

## Lecture 4

# Basic Concepts of proxy server

# Basic Concepts of proxy server

HTTP supports proxy servers. A proxy server is a computer that keeps copies of responses to recent requests. The HTTP client sends a request to the proxy server. The proxy server checks its cache. If the response is not stored in the cache, the proxy server sends the request to the corresponding server. Incoming responses are sent to the proxy server and stored for future requests from other clients.

The proxy server reduces the load on the original server, decreases traffic, and improves latency. However, to use the proxy server, the client must be configured to access the proxy instead of the target server.

# Firewalls

# What is a Firewall?

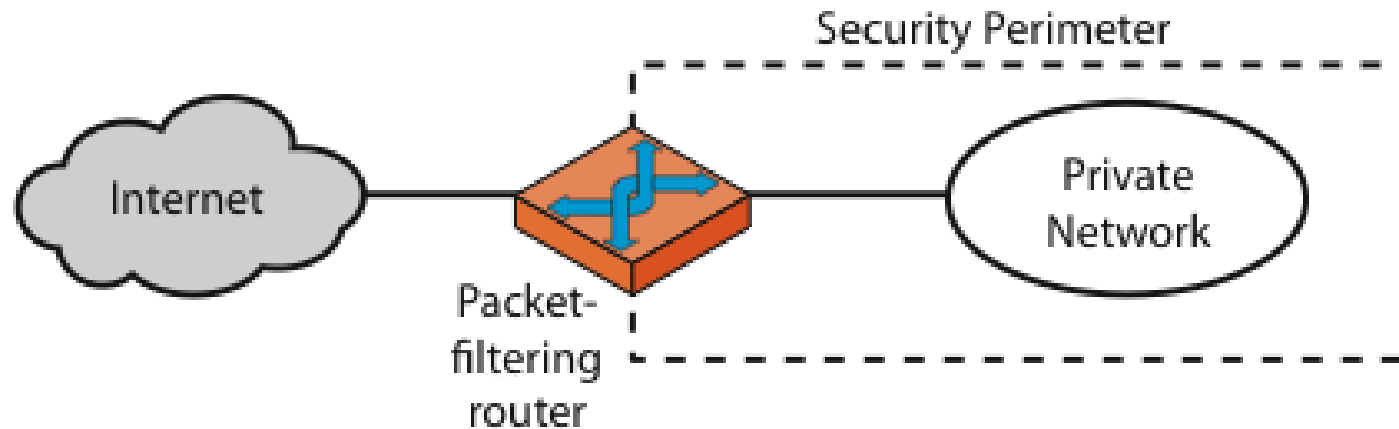
- A **choke point** of control and monitoring
- Interconnects networks with differing trust
- Imposes restrictions on network services
  - only authorized traffic is allowed
- Auditing and controlling access
  - can implement alarms for abnormal behavior
- Itself immune to penetration
- Provides **perimeter defence**

# Classification of Firewall

Characterized by protocol level it controls in

- Packet filtering
- Circuit gateways
- Application gateways
- Combination of above is dynamic packet filter

# Firewalls – Packet Filters



(a) Packet-filtering router

# Firewalls – Packet Filters

- Simplest of components
- Uses transport-layer information only
  - IP Source Address, Destination Address
  - Protocol/Next Header (TCP, UDP, ICMP, etc)
  - TCP or UDP source & destination ports
  - TCP Flags (SYN, ACK, FIN, RST, PSH, etc)
  - ICMP message type
- Examples
  - DNS uses port 53
    - No incoming port 53 packets except known trusted servers

# Usage of Packet Filters

- Filtering with incoming or outgoing interfaces
  - E.g., Ingress filtering of spoofed IP addresses
  - Egress filtering
- Permits or denies certain services
  - Requires intimate knowledge of TCP and UDP port utilization on a number of operating systems



# How to Configure a Packet Filter

- Start with a security policy
- Specify allowable packets in terms of logical expressions on packet fields
- Rewrite expressions in syntax supported by your vendor
- General rules - least privilege
  - All that is not expressly permitted is prohibited
  - If you do not need it, eliminate it