# nmap Network scanner

## CONCEPTS

> Only scan hosts and networks you own or are explicitly authorised to test. Unauthorised scans can be illegal and set off alarms.

**Targets** hosts, CIDR
↓ discovery
**Live hosts** ping probes
↓ port scan
**Port states** open/closed/filtered
↓ -sV -O -sC
**Details** service, OS, scripts

> Without root, nmap falls back to a TCP connect scan (-sT); raw-packet scans like -sS, -sU and -O need privileges.

## TARGETS

`nmap <host>`
Scan one host

`nmap <host1> <host2>`
Scan several hosts

`nmap <net>/24`
Scan a whole subnet (CIDR)

`nmap -iL <file>`
Read targets from a file

## HOST DISCOVERY

`nmap -sn <net>/24`
Ping scan only, no port scan

`nmap -Pn <host>`
Skip discovery, assume host is up

## PORTS

`nmap -p <port> <host>`
Scan one port

`nmap -p 22,80,443 <host>`
Scan a port list

`nmap -p 1-1023 <host>`
Scan a port range

`nmap -p- <host>`
Scan all 65535 ports

`nmap -F <host>`
Fast: top 100 ports only

`nmap --top-ports <n> <host>`
Scan the n most common ports

## SCAN TYPES

`nmap -sS <host>`
TCP SYN (half-open) scan

`nmap -sT <host>`
TCP connect scan

`nmap -sU <host>`
UDP scan

## DETECTION

`nmap -sV <host>`
Detect service versions

`nmap -O <host>`
Detect the operating system

`nmap -A <host>`
OS, versions, scripts, traceroute

## SCRIPTS (NSE)

`nmap -sC <host>`
Run default scripts

`nmap --script <name> <host>`
Run a named script

`nmap --script <category> <host>`
Run a category (safe, vuln…)

`nmap --script "http-*" <host>`
Run scripts by wildcard

> NSE scripts are not sandboxed and categories like intrusive, brute, exploit and dos can disrupt services. Review scripts before running them and prefer safe.

## TIMING & PERFORMANCE

`nmap -T4 <host>`
Faster scan on a reliable network

## OUTPUT

`nmap -v <host>`
More verbose, repeat for more

`nmap --open <host>`
Show only open ports

`nmap -oN <file> <host>`
Save normal output

`nmap -oX <file> <host>`
Save XML output

`nmap -oA <base> <host>`
Save normal, XML and grepable