

Unit I

* Three Way Handshaking (TCP)

Step 1 : SYN

- SYN is a segment sent by the client to the server. It acts as connection request.
- It informs the server that the client wants to establish a request.
- Synchronising sequence nos:
→ synchronises sequence number between two devices
→ SYN segment asks for seq number with the connection request.

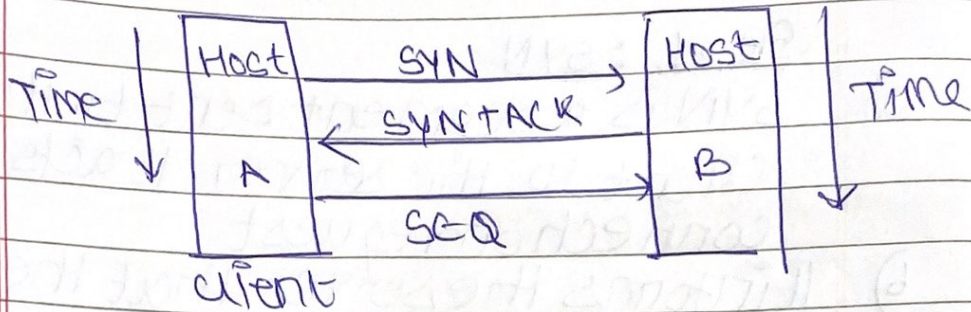
Step 2 SYN-ACK

- Sent by the server
- ACK informs the client that server is ready to build connection as it has received connection request.
- SYN segment informs sequence number with which server is ready to start.

Step 3 ACK

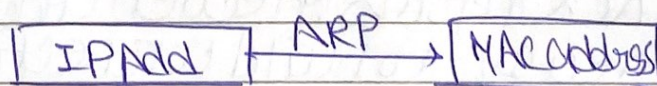
- It is the last step
- Sent by server in response of ACK-SYN
- Results in establishment of a connection

- After these steps, the client & server are ready for communication
Full duplex (both sides)



ARP and ARP Packages Media Access Control

- Used to find MAC address of a device when IP is known of destination
- Source knows IP but not MAC
- MAC is required for communication in local area network



- 1 for requests 2 for responses

Types of Mapping

Static Dynamic

COMPONENTS

- Cache Table
- Queues
- Output Module
- Input Module

Cache Control Module

- ↳ maintains the cache table & checks the entry periodically.
- ↳ if state is free checks another entry.
- ↳ if state field of the entry is pending, cache control module increases the attempt field value by 1.
- ↳ It checks the value of the attempt field.
- ↳ If $\text{attempt field} > \text{max limit}$, it updates the state field to FREE & destroys the queue.
- ↳ If state \rightarrow RESOLVED, CCM decreases time out field by 1.
- ↳ If, $\text{time out field} \leq 0$, it updates the state field of entry to FREE & destroys queue.

TCP Header

Source Port	Destination Port
Sequence No.	
Acknowledgement No.	
Do RSV Flags	Window
Checksum	urgent
options	

ICMP Messages

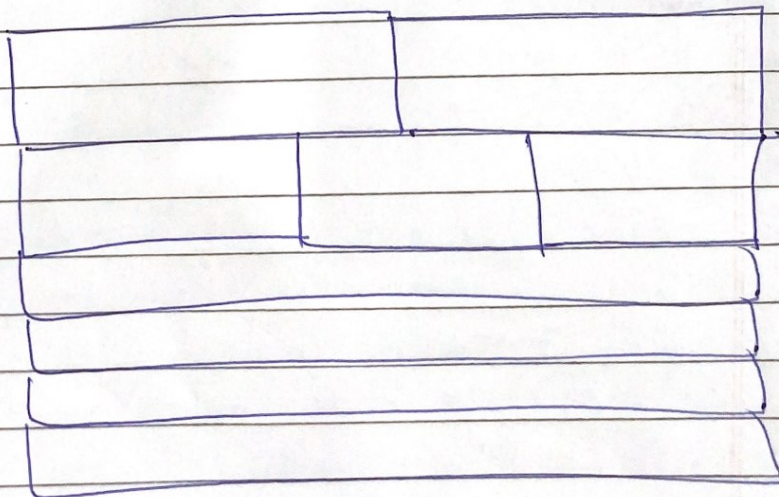
Type	Query Message	Error reporting
8/0	Echo (req/reply)	3 Destination unreachable
13/14	Timestamp	4 Source quench
18/18	Address mask	11 Time exceeded
10/9	Router	12 Parameter Problem
		5 Redirection

Silly window Syndrome in TCP flow control.

- a) poor implementation of TCP. (data transmission is extremely difficult).
- b) It causes sender window size to shrink to a silly value.
- c) The window size shrinks to such an extent that data being transmitted is smaller than TCP Header

Causes

1. Sender window transmitting one byte of data repeatedly.
2. Receiver window accepting one byte of data repeatedly.



ARP Header

- Hardware Type
1 for Ethernet
- Protocol Type
Used in network layer (protocol)
- Hardware Address Length
6 bytes of or Ethernet
- Protocol Address Length
Its value is 4 bytes
- Operation Code
Indicates packet is ARP ^{Request} (1) or ARP Response (2).
- Sender Hardware Address
Hardware address of source
- Sender Protocol Address
3 layer address of source
- Target Hardware Address
→ Used in a RARP request
→ Implies Sender Hardware & Protocol (response).
- Target Protocol Address
→ Used in ARP request
→ carries sender hardware & protocol