OPNSense is a **free, open-source firewall and router software** based on hardenedBSD(secure version of freeBSD). It’s like turning a regular PC into a powerful network security appliance. You manage it through a web interface—no need to touch the terminal unless you want to

It provides a full-featured **web-based GUI** to configure firewall rules, NAT, VPNs, IDS/IPS (like Suricata), VLANs, DMZs, routing, DHCP/DNS, and more.

Acts as a **firewall, router, VPN server, DHCP/DNS server**, and more—all in one.

Ideal for **home labs, small businesses, and even large enterprises**.

Supports **third-party packages** like Snort (IDS/IPS), Squid (proxy), pfBlockerNG (ad blocker), etc.

Features:

Filters traffic using stateful packet inspection

Translates internal IPs to public IPs

Supports IPsec, OpenVPN, WireGuard for secure remote access

Assigns IPs and resolves domain names internally

Installs add-ons like Snort, Squid, pfBlockerNG

Why we are usin OPNsense instead of pfSense?

Because opensense (developed by desico)is fork of pfsesense (netgate) .both provides same features but pfsense is oudated and opensense is modern provides modern UI ,regular updates,and security patches,it has large community support, it gives better speed than pfsense, provides easier plugin management.

00:50:56:23:80:A8 mac of network adapter2

The three most common networking modes are **Bridged**, **NAT**, and **Host-only.**

**Bridge= vm act like separate machine on our physical machine**

**It communicate with host,vms,to internet.**

**NAT = vm connects to internet,and is not exposed to physical lan /network.here vmware acts as router, gives private ip through dhcp and translates their traffic.here host’s ip is shared with vms.**

**Connects to host,other vms and internet but do not connect to other devices which are present in lan.**

**Host only= here vms communicate only with host and other hostonly vms .It cant communicate with other vms which are in nat because they both of them will belong to different network.host only uses vmnet1 and nat uses vmnet 80.**

**00:50:56:2D:A3:5A mac of networka adpter 2 vmnet5 host only== lan**

**00:50:56:26:4A:02 mac of adpter3 vmnet4host only =for dmz**