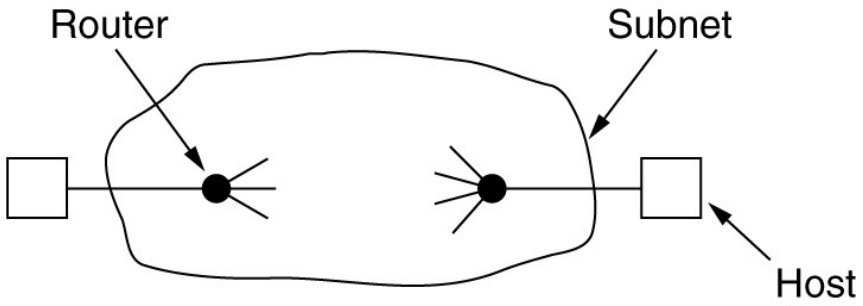
Elements of Transport Protocols

- Addressing
- Connection Establishment
- Connection Release
- Flow Control and Buffering
- Multiplexing
- Crash Recovery

Transport Protocol



(a)

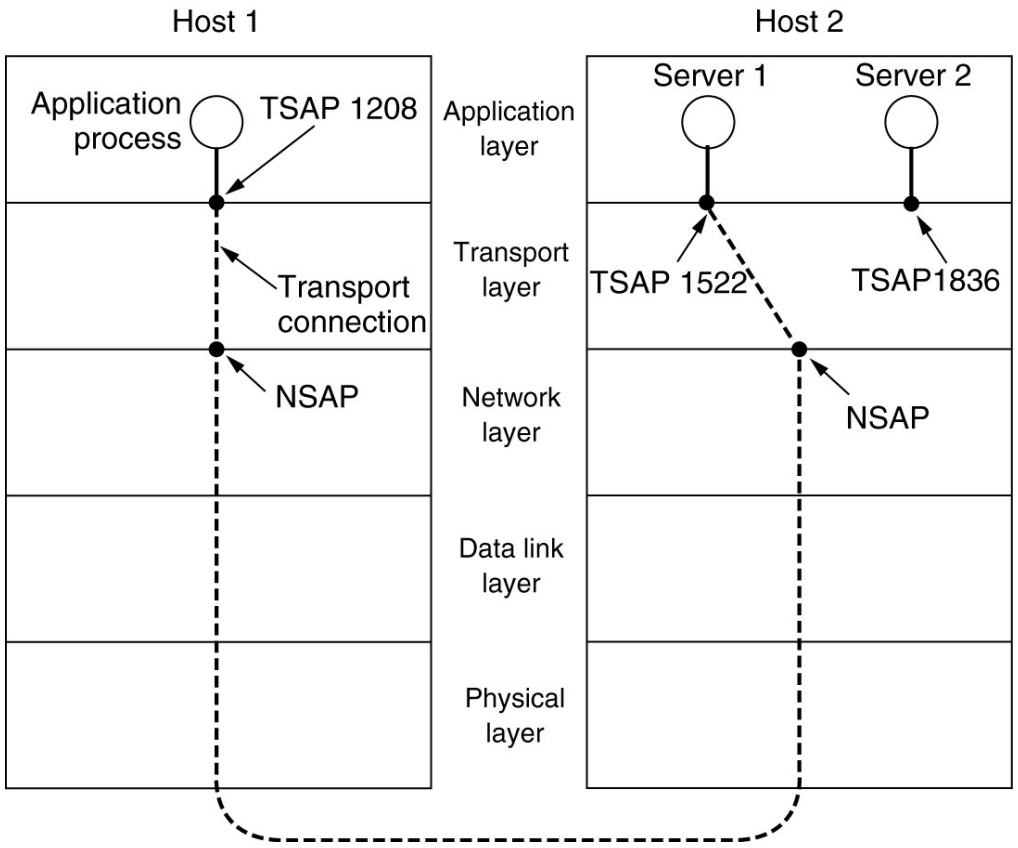


(b)

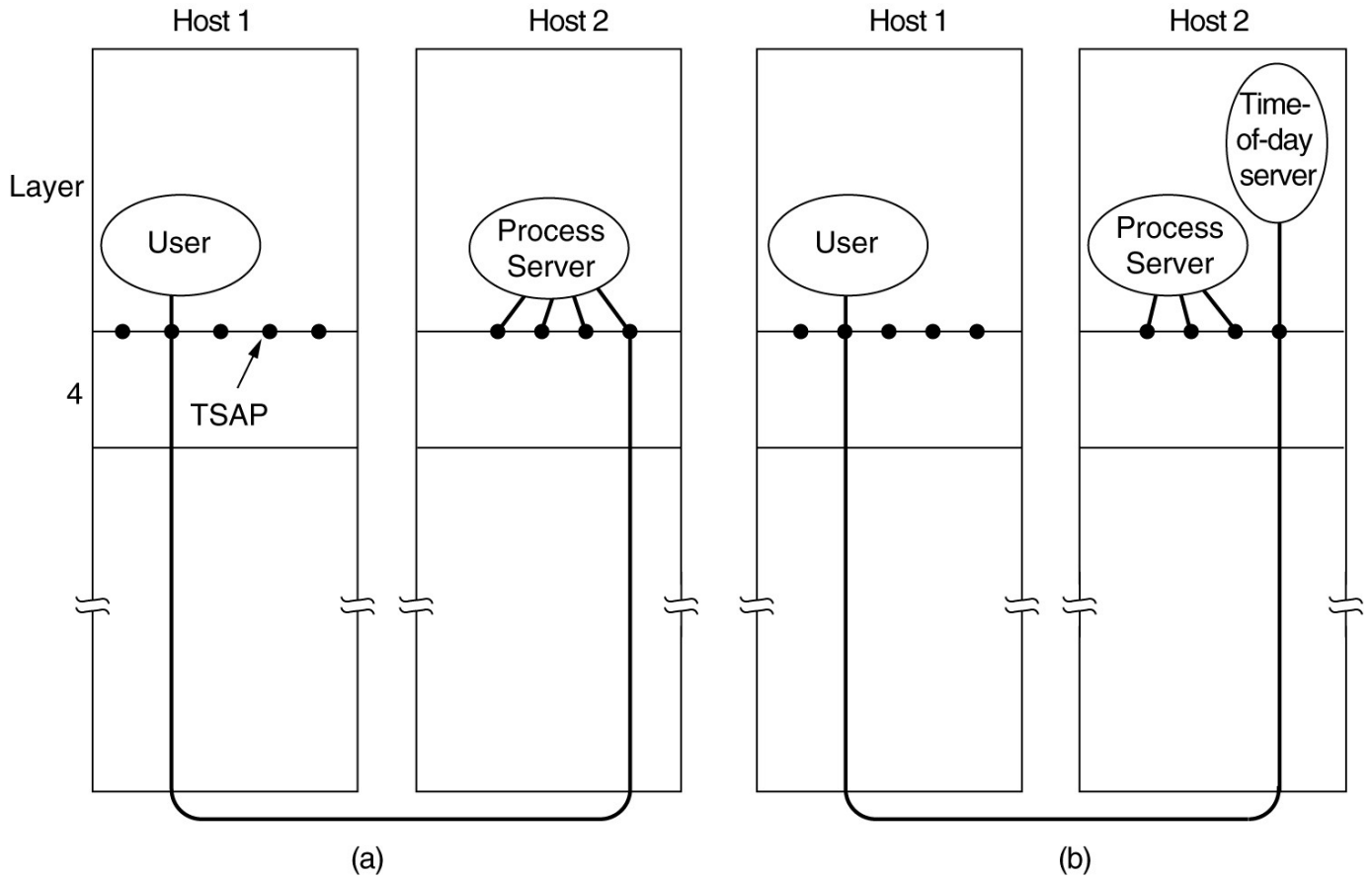
(a) Environment of the data link layer.

(b) Environment of the transport layer.

Addressing



TSAPs, NSAPs and transport connections.



How a user process in host 1 establishes a connection with a time-of-day server in host 2.

Connection Establishment

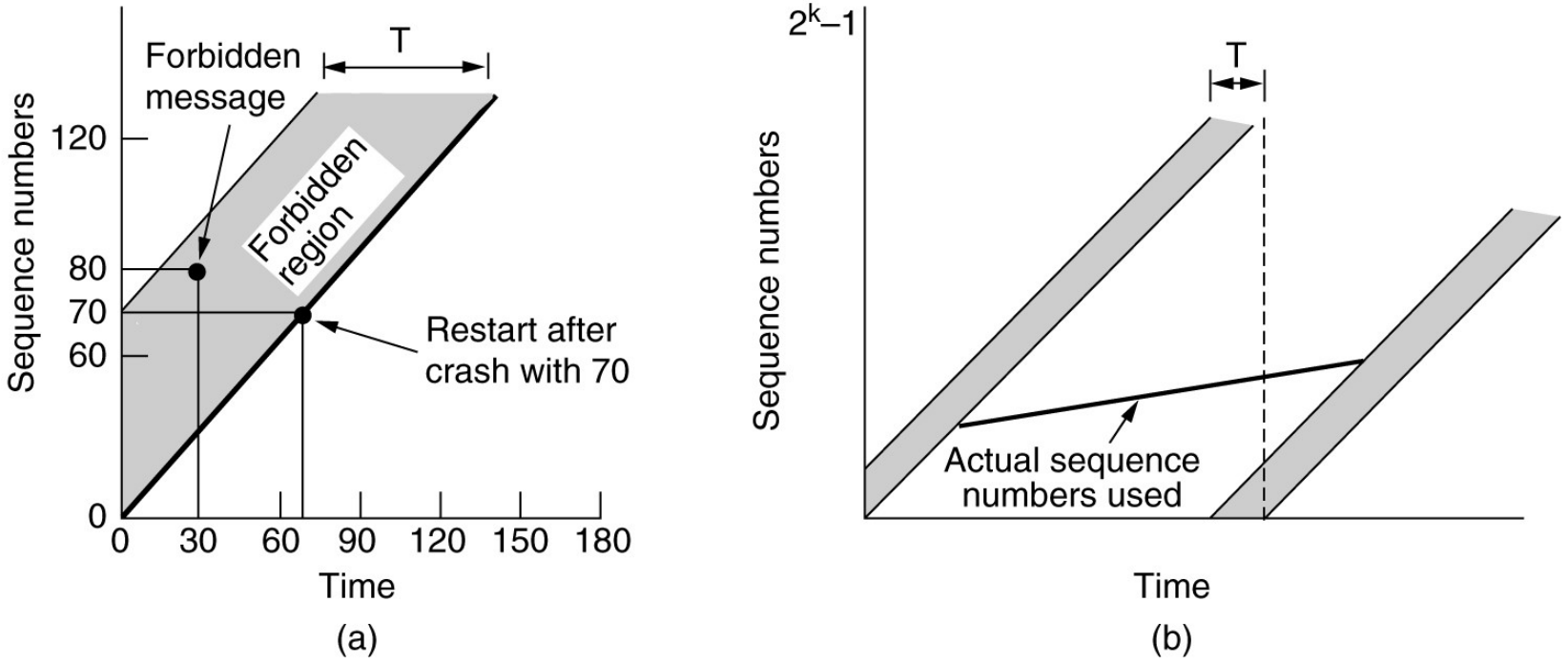
Easy but problem occur when the n/w can lose , store and duplicate packet.

Solution : kill off aged packets that are still exist.

Method

1. Restricted subnet design : prevent packet from looping.
2. Putting a hop counter in each packet.
3. Time stamping each packet.

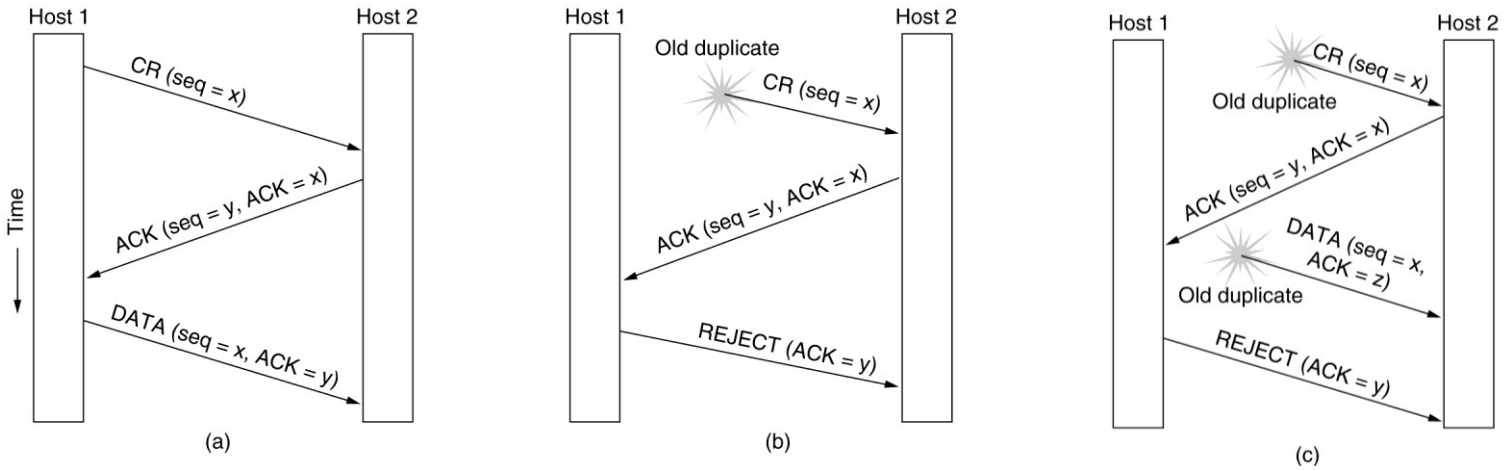
Connection Establishment (2)



(a) TPDUs may not enter the forbidden region.

(b) The resynchronization problem.

Connection Establishment (3)



Three protocol scenarios for establishing a connection using a three-way handshake. CR denotes CONNECTION REQUEST.

(a) Normal operation,

(b) Old CONNECTION REQUEST appearing out of nowhere.

(c) Duplicate CONNECTION REQUEST and duplicate ACK.

Thank you