

Modem vs Router (and Why Your Router Gets Botnetted)

Quick reference cheat sheet · Episode 010 · Net+ / Sec+



Stage	What happens	Key terms
1. Modem	Converts your ISP's line signal (coax, fiber, or phone) to and from Ethernet. By itself it gives you one internet connection and nothing else.	modem, Ethernet, ISP line
2. Router	WAN port takes one public IP, then does four jobs: DHCP (private IPs), NAT (share the public IP), Wi-Fi, and a stateful firewall that drops unrequested inbound.	WAN, public IP, DHCP, NAT, firewall
3. Gateway	The combo box: a modem and a router in one case. Convenient, but less control and a single point of failure. Still two devices in one shell.	gateway, combo box, bridge mode
4. Why targeted	The router is an always-on Linux computer wired to the public internet, rarely patched, often still on its default password. A perfect victim.	always-on, unpatched, default creds
5. Mirai	2016 malware scans the internet, brute-forces Telnet (port 23) with ~60 default logins, then falls back to known CVEs on unpatched devices. The way in is a login.	Mirai, Telnet :23, default logins, CVE
6. Botnet + DDoS	Hijacked routers take orders from one operator and flood one target at once (DDoS), from too many source IPs to block. 2016 Mirai hit Dyn (DNS) and took Twitter/Netflix/Reddit offline.	botnet, DDoS, Dyn, 100+ Gbps
7. Fixes	Change the default password (stops most of Mirai), auto-update firmware, disable remote admin / Telnet / UPnP, retire end-of-life routers.	default password, firmware, UPnP, EOL

Acronym key

modem ISP line to Ethernet

WAN router's internet-side port

NAT many devices, one public IP

Mirai 2016 router botnet malware

UPnP auto-opens ports (disable)

router shares + guards one link

public IP your one address online

firewall drops unrequested inbound

botnet hijacked machines, one boss

firmware router's updatable software

gateway modem + router in one box

DHCP hands out private IPs

Telnet old login service, port 23

DDoS flood from many devices

Dyn DNS provider hit in 2016