NMAP

Network Scanning and Port Scanning Tool

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INTRODUCTION

- NMAP = Network Mapper
- Nmap is and an Open Source utility which can quickly scan broad ranges of devices and provide valuable information about the devices on your network.It can be used for IT auditing and asset discovery as well as security profiling of the network.
- Nmap is a tool used for determining the hosts that are running and what services the hosts are running.
- Originally developed by Gorden Lyon(Fyodor).
- Released in September 1997 stable version in 23 Aug 2014 , NMAP v6.47.
- Written in c,c++,Python. It is Cross Platform.
- Website http://nmap.org

OVERVIEW

- What Does NMAP do?
- NMAP uses raw IP packets to determine what hosts are available on the network , the services that are enabled, the operating system and version of the host, what sort of firewall and packet filters are in place and many other aspects of the network.
- The Information can be used both proactively to identify and correct security holes and by attackers to perform reconnaissance about the types and quantities of targets available and what weaknesses exists.

WHY NMAP?

- Nmap can use Syn/XMas/NULL scan in a speed where you can see nowhere else .0 The Nmap suite includes an advanced GUI and results viewer (Zenmap), a flexible data transfer, redirection, and debugging tool (Ncat), a utility for comparing scan results (Ndiff), and a packet generation and response analysis tool (Nping). Nmap was named “Security Product of the Year” by Linux Journal, Info World, LinuxQuestions.Org, and Codetalker Digest. It was even featured in eight movies , including The Matrix Reloaded , Die Hard 4 , and The Bourne Ultimatum.

PRIMARY USES OF NMAP

- 1. Determining open ports and services running in an host:
- 2. Determine the Operating System running on a host
- 3. Alter the source IP of the scan (One way is to use –S option)
- 4.Scriptable Interaction with the target- using Nmap Scripting Engine(NSE)

BASIC NMAP FUNCTIONS

- Host discovery

  -Which Hosts are up(IP Addresses)

  -Ping Scans

- Port Scanning

  -Which ports of the target host have servers listening on them

  -Allows a guess of software and services a machine is running

- OS Detection

  -OS Detection/OS Fingerprinting

HOST DETECTION

- What is Host Detection?
- Host detection is a feature of Nmap that tells it to further analyze what the packet behavior is, and asses what operating system the target host is Based on.
- What is Version Detection?
- Version detection Expands on host detection by also querying the ports Nmap finds open for what the service is.
- How does Nmap identifies host?
- Nmap by default will perform either TCP SYN or TCP Connect Ping to gather active hosts. In some cases Nmap will even use ARP pinging to identify hosts as well.

PORT SCANNING

- The act of testing a remote port to know in which state it is.
- •Common port states:
  - –Open,
  - –Closed,
  - –and Filtered
- Scan Displays
  - -Service Name
  - -Port Number
  - -Port State
  - -Protocol

PORT STATES

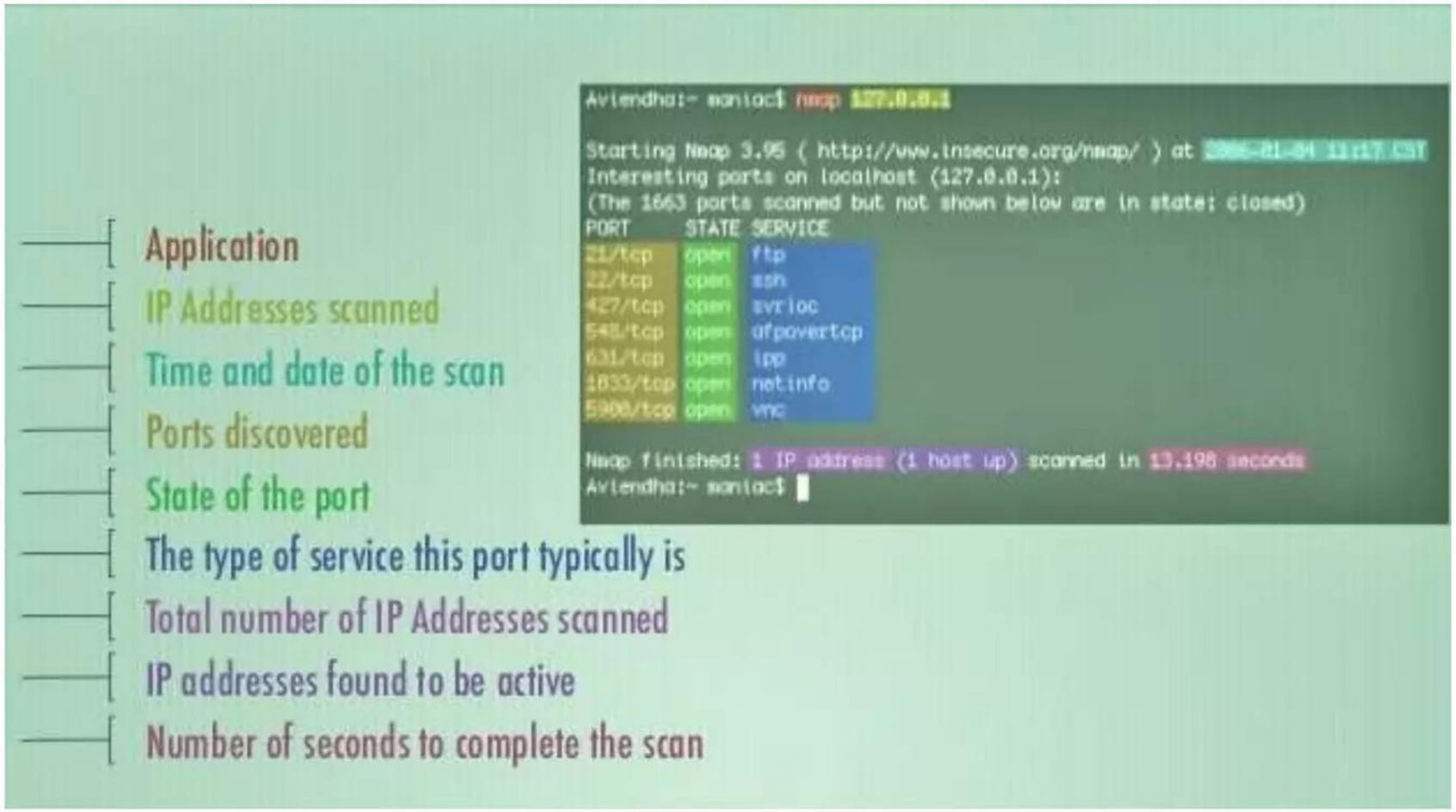
- Open
  - Will Accept connections
- Closed
  - Host is up, but no services running on the port
- Filtered
  - Firewall or other network obstacle is covering port
- Unfiltered or Closed
  - Port is accessible but Determined to be closed with no obstacle or interface
  - -most common case

PORT SCANNING -TECHNIQUES

- •TCP SYN or Stealth Scan (-sS)
- •TCP Connect Scan (-sT)
- •TCP ACK Scan (-sA)
- •UDP Scan (-sU)
- •TCP FIN Scan (-sF)
- •TCP NULL Scan (-sN)
- •XMAS Tree Scan(-sX)
- •Custom Scan (--scanflags)
- •IP Protocol Scan (-sO)
- •Bounce Attack[ftp] (-b)

OS DETECTION

In third part of scanning Nmap also detects the type OS run by the Host. With the use of OS Fingerprinting.



ANATOMY OF A NMAP ARGUMENT

- nmap –sS-PO –O –p 1-1024 192.168.1.*

- -s = Scan type
- -P = Ping Type
- -O = Optional os detection
- -p #-# = port range
- Id Range: 192.168.1.0/24,192.168.1.1-254

IMPORTANT

- -O = os detection
- -sV = Service Detection

  -allports

  -Version intensity<intensity>(set version scan intensity)

-F = Fast Scan(0-1024)

-r = don’t randomize ports

-6 = IPV6 scanning enable

-A = Aggressive scan option(-O,-sV,-traceroute)

NMAP RUNS ON ?

- Nmap is available for wide range of Operating System platforms. The standard download is a UNIX version.(Which runs on Linux, Solaris ,free/Net/Open BSD and Mac OS X) And the windows version Nmap as well Recommended GUI Zenmap.

NMAP USING REDHAT

- Information on Nmap can be obtained from the manual pages of Redhat using the command ‘man nmap’.

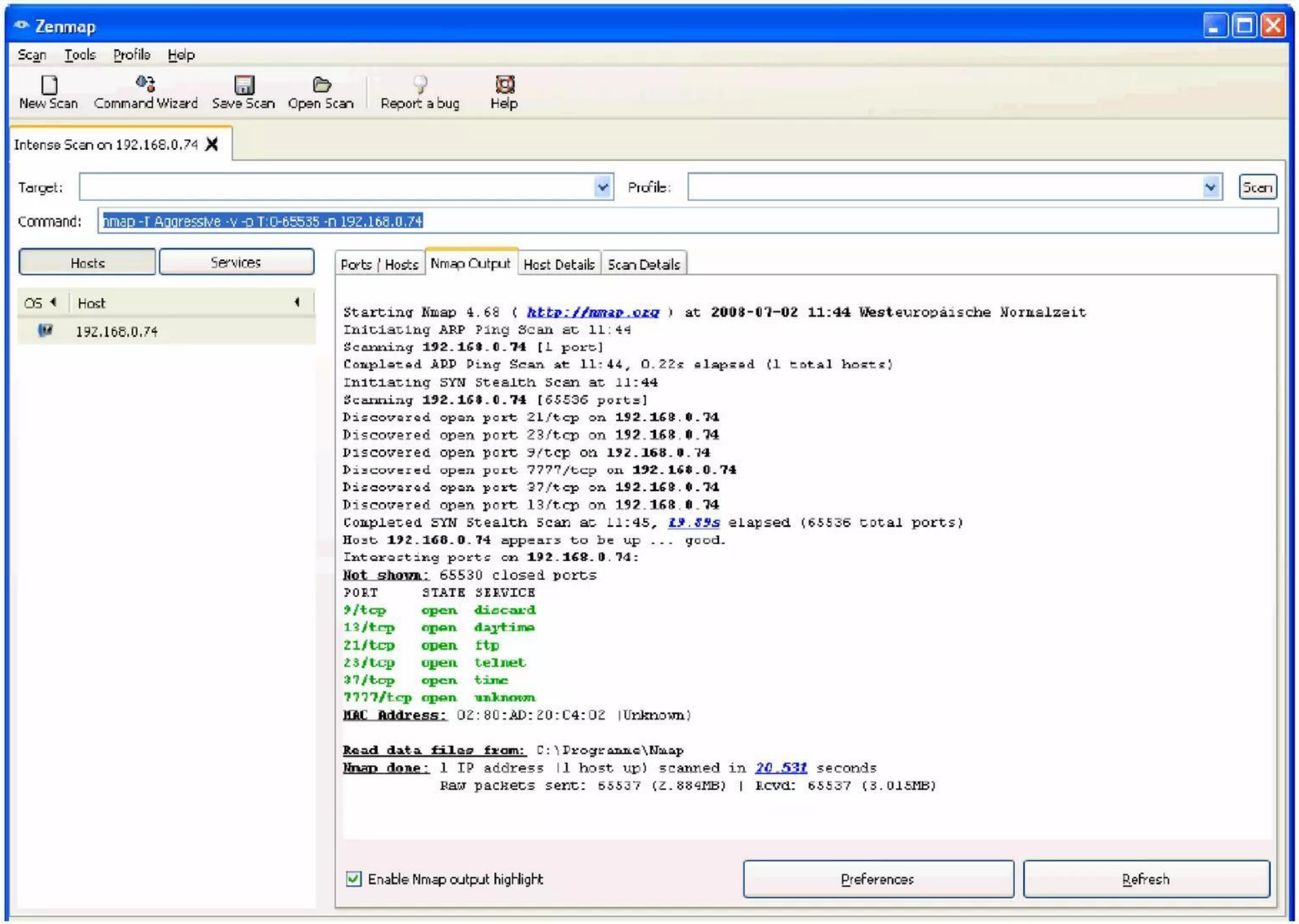
- Open a terminal and type “*nmapfe*” *to access the front end of nmap.*

NMAP USING WINDOWS

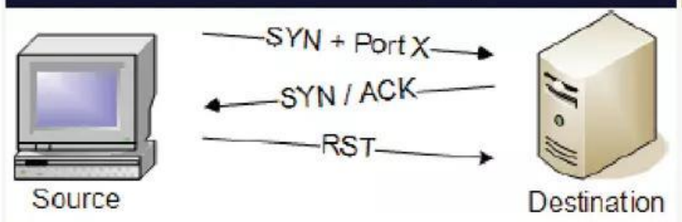
- To Run Nmap on windows The two important files to be installed are as follows:
  - a) Nmap-<version>-win32.zip
  - b) WinPcap 3.0 stable version. (WinPcap is the packet capture library for Nmap).

- There is more User friendly version Available for us With GUI known ass Zenmap.

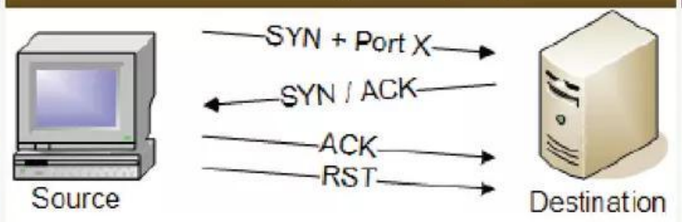
SCREENSHOT TAKEN ON ZENMAP



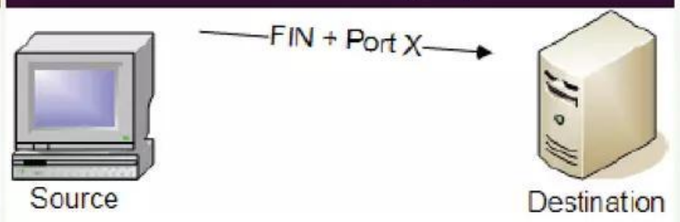
TCP SYN SCAN (-sS)



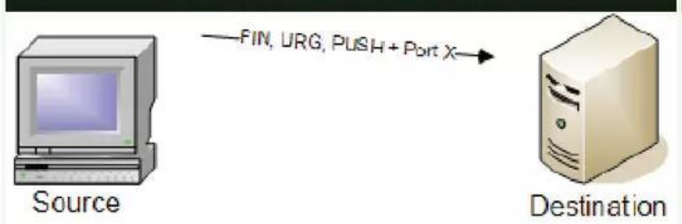
TCP connect() SCAN (-sT)



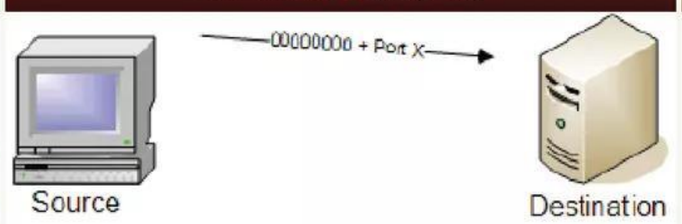
TCP FIN SCAN (-sF)



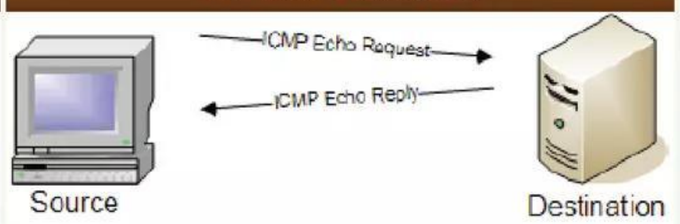
TCP XMAS TREE SCAN (-sX)



TCP NULL SCAN (-sN)

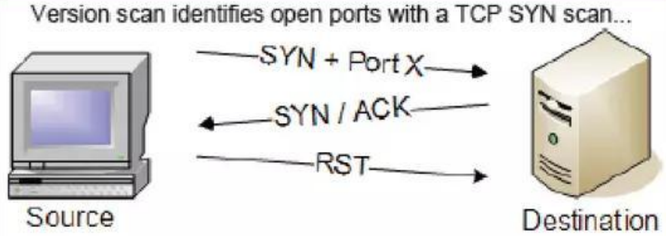


TCP PING SCAN (-sP)

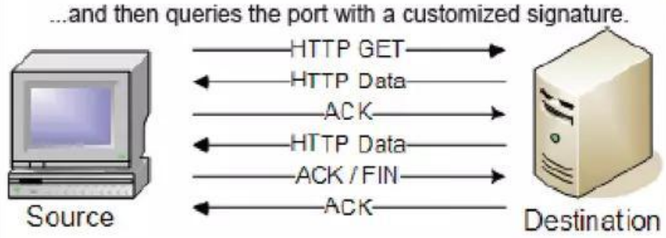


VERSION DETECTION SCAN (-sV)

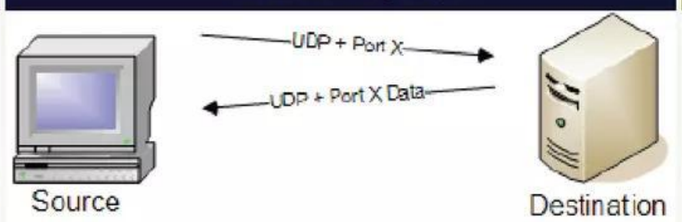
Version scan identifies open ports with a TCP SYN scan...



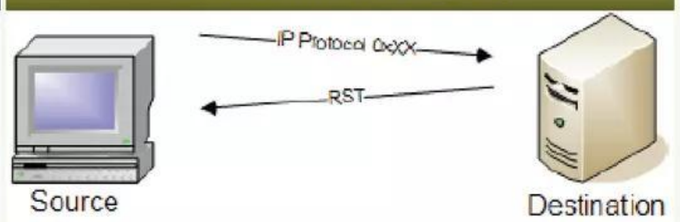
...and then queries the port with a customized signature.



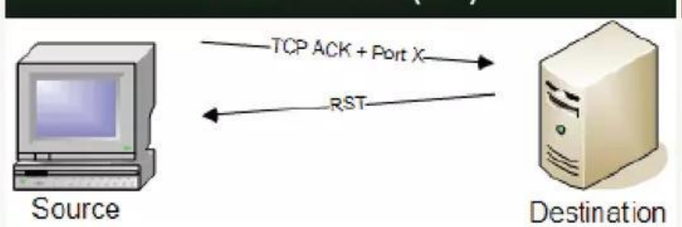
UDP SCAN (-sU)



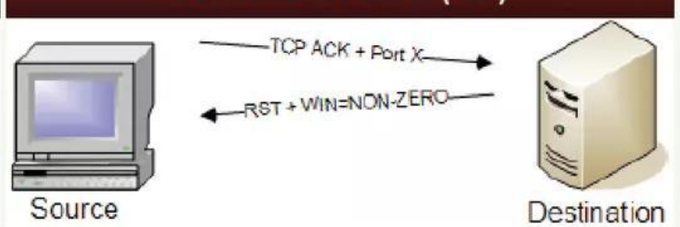
IP PROTOCOL SCAN (-sO)



TCP ACK SCAN (-sA)



TCP WINDOW SCAN (-sW)



SCAN OPTION SUMMARY				
Scan Name	**Command Syntax**	**Requires Privileged Access**	**Identifies TCP Ports**	**Identifies UDP Ports**
TCP SYN Scan	`-sS`	YES	YES	NO
TCP connect() Scan	`-sT`	NO	YES	NO
FIN Stealth Scan	`-sF`	YES	YES	NO
Xmas Tree Stealth Scan	`-sX`	YES	YES	NO
Null Stealth Scan	`-sN`	YES	YES	NO
Ping Scan	`-sP`	NO	NO	NO
Version Detection	`-sV`	NO	NO	NO
UDP Scan	`-sU`	YES	NO	YES
IP Protocol Scan	`-sO`	YES	NO	NO
ACK Scan	`-sA`	YES	YES	NO
Window Scan	`-sW`	YES	YES	NO
RPC Scan	`-sR`	NO	NO	NO
List Scan	`-sL`	NO	NO	NO
Idlescan	`-sI`	YES	YES	NO
FTP Bounce Attack	`-b`	NO	YES	NO

PING OPTIONS	
ICMP Echo Request Ping	`-PE, -PI`
TCP ACK Ping	`-PA[portlist], -PT[portlist]`
TCP SYN Ping	`-PS[portlist]`
UDP Ping	`-PU[portlist]`
ICMP Timestamp Ping	`-PP`
ICMP Address Mask Ping	`-PM`
Don't Ping	`-P0, -PN, -PD`
Require Reverse	`-R`
Disable Reverse DNS	`-n`
Specify DNS Servers	`--dns-servers`

REAL-TIME INFORMATION OPTIONS	
Verbose Mode	`--verbose, -v`
Version Trace	`--version-trace`
Packet Trace	`--packet-trace`
Debug Mode	`--debug, -d`
Interactive Mode	`--interactive`
Noninteractive Mode	`--noninteractive`

LATEST VERSIONS AVAILBLE

- Nmap 6.49BETA2
- Nmap 6.49BETA1
- Nmap 6.40
- Nmap 6.25
- Now available with 100's of new OS and version detection and with Gopher protocol Support.

CONCLUSION

Thank You…!