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.

Port states: open, closed, filtered (no reply, probably a firewall), unfiltered, plus open|filtered and closed|filtered when nmap cannot tell.

TARGETS

nmap *<host>*
Scan one host

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

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

nmap 192.168.0-255.1-254
Scan with octet ranges

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

nmap --exclude *<hosts>*
Skip hosts or networks

nmap -6 *<host>*
Scan IPv6 addresses

HOST DISCOVERY

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

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

nmap -PS<*ports*> *<host>*
Discover with TCP SYN probes

nmap -n *<host>*
Never resolve DNS names

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

nmap -p T:80,U:53 *<host>*
Mix TCP and UDP 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

nmap -sV --version-intensity *<0-9>* *<host>*
Set version probe depth

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

nmap --script-args *<k>*=*<v>* *<host>*
Pass arguments to scripts

SCRIPTS (NSE) (cont.)

nmap --script-help *<script>*
Describe a script or category

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

nmap -oG *<file>* *<host>*
Save grepable output

nmap --reason *<host>*
Explain each port state

MISC

nmap -h
Short help screen

nmap --version
Print nmap version

RECIPES

Map a LAN, then dig in

```
# 1. who is up?
nmap -sn 192.168.1.0/24 -oG - | grep Up
# 2. details on one host
sudo nmap -sS -sV -O -p- 192.168.1.10
```

Thorough scan, saved

```
sudo nmap -p- -sV -sC -T4 -oA scan <host>
# review later
less scan.nmap
```

Quick web service check

```
nmap -p 80,443,8080 --open -sV \
 "--script=http-title" <net>/24
```