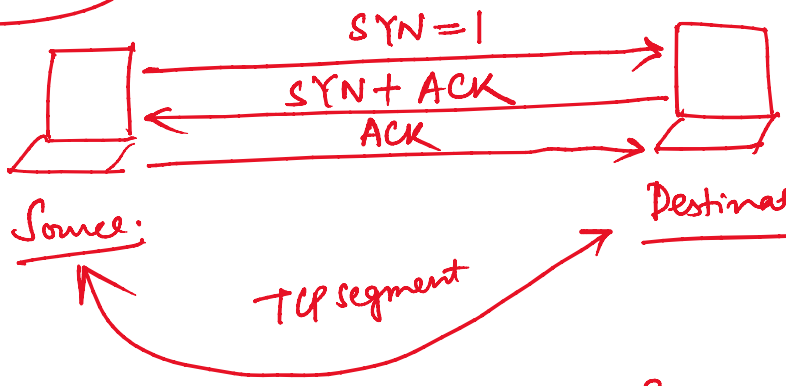
Module-2: Application Layer-5

Friday, February 4, 2022 10:52 AM

Authoritative DNS Server
Local DNS server
} They are present in every network.
Implementation: either on the same or different end systems.

A-type
Keeps records of publicly accessible resources of a network. (Web server(s), mail server(s))
acting as a server by responding to DNS queries coming from the Internet. (i.e. for incoming requests).
acting as a client by forwarding the DNS address resolution queries to hierarchical DNS servers (i.e. for outgoing request)
Occassionally, it can act as server if the answer to the DNS query is available in its local cache.

Three-way Handshaking Protocol - establishing TCP connection between source and destination

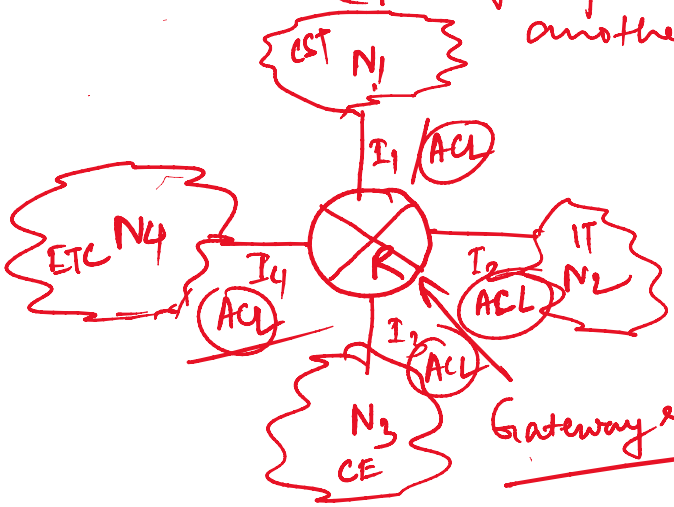


Connection is terminated by sending a TCP segment with FIN set to 1.

DoS attacks
→ (1) SYN flooding
→ (2) ICMP echo request packets. (ping)

Router
→ routing (computing the optimal from the source to the destination)
→ forwarding (pushing a packet from one interface to

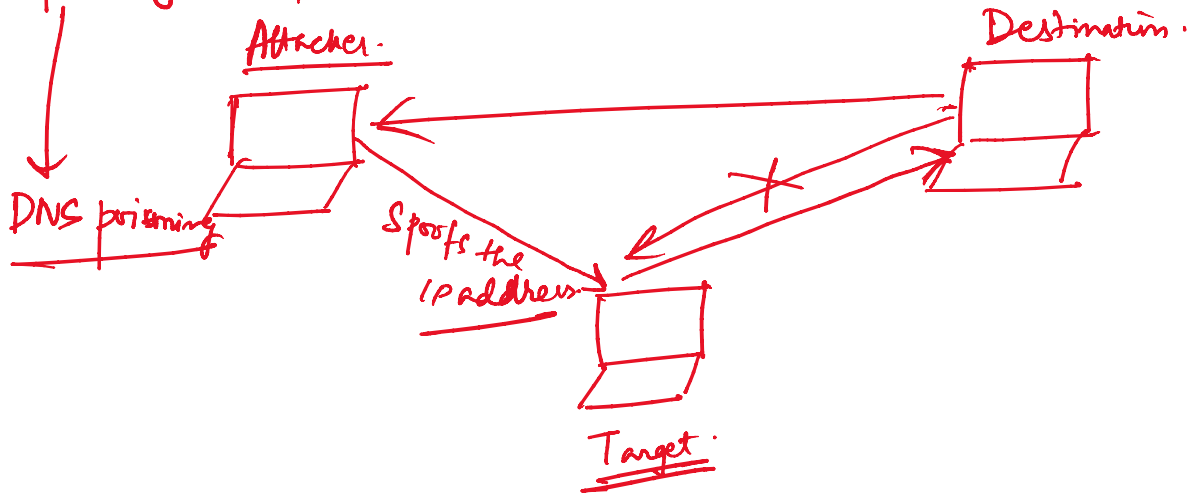
→ forwarding (pushing a packet from one interface to another interface)



for an enterprise network —
N_1, N_2, N_3, N_4 : Subnets.

Gateway router.

Spoofing: type of man-in-the-middle (MITM) attack.

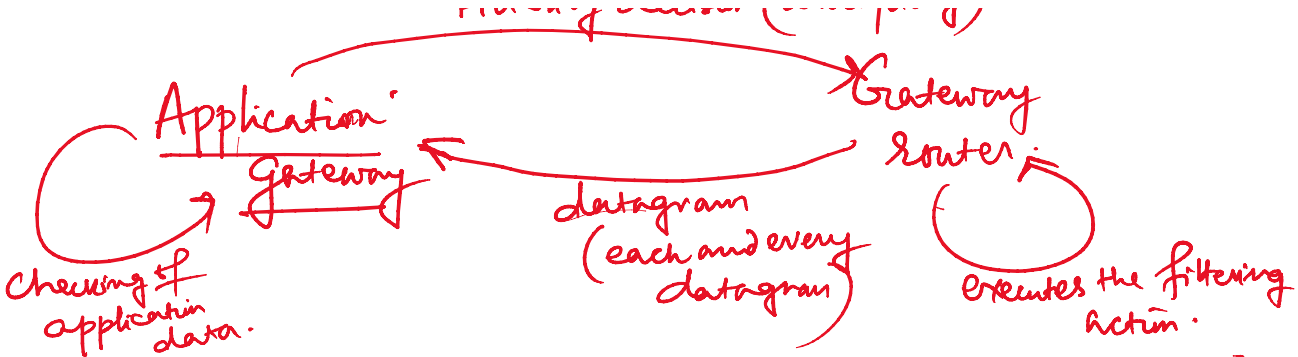


Application gateway collaborates with gateway (edge) router to implement the intricate security policies and helps in intelligent decision making

↳ filtering decision (whether to allow or deny datagrams).

Filtering decision (allow/deny)

Gateways



Trade-off

- Performance penalty (delay) → for both scenarios
  - application gateways implemented on the same end system.
  - application gateways implemented on different end systems.
- Implementation of non-trivial and intricate security policies.

HTTP – Web
FTP – File sharing
SMTP – email
DNS – address resolution.

TELNET, SSH – remote access / file sharing