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Nmap Cheat Sheet ∞

CHEAT-SHEET



Nmap (network mapper), the god of port scanners used for network discovery and the basis for most security enumeration during the initial stages of a penetration test. The tool was written and maintained by Fyodor AKA Gordon Lyon.

Nmap displays exposed services on a target machine along with other

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CHEAT SHEETS

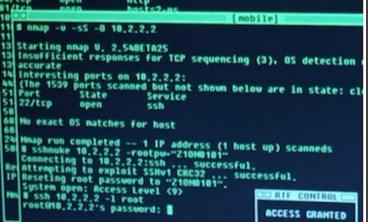
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useful information such as the verion and OS detection.

Nmap has made twelve movie appearances, including The Matrix Reloaded, Die Hard 4, Girl With the Dragon Tattoo, and The Bourne Ultimatum.

- Service Version Detection
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Nmap in a nutshell

Host discovery

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- Port discovery / enumeration
- Service discovery
- Operating system version detection
- Hardware (MAC) address detection
- Service version detection
- Vulnerability / exploit detection, using Nmap scripts (NSE)

Nmap Examples

Basic Nmap scanning examples, often used at the first stage of enumeration.

COMMAND	DESCRIPTION
nmap -sP 10.0.0.0/24	Ping scans the network, listing machines that respond to ping.
nmap -p 1-65535 -sV -sS -T4 target	Full TCP port scan using with service version detection - usually my first scan, I find T4 more accurate than T5 and still "pretty"
	quick".

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nmap -v -sS -A -T4 target	Prints verbose output, runs stealth syn scan, T4 timing, OS and version detection + traceroute and scripts against target services.
nmap -v -sS -A -T5 target	Prints verbose output, runs stealth syn scan, T5 timing, OS and version detection + traceroute and scripts against target services.
nmap -v -sV -O -sS -T5 target	Prints verbose output, runs stealth syn scan, T5 timing, OS and version detection.
nmap -v -p 1-65535 -sV -0 -sS -T4 target	Prints verbose output, runs stealth syn scan, T4 timing, OS and version detection + full port range scan.
nmap -v -p 1-65535 -sV -0 -sS -T5 target	Prints verbose output, runs stealth syn scan, T5 timing, OS and version detection + full port range scan.

(i) Agressive scan timings are faster, but could yeild inaccurate results!

T5 uses very aggressive scan timings and could lead to missed ports, T4 is a better compromise if you need fast results.

Nmap scan from file

COMMAND	DESCRIPTION
nmap -iL ip-addresses.txt	Scans a list of IP addresses, you can add options before / after.

Nmap output formats

COMMAND	DESCRIPTION
nmap -sV -p 139,445 -oG grep-output.txt 10.0.1.0/24	Outputs "grepable" output to a file, in this example Netbios servers. E.g, The output file could be grepped for "Open".
nmap -sS -sV -T5 10.0.1.99webxml -oX - xsltprocoutput file.html -	Export nmap output to HTML report.

Nmap Netbios Examples

COMMAND	DESCRIPTION
---------	-------------

nmap -sV -v -p 139,445 10.0.0.1/24	Find all Netbios servers on subnet
nmap -sUscript nbstat.nse -p 137 target	Nmap display Netbios name
nmapscript-args=unsafe=1script smb-check-vulns.nse -p 445 target	Nmap check if Netbios servers are vulnerable to MS08-067

--script-args=unsafe=1 has the potential to crash servers / services

Becareful when running this command.

Nmap Nikto Scan

COMMAND	DESCRIPTION
nmap -p80 10.0.1.0/24 -oG - nikto.pl -h -	Scans for http servers on port 80 and pipes into Nikto for scanning.
nmap -p80,443 10.0.1.0/24 -oG - nikto.pl -h -	Scans for http/https servers on port 80, 443 and pipes into Nikto for scanning.

Nmap Cheatsheet

Target Specification

Nmap allows hostnames, IP addresses, subnets.

Example blah.highon.coffee, nmap.org/24, 192.168.0.1; 10.0.0-255.1-254

COMMAND	DESCRIPTION
-iL	inputfilename: Input from list of hosts/networks
-iR	num hosts: Choose random targets
exclude	host1[,host2][,host3], : Exclude hosts/networks
excludefile	exclude_file: Exclude list from file

Host Discovery

COMMAND	DESCRIPTION
-sL	List Scan - simply list targets to scan
-sn	Ping Scan - disable port scan

-Pn	Treat all hosts as online skip host discovery
-PS/PA/PU/PY[portlist]	TCP SYN/ACK, UDP or SCTP discovery to given ports
-PE/PP/PM	ICMP echo, timestamp, and netmask request discovery probes
-PO[protocol list]	IP Protocol Ping
-n/-R	Never do DNS resolution/Always resolve [default: sometimes]

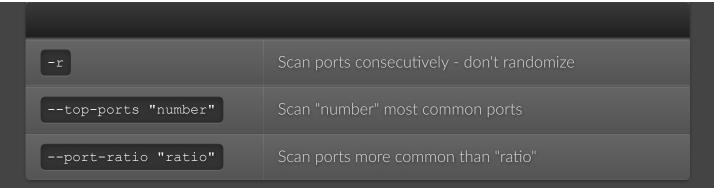
Scan Techniques

COMMAND	DESCRIPTION
-sS -sT -sA -sW	TCP SYN scan Connect scan ACK scan Window scan Maimon scan
-sU	UDP Scan

-sN -sF -sX	TCP Null scan FIN scan Xmas scan
scanflags	Customize TCP scan flags
-sI zombie host[:probeport]	ldle scan
-sY -sZ	SCTP INIT scan COOKIE-ECHO scan
-s0	IP protocol scan
-b "FTP relay host"	FTP bounce scan

Port Specification and Scan Order

COMMAND	DESCRIPTION
-р	Specify ports, e.gp80,443 or -p1-65535
-p U:PORT	Scan UDP ports with Nmap, e.gp U:53
-F	Fast mode, scans fewer ports than the default scan



Service Version Detection

COMMAND	DESCRIPTION
-sV	Probe open ports to determine service/version info
version-intensity "level"	Set from 0 (light) to 9 (try all probes)
version-light	Limit to most likely probes (intensity 2)
version-all	Try every single probe (intensity 9)
version-trace	Show detailed version scan activity (for debugging)

Script Scan

COMMAND	DESCRIPTION
-sC	equivalent toscript=default

script="Lua scripts"	"Lua scripts" is a comma separated list of directories, script-files or script-categories
script-args=n1=v1,[n2=v2,]	provide arguments to scripts
-script-args-file=filename	provide NSE script args in a file
script-trace	Show all data sent and received
script-updatedb	Update script database
script-help="Lua scripts"	Show help about scripts

OS Detection

COMMAND	DESCRIPTION
-0	Enable OS Detection
osscan-limit	Limit OS detection to promising targets
osscan-guess	Guess OS more aggressively

Timing and Performance

Options which take TIME are in seconds, or append 'ms' (milliseconds), 's' (seconds), 'm' (minutes), or 'h' (hours) to the value (e.g. 30m).

COMMAND	DESCRIPTION
-т 0-5	Set timing template - higher is faster (less accurate)
min-hostgroup SIZEmax-hostgroup SIZE	Parallel host scan group sizes
min-parallelism NUMPROBESmax-parallelism NUMPROBES	Probe parallelization
min-rtt-timeout TIMEmax-rtt-timeout TIMEinitial-rtt-timeout TIME	Specifies probe round trip time
max-retries TRIES	Caps number of port scan probe retransmissions
host-timeout TIME	Give up on target after this long
scan-delay TIMEmax-scan-delay TIME	Adjust delay between probes
min-rate NUMBER	Send packets no slower than NUMBER per second
max-rate NUMBER	Send packets no faster than NUMBER per second

Firewalls IDS Evasion and Spoofing

COMMAND	DESCRIPTION
-f;mtu VALUE	Fragment packets (optionally w/given MTU)
-D decoy1, decoy2, ME	Cloak a scan with decoys
-S IP-ADDRESS	Spoof source address
-e IFACE	Use specified interface
-g PORTNUMsource-port PORTNUM	Use given port number
proxies url1,[url2],	Relay connections through HTTP / SOCKS4 proxies
data-length NUM	Append random data to sent packets
ip-options OPTIONS	Send packets with specified ip options
ttl VALUE	Set IP time to live field
spoof-mac ADDR/PREFIX/VENDOR	Spoof NMAP MAC address
badsum	Send packets with a bogus TCP/UDP/SCTP checksum

Nmap Output Options

COMMAND	DESCRIPTION
-oN	Output Normal
-oX	Output to XML
-os	Script Kiddie / 1337 speak sigh
-oG	Output greppable - easy to grep nmap output
-oA BASENAME	Output in the three major formats at once
-v	Increase verbosity level use -vv or more for greater effect
-d	Increase debugging level use -dd or more for greater effect
reason	Display the reason a port is in a particular state
open	Only show open or possibly open ports
packet-trace	Show all packets sent / received
iflist	Print host interfaces and routes for debugging
log-errors	Log errors/warnings to the normal-format output file

append-output	Append to rather than clobber specified output files
resume FILENAME	Resume an aborted scan
stylesheet PATH/URL	XSL stylesheet to transform XML output to HTML
webxml	Reference stylesheet from Nmap.Org for more portable XML
no-stylesheet	Prevent associating of XSL stylesheet w/XML output

Misc Nmap Options

COMMAND	DESCRIPTION
-6	Enable IPv6 scanning
-A	Enable OS detection, version detection, script scanning, and traceroute
datedir DIRNAME	Specify custom Nmap data file location
send-eth send-ip	Send using raw ethernet frames or IP packets
privileged	Assume that the user is fully privileged

unprivileged	Assume the user lacks raw socket privileges
-V	Show nmap version number
-h	Show nmap help screen

Nmap Enumeration Examples

The following are real world examples of Nmap enumeration.

Enumerating Netbios

The following example enumerates Netbios on the target networks, the same process can be applied to other services by modifying ports / NSE scripts.

Detect all exposed Netbios servers on the subnet.

Nmap find exposed Netbios servers

```
root:~# nmap -sV -v -p 139,445 10.0.1.0/24
Starting Nmap 6.47 ( http://nmap.org ) at 2014-12-11 21:26 GMT
```

```
Nmap scan report for nas.decepticons 10.0.1.12
Host is up (0.014s latency).

PORT STATE SERVICE VERSION
139/tcp open netbios-ssn Samba smbd 3.X (workgroup: MEGATRON)
445/tcp open netbios-ssn Samba smbd 3.X (workgroup: MEGATRON)

Service detection performed. Please report any incorrect results at http://nmap.org/submit/ .

Nmap done: 256 IP addresses (1 hosts up) scanned in 28.74
seconds
```

Nmap find Netbios name.

Nmap find exposed Netbios servers

```
root:~# nmap -sU --script nbstat.nse -p 137 10.0.1.12

Starting Nmap 6.47 ( http://nmap.org ) at 2014-12-11 21:26 GMT
Nmap scan report for nas.decepticons 10.0.1.12
Host is up (0.014s latency).

PORT STATE SERVICE VERSION
137/udp open netbios-ns

Host script results:
|_nbstat: NetBIOS name: STARSCREAM, NetBIOS user: unknown,
NetBIOS MAC: unknown (unknown)
```

```
Nmap done: 256 IP addresses (1 hosts up) scanned in 28.74 seconds
```

Check if Netbios servers are vulnerable to MS08-067

Nmap check MS08-067

```
root:~#
nmap --script-args=unsafe=1 --script smb-check-vulns.nse -p 445
10.0.0.1

Nmap scan report for ie6winxp.decepticons (10.0.1.1)
Host is up (0.00026s latency).
PORT STATE SERVICE
445/tcp open microsoft-ds
Host script results:
| smb-check-vulns:
| MS08-067: VULNERABLE
| Conficker: Likely CLEAN
| regsvc DoS: NOT VULNERABLE
| SMBv2 DoS (CVE-2009-3103): NOT VULNERABLE
| MS07-029: NO SERVICE (the Dns Server RPC service is inactive)
Nmap done: 1 IP address (1 host up) scanned in 5.45 seconds
```

The information gathered during the enumeration indicates the target is vulnerable to MS08-067, exploitation will confirm if it's vulnerable to MS08-067.

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