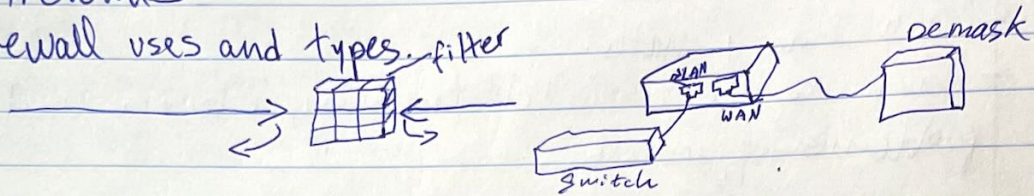


Firewalls

Firewall uses and types. filter



you can filter base on keywords.

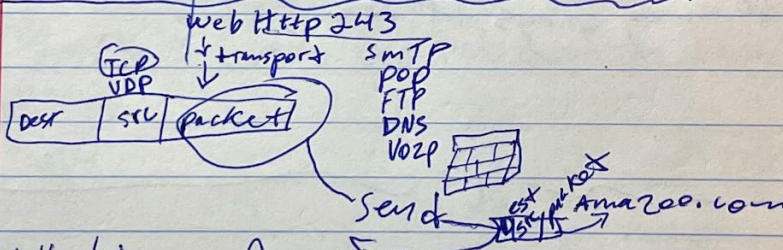
- Types:
- packet filtering firewall
 - Circuit-level gateway
 - Application-level gateway

youtube
sunny
classroom

→ ACL: access control list.

Stateless vs. Stateful firewall.

- | | |
|---|---|
| <ul style="list-style-type: none"> • just packet • No history • fast | <ul style="list-style-type: none"> • Data flow • Conversation • Resource intensive |
|---|---|



youtube
video

What is a firewall?

Firewall rules → access control list

- Host base firewall - protects that computer only.
- Network base software - can be stand alone firewall

youtube
sunny

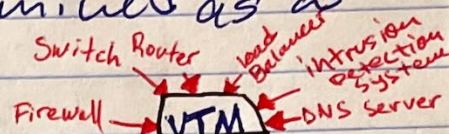
Intranet router Firewall proxyserver

1. Port filtering or Port Blocking
2. MAC filtering - Media Access Control Device

William Prado

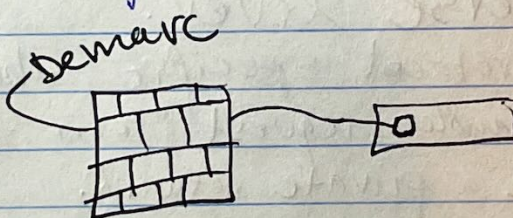
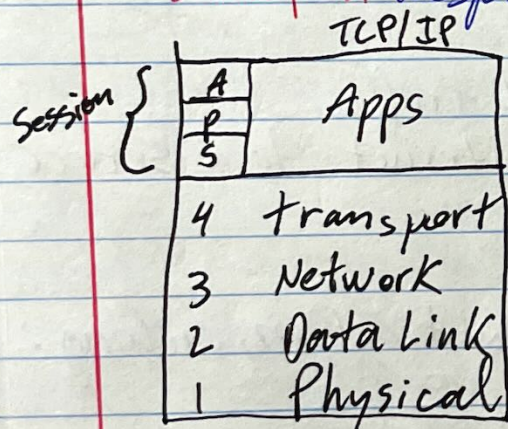
04/24/2025.

3. IP filtering block packets based on layer 3
4. Content filtering
5. Dynamic filtering or stateful filtering - must have a valid ID. All packets are examined as a stream as a whole.



VTM - Unified Threat Management (VTM) - single hrdw/swr.
What is next-gen firewall? NGFW is an advanced security tool designed to protect business from cyber threat.
NGFWs - recognize & control traffic, block new attacks, protect against phishing & ransomware.

Circuit-level Gateway. Layer 5 - session. Verify established TCP connections & keep track of the active sessions.
• Statefull inspection firewall.



Proxy server - retrieves data on the internet on behalf of a user.

- Privacy, IP address is not visible.

- Speed - cached web page database on proxy server

Saves bandwidth.

- Activity logging - keep record of websites visiting.

VPN - virtual private network. Encrypts data.

Net doesn't filter, only translate.

Proxy - filters at the application layer.

Youtube video
Spring classroom

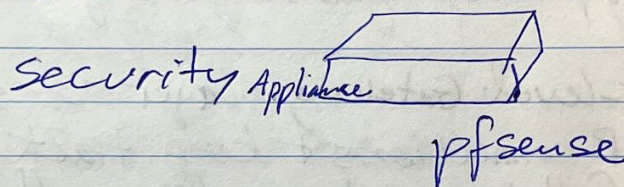
Proxy Server

- 1:
- 2: as a caching machine.
- 3: Controlling inbound & outbound traffic
- 4: /
- 5: can be setup to by pass the firewall.

Youtube video.

Proxy vs Reverse Proxy Explained

Proxy: "Agent of client", "Middle-man", "By pass firewall", Application firewall, WAF, "Fucker".
Filters: port, MAC, IP, content.
UTM: NGFW.



Reverse server.

- protocol-specific inbound traffic
- handles request from the internet to a server located inside a private network.

Reverse Server Benefits: load balancing, authentication, caching.

Reverse Server to protect the server.
Forward Server to protect the client.

Network types: LAN, WAN, PAN, WLAN, CAN, MAN, SAN

PAN - personal area network.

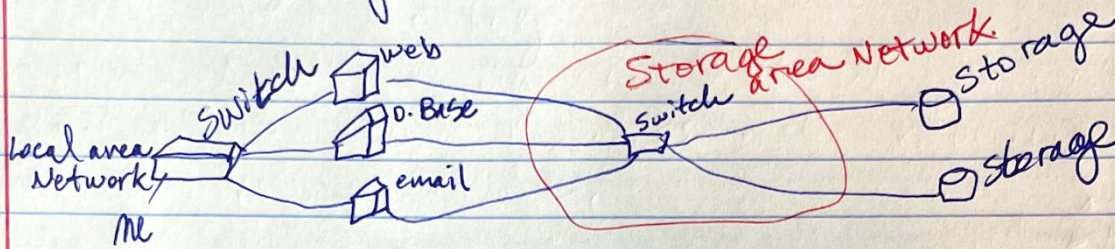
LAN - local area network.

WLAN - wireless local area network

CAN - campus area network.

MAN - Metropolitan area network.

SAN - Storage area network



summary classroom LAN topologies layer 1. physical, logical, hybrid

logical - signal flow.

point to point - one device connected to another device.

point to multipoint topology.

Bus topology. daisy chain topology.

Ring topology - data flow in circle until reach destination.

Star topology.

Hybrid Star Ring (star-wired ring)
Star bus (star-wired bus)

Partially Meshed topology →

fully meshed topology.

mesh topology

Infrastructure topology.

CISCO

Three-tiered Network Hierarchy

CISCO

- Scalable
- Resilient
- Manageable.

