NORTH WESTER UNIVERSITY

Department of computer science and Engineering

Sessional lab report

Title: Introduction To Computer Network Using NS2
Based on the domain as www.facebook.com

SUBMITTED TO:

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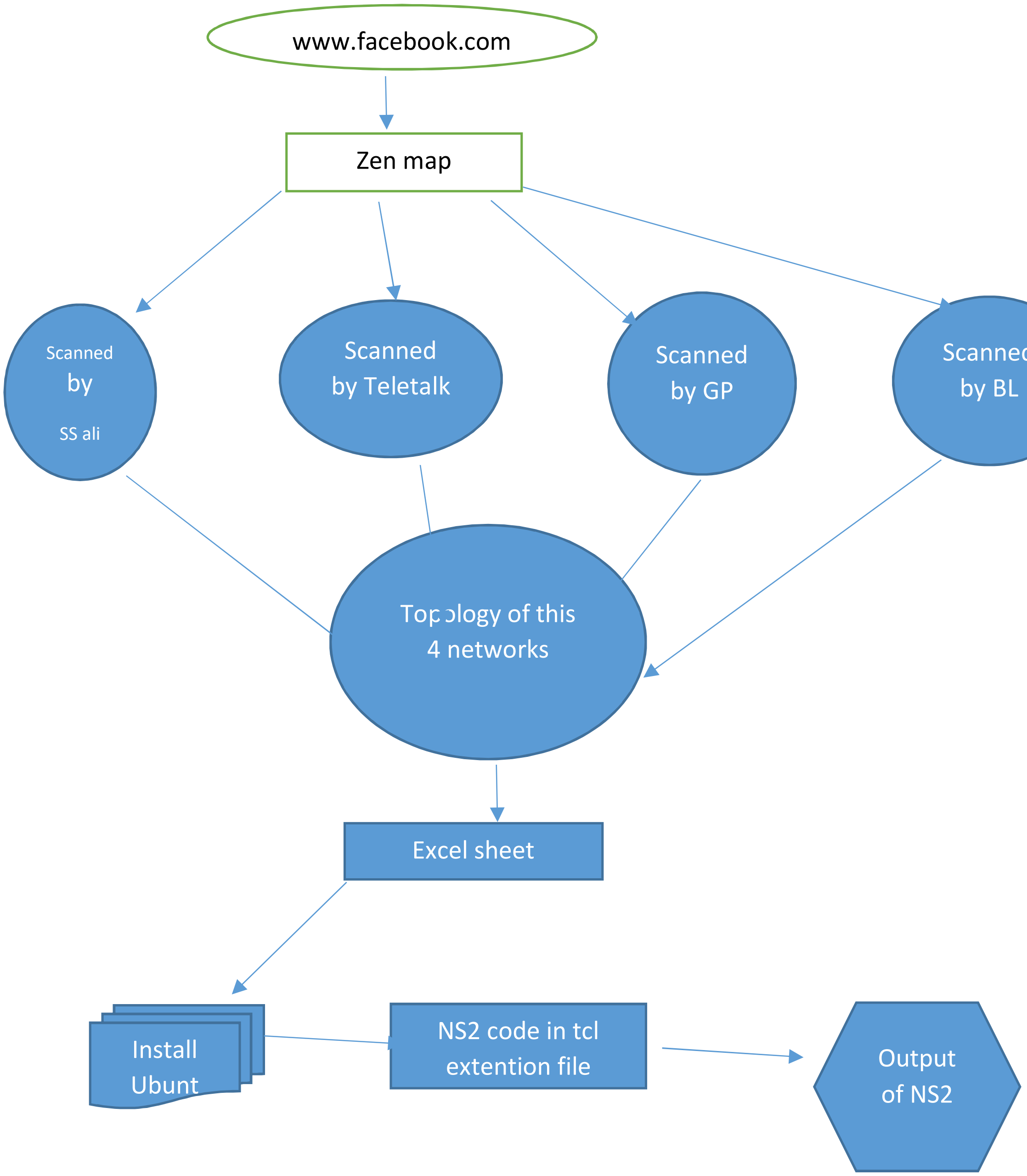
Course title: Computer Network Sessional

Table of Contents

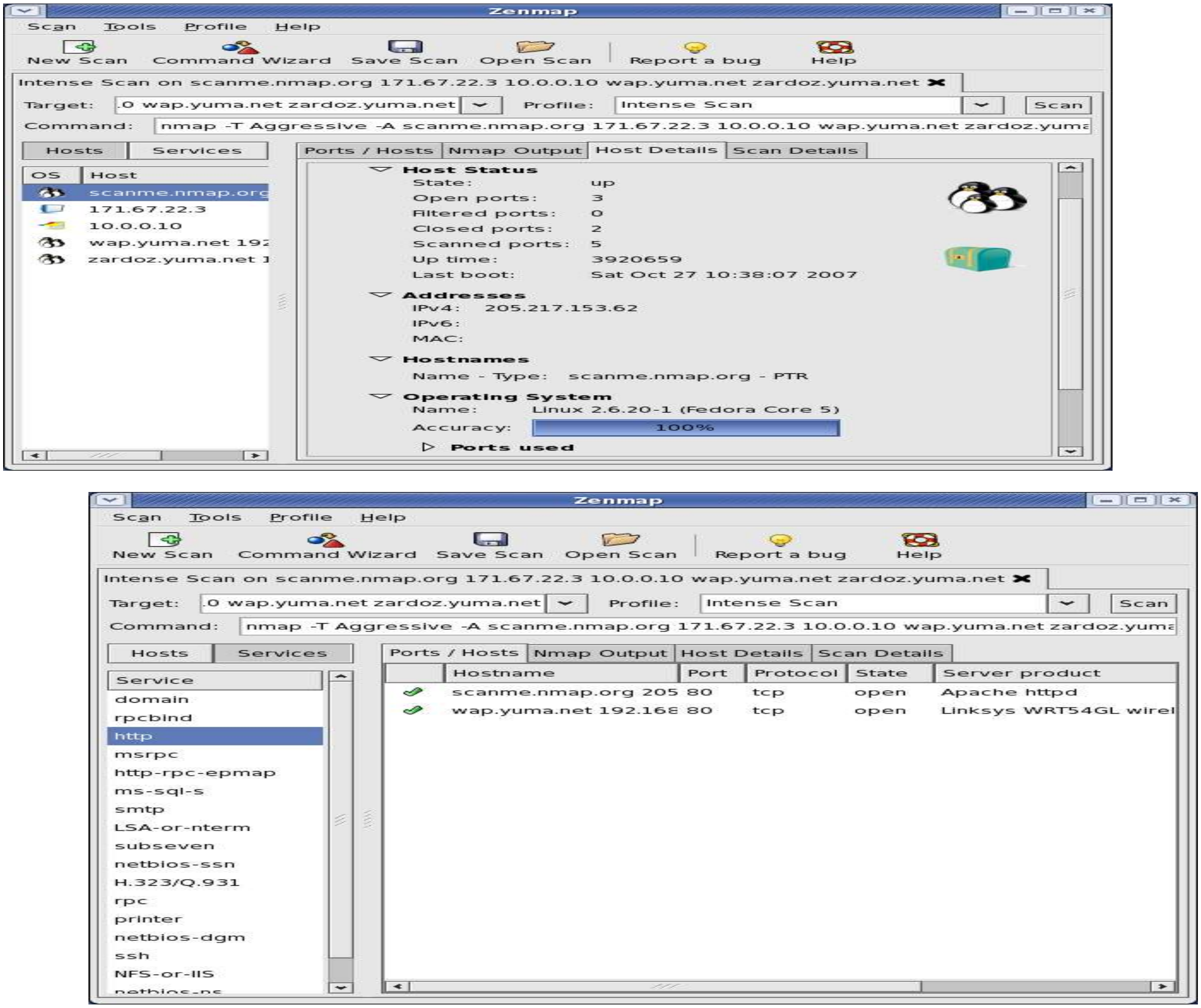
1.Overview of the project

The journey to the computer network's lab was well. It is very better facility for student interested in exploring the world of network engineering. In this project we searched to find IP addresses, protocol, network topology of computer network through zenmap. At first we selected a web site .That was www,facebook.com. Then we scanned it in zenmap app & we got network's IP addresses from different networks. We got network topology, protocol etc. Secondly, we created an IP routing by excel sheet. & then we use Ubuntu 18.04 and installed ns2 in it for routing graphical interface. We draw a figure on the basis on our excel sheet in Xming.



2.Introduction to zenmap

Zenmap is the official graphical user interface (GUI) for the Nmap Security Scanner. It is a multi-platform, free and open-source application designed to make Nmap easy for beginners to use while providing advanced features for experienced Nmap users. Frequently used scans can be saved as profiles to make them easy to run repeatedly. A command creator allows interactive creation of Nmap command lines. Scan results can be saved and viewed later. Saved scans can be compared with one another to see how they differ. The results of recent scans are stored in a searchable database. A typical Zenmap screen shot is shown in Figure 2.1



Intense Scan on scanme.nmap.org 171.67.22.3 10.0.0.10 wap.yuma.net zardoz.yuma.net

Target: .0 wap.yuma.net zardoz.yuma.net

Profile: Intense Scan

Command: nmap -T Aggressive -A scanme.nmap.org 171.67.22.3 10.0.0.10 wap.yuma.net zardoz.yuma

OS	Host
	scanme.nmap.org
	171.67.22.3
	10.0.0.10
	wap.yuma.net 192
	zardoz.yuma.net 1

Host Status

State:	up
Open ports:	3
Filtered ports:	0
Closed ports:	2
Scanned ports:	5
Up time:	3920659
Last boot:	Sat Oct 27 10:38:07 2007

Addresses

IPv4: 205.217.153.62

IPv6:

MAC:

Hostnames

Name - Type: scanme.nmap.org - PTR

Operating System

Name: Linux 2.6.20-1 (Fedora Core 5)

Accuracy: 100%

Ports used

Intense Scan on scanme.nmap.org 171.67.22.3 10.0.0.10 wap.yuma.net zardoz.yuma.net

Target: .0 wap.yuma.net zardoz.yuma.net

Profile: Intense Scan

Command: nmap -T Aggressive -A scanme.nmap.org 171.67.22.3 10.0.0.10 wap.yuma.net zardoz.yuma

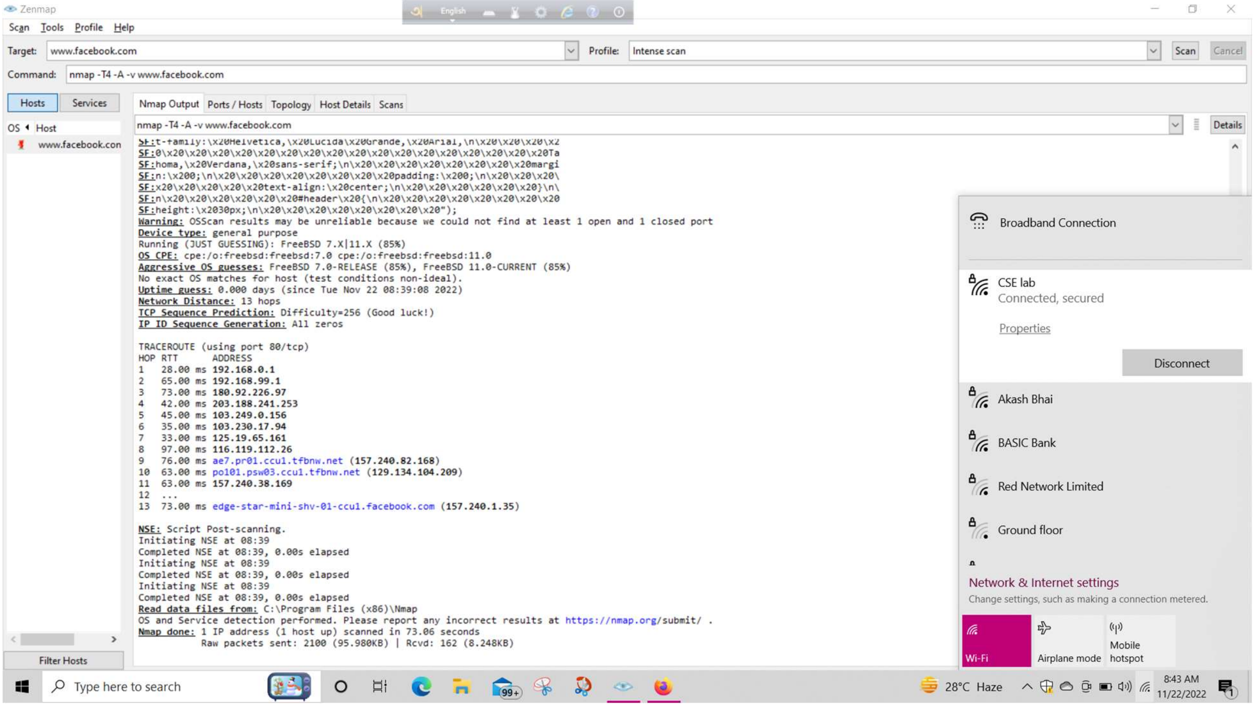
Service
domain
rpcbind
http
msrpc
http-rpc-epmap
ms-sql-s
smtp
LSA-or-nterm
subseven
netbios-ssn
H.323/Q.931
rpc
printer
netbios-dgm
ssh
NFS-or-IIS
netbios-ns

	Hostname	Port	Protocol	State	Server product
✓	scanme.nmap.org 205	80	tcp	open	Apache httpd
✓	wap.yuma.net 192.168	80	tcp	open	Linksys WRT54GL wirel

Fig 2: Zen Map interface

3. Different host to domain

Our topic was in this project www.facebook.com for scanning by for different networks and find the routing. We scanned this website by three cellular networks and one broadband network. Now we are adding the photos.



Target: www.facebook.com

Profile: Intense scan

Command: nmap -T4 -A -v www.facebook.com

CSE lab
Connected, secured
Properties
Disconnect

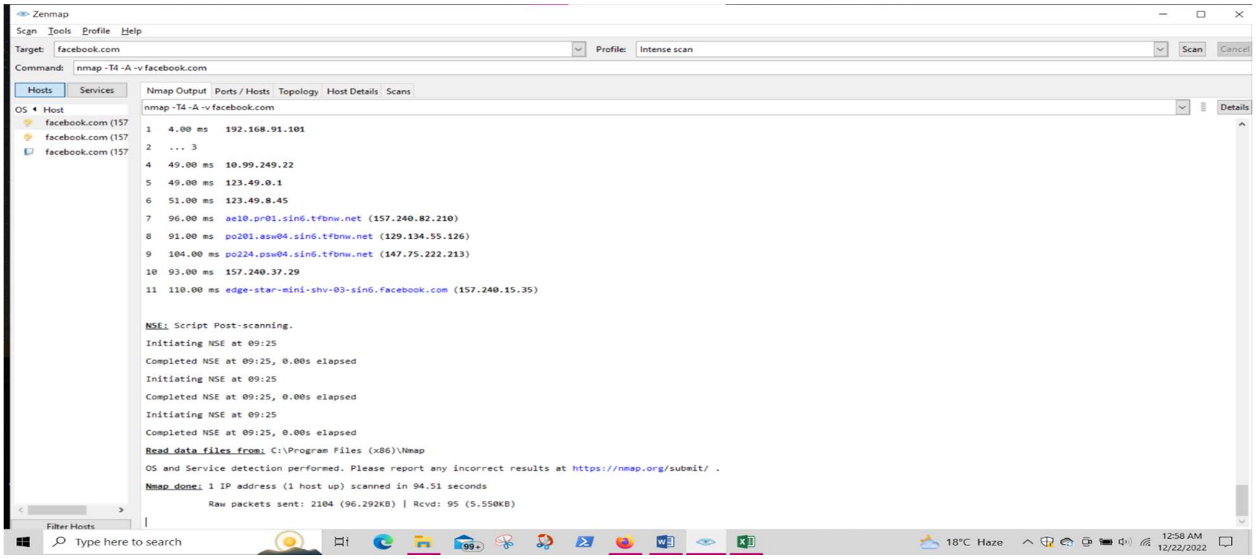
```
nmap -T4 -A -v www.facebook.com
SF:t-family:\x20Helvetica,\x20Lucida\x20Grande,\x20Arial,\n\x20\x20\x20\x2
SF:0\x20\x20\x20\x20\x20\x20\x20\x20\x20\x20\x20\x20\x20\x20\x20\x20Ta
SF:homa,\x20Verdana,\x20sans-serif;\n\x20\x20\x20\x20\x20\x20\x20\x20margi
SF:n:\x200;\n\x20\x20\x20\x20\x20\x20\x20\x20padding:\x200;\n\x20\x20\x20\
SF:x20\x20\x20\x20\x20text-align:\x20center;\n\x20\x20\x20\x20\x20\x20}\n\
SF:n\x20\x20\x20\x20\x20\x20#header\x20{\n\x20\x20\x20\x20\x20\x20\x20\x20
SF:height:\x2030px;\n\x20\x20\x20\x20\x20\x20\x20\x20");
Warning: OSScan results may be unreliable because we could not find at least 1 open and 1 closed port
Device type: general purpose
Running (JUST GUESSING): FreeBSD 7.X|11.X (85%)
OS CPE: cpe:/o:freebsd:freebsd:7.0 cpe:/o:freebsd:freebsd:11.0
Aggressive OS guesses: FreeBSD 7.0-RELEASE (85%), FreeBSD 11.0-CURRENT (85%)
No exact OS matches for host (test conditions non-ideal).
Uptime guess: 0.000 days (since Tue Nov 22 08:39:08 2022)
Network Distance: 13 hops
TCP Sequence Prediction: Difficulty=256 (Good luck!)
IP ID Sequence Generation: All zeros

TRACEROUTE (using port 80/tcp)
HOP RTT      ADDRESS
1   28.00 ms 192.168.0.1
2   65.00 ms 192.168.99.1
3   73.00 ms 180.92.226.97
4   42.00 ms 203.188.241.253
5   45.00 ms 103.249.0.156
6   35.00 ms 103.230.17.94
7   33.00 ms 125.19.65.161
8   97.00 ms 116.119.112.26
9   76.00 ms ae7.pr01.ccu1.tfbnw.net (157.240.82.168)
10  63.00 ms po101.psw03.ccu1.tfbnw.net (129.134.104.209)
11  63.00 ms 157.240.38.169
12  ...
13  73.00 ms edge-star-mini-shv-01-ccu1.facebook.com (157.240.1.35)

NSE: Script Post-scanning.
Initiating NSE at 08:39
Completed NSE at 08:39, 0.00s elapsed
Initiating NSE at 08:39
Completed NSE at 08:39, 0.00s elapsed
Initiating NSE at 08:39
Completed NSE at 08:39, 0.00s elapsed
Read data files from: C:\Program Files (x86)\Nmap
OS and Service detection performed. Please report any incorrect results at https://nmap.org/submit/ .
Nmap done: 1 IP address (1 host up) scanned in 73.06 seconds
           Raw packets sent: 2100 (95.980KB) | Rcvd: 162 (8.248KB)
```

Fig 3: broadband network zenmap output

In fig 3, this is our only broadband network. We can see, there was 12 IP address in that network.



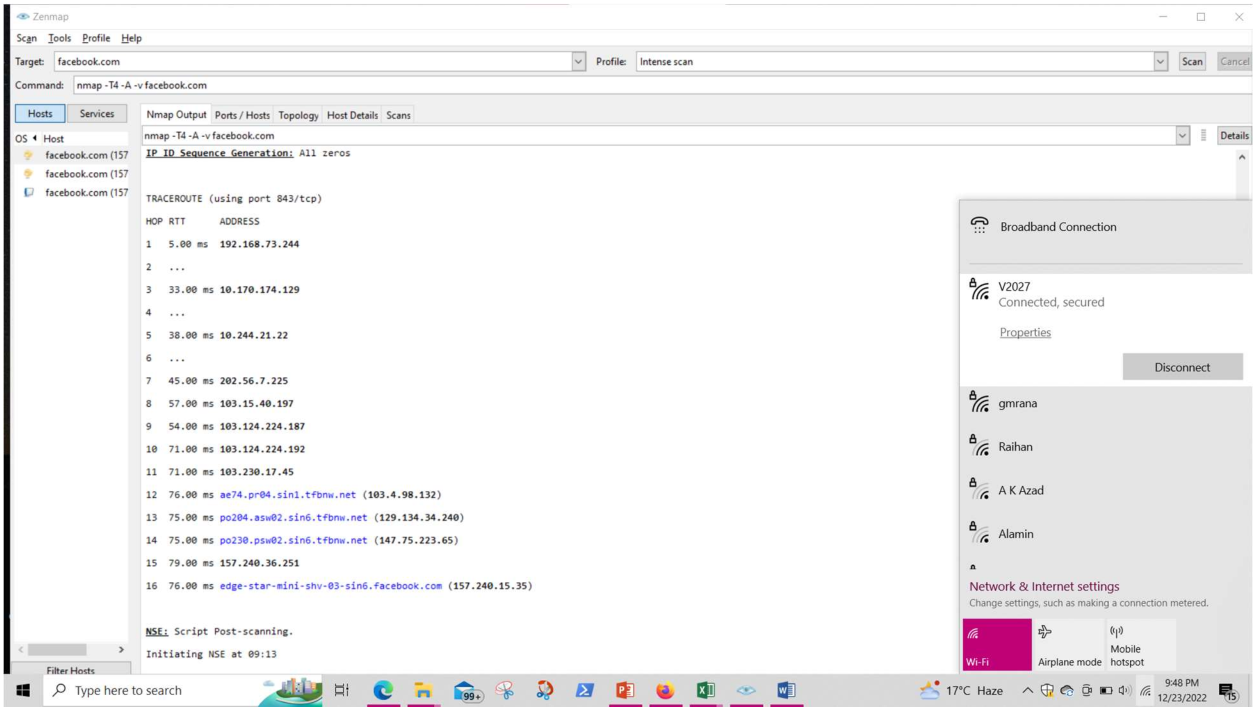
Target: facebook.com
Profile: Intense scan
Command: nmap -T4 -A -v facebook.com

```
nmap -T4 -A -v facebook.com
1   4.00 ms   192.168.91.101
2   ... 3
4   49.00 ms  10.99.249.22
5   49.00 ms  123.49.0.1
6   51.00 ms  123.49.8.45
7   96.00 ms  ae10.pr01.sin6.tfbnw.net (157.240.82.210)
8   91.00 ms  po201.asw04.sin6.tfbnw.net (129.134.55.126)
9   104.00 ms po224.psw04.sin6.tfbnw.net (147.75.222.213)
10  93.00 ms  157.240.37.29
11  110.00 ms edge-star-mini-shv-03-sin6.facebook.com (157.240.15.35)

NSE: Script Post-scanning.
Initiating NSE at 09:25
Completed NSE at 09:25, 0.00s elapsed
Initiating NSE at 09:25
Completed NSE at 09:25, 0.00s elapsed
Initiating NSE at 09:25
Completed NSE at 09:25, 0.00s elapsed
Read data files from: C:\Program Files (x86)\Nmap
OS and Service detection performed. Please report any incorrect results at https://nmap.org/submit/ .
Nmap done: 1 IP address (1 host up) scanned in 94.51 seconds
           Raw packets sent: 2104 (96.292KB) | Rcvd: 95 (5.550KB)
```

Fig 4: Teletalk network zenmap output

In fig 4, this is TELETALK network. We can see, there was 11 IP address in that network.



Target: facebook.com
Profile: Intense scan
Command: nmap -T4 -A -v facebook.com

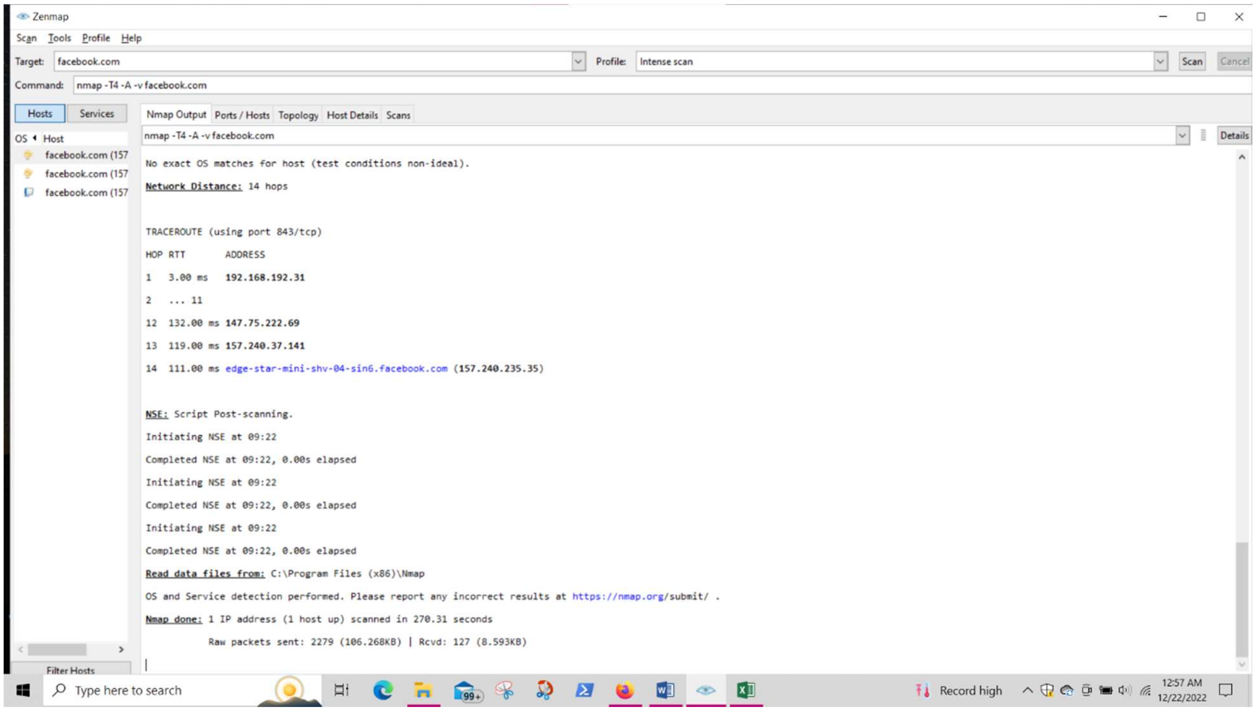
```
nmap -T4 -A -v facebook.com
IP ID Sequence Generation: All zeros


TRACEROUTE (using port 843/tcp)
HOP RTT      ADDRESS
1   5.00 ms  192.168.73.244
2   ...
3   33.00 ms 10.170.174.129
4   ...
5   38.00 ms 10.244.21.22
6   ...
7   45.00 ms 202.56.7.225
8   57.00 ms 103.15.40.197
9   54.00 ms 103.124.224.187
10  71.00 ms 103.124.224.192
11  71.00 ms 103.230.17.45
12  76.00 ms ae74.pr04.sin1.tfbnw.net (103.4.98.132)
13  75.00 ms po204.asw02.sin6.tfbnw.net (129.134.34.240)
14  75.00 ms po230.psw02.sin6.tfbnw.net (147.75.223.65)
15  79.00 ms 157.240.36.251
16  76.00 ms edge-star-mini-shv-03-sin6.facebook.com (157.240.15.35)

NSE: Script Post-scanning.
Initiating NSE at 09:13
```

Fig 5: Grameenphone network zenmap output

In fig 4, this is grameenphone network. We can see, there was 16 IP address in that network.



```
nmap -T4 -A -v facebook.com

No exact OS matches for host (test conditions non-ideal).

Network Distance: 14 hops


TRACEROUTE (using port 843/tcp)

HOP RTT       ADDRESS

1   3.00 ms   192.168.192.31

2   ... 11

12  132.00 ms 147.75.222.69

13  119.00 ms 157.240.37.141

14  111.00 ms edge-star-mini-shv-04-sin6.facebook.com (157.240.235.35)


NSE: Script Post-scanning.

Initiating NSE at 09:22

Completed NSE at 09:22, 0.00s elapsed

Initiating NSE at 09:22

Completed NSE at 09:22, 0.00s elapsed

Initiating NSE at 09:22

Completed NSE at 09:22, 0.00s elapsed

Read data files from: C:\Program Files (x86)\Nmap

OS and Service detection performed. Please report any incorrect results at https://nmap.org/submit/ .

Nmap done: 1 IP address (1 host up) scanned in 270.31 seconds

           Raw packets sent: 2279 (106.268KB) | Rcvd: 127 (8.593KB)
```

Fig 6: Banglalink network zenmap output

In fig 6, this is Banglalink network. We can see, there was 14 IP address in that network.

4. Design network Topology

Network topology is the topological structure of a network and may be depicted physically or logically. It is an application of graph theory wherein communicating devices are modeled as nodes and the connections between the devices are modeled as links or lines between the nodes. Physical topology is the placement of the various components of a network while logical topology illustrates how data flows within a network. Distances between nodes, physical interconnections, transmission rates, or signal types may differ between two different networks, yet their logical topologies may be identical. A network's physical topology is a particular concern of the physical layer of the OSI model.

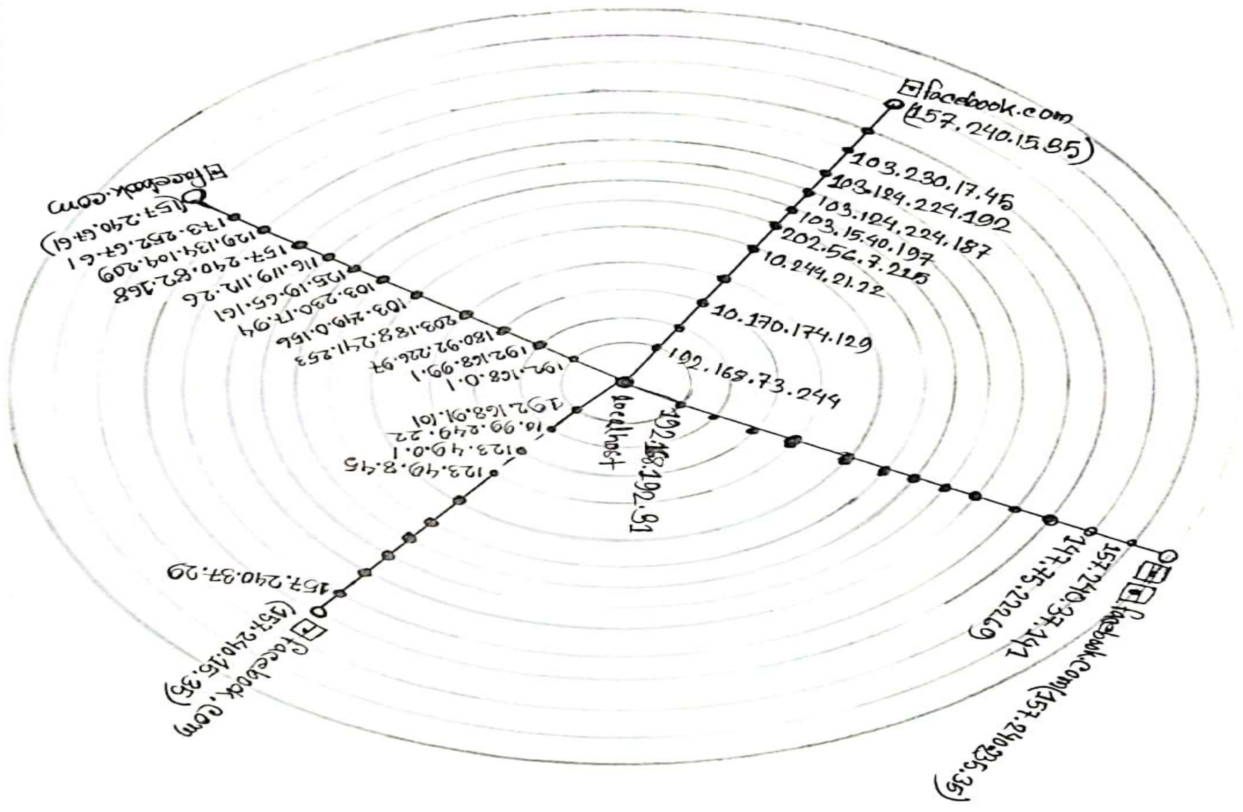
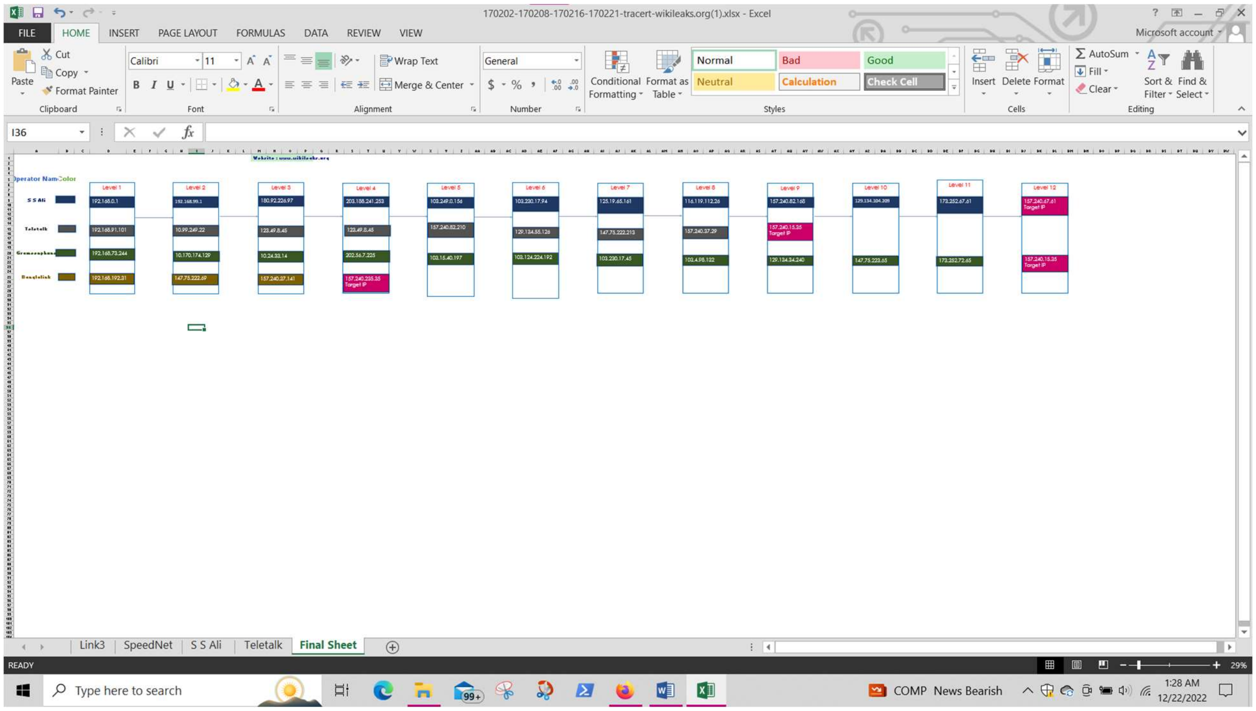


Fig 7: Network topology of Facebook

By scanning in zenmap we create this topology. This is our four network topology.

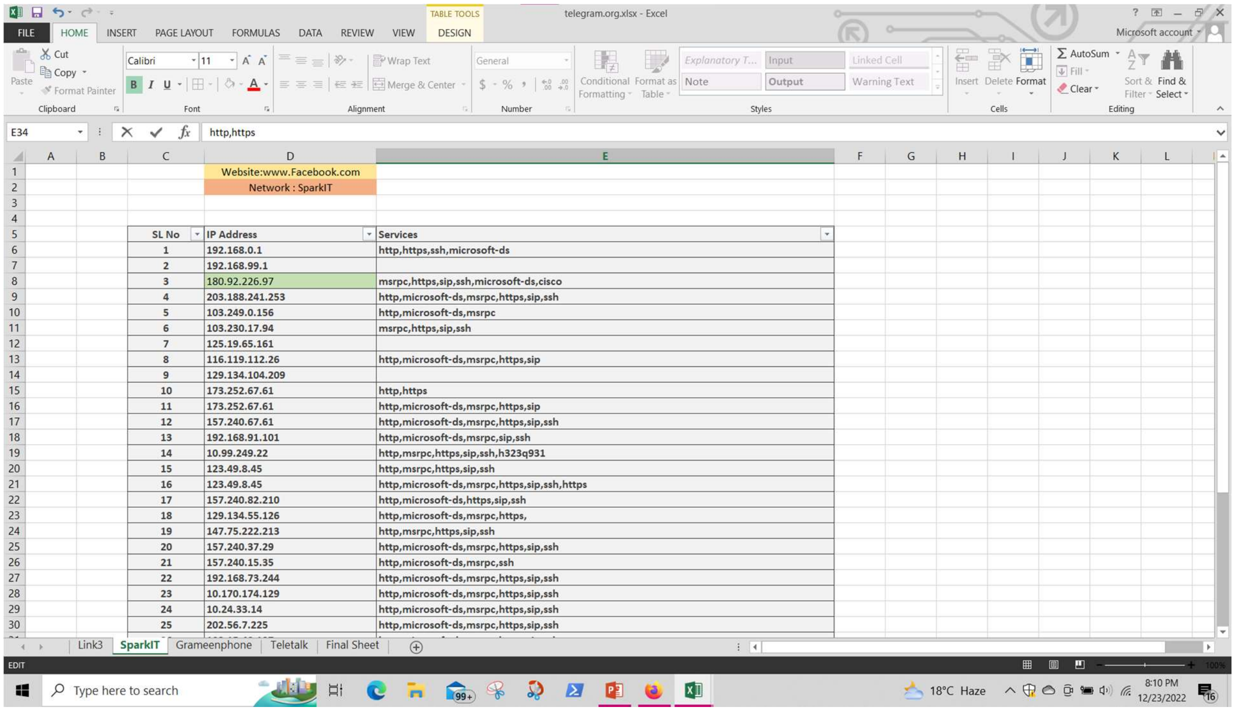
5. Excel sheet of network diagram



Website : www.wikileaks.org

Operator Nam	Color	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6	Level 7	Level 8	Level 9	Level 10	Level 11	Level 12
S S Ali	🟦	192.168.0.1	192.168.99.1	180.92.226.97	203.188.241.253	103.249.0.156	103.230.17.94	125.19.65.161	116.119.112.26	157.240.82.168	129.134.104.209	173.252.67.61	157.240.67.61 Target IP
Teletalk	⬛	192.168.91.101	10.99.249.22	123.49.8.45	123.49.8.45	157.240.82.210	129.134.55.126	147.75.222.213	157.240.37.29	157.240.15.35 Target IP			
Grameenphone	🟩	192.168.73.244	10.170.174.129	10.24.33.14	202.56.7.225	103.15.40.197	103.124.224.192	103.230.17.45	103.4.98.132	129.134.34.240	147.75.223.65	173.252.72.65	157.240.15.35 Target IP
Banglalink	🟫	192.168.192.31	147.75.222.69	157.240.37.141	157.240.235.35 Target IP								

Fig 8: Excel sheet of IP address

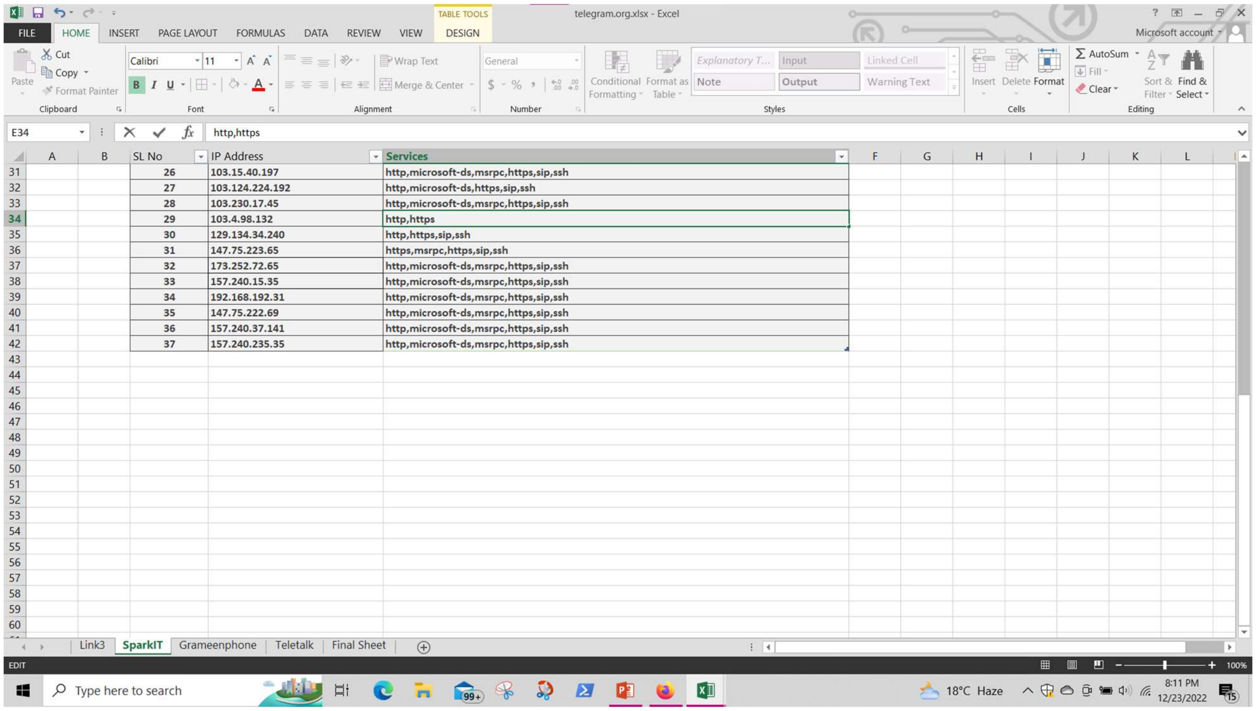


Website:www.Facebook.com

Network : SparkIT

SL No	IP Address	Services
1	192.168.0.1	http,https,ssh,microsoft-ds
2	192.168.99.1	
3	180.92.226.97	msrpc,https,sip,ssh,microsoft-ds,cisco
4	203.188.241.253	http,microsoft-ds,msrpc,https,sip,ssh
5	103.249.0.156	http,microsoft-ds,msrpc
6	103.230.17.94	msrpc,https,sip,ssh
7	125.19.65.161	
8	116.119.112.26	http,microsoft-ds,msrpc,https,sip
9	129.134.104.209	
10	173.252.67.61	http,https
11	173.252.67.61	http,microsoft-ds,msrpc,https,sip
12	157.240.67.61	http,microsoft-ds,msrpc,https,sip,ssh
13	192.168.91.101	http,microsoft-ds,msrpc,sip,ssh
14	10.99.249.22	http,msrpc,https,sip,ssh,h323q931
15	123.49.8.45	http,msrpc,https,sip,ssh
16	123.49.8.45	http,microsoft-ds,msrpc,https,sip,ssh,https
17	157.240.82.210	http,microsoft-ds,https,sip,ssh
18	129.134.55.126	http,microsoft-ds,msrpc,https,
19	147.75.222.213	http,msrpc,https,sip,ssh
20	157.240.37.29	http,microsoft-ds,msrpc,https,sip,ssh
21	157.240.15.35	http,microsoft-ds,msrpc,ssh
22	192.168.73.244	http,microsoft-ds,msrpc,https,sip,ssh
23	10.170.174.129	http,microsoft-ds,msrpc,https,sip,ssh
24	10.24.33.14	http,microsoft-ds,msrpc,https,sip,ssh
25	202.56.7.225	http,microsoft-ds,msrpc,https,sip,ssh

Fig 9:Excel sheet of IP Addresses



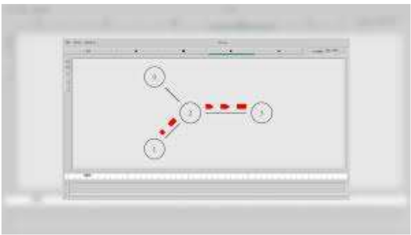
E34 http,https

SL No	IP Address	Services
26	103.15.40.197	http,microsoft-ds,msrpc,https,sip,ssh
27	103.124.224.192	http,microsoft-ds,https,sip,ssh
28	103.230.17.45	http,microsoft-ds,msrpc,https,sip,ssh
29	103.4.98.132	http,https
30	129.134.34.240	http,https,sip,ssh
31	147.75.223.65	https,msrpc,https,sip,ssh
32	173.252.72.65	http,microsoft-ds,msrpc,https,sip,ssh
33	157.240.15.35	http,microsoft-ds,msrpc,https,sip,ssh
34	192.168.192.31	http,microsoft-ds,msrpc,https,sip,ssh
35	147.75.222.69	http,microsoft-ds,msrpc,https,sip,ssh
36	157.240.37.141	http,microsoft-ds,msrpc,https,sip,ssh
37	157.240.235.35	http,microsoft-ds,msrpc,https,sip,ssh

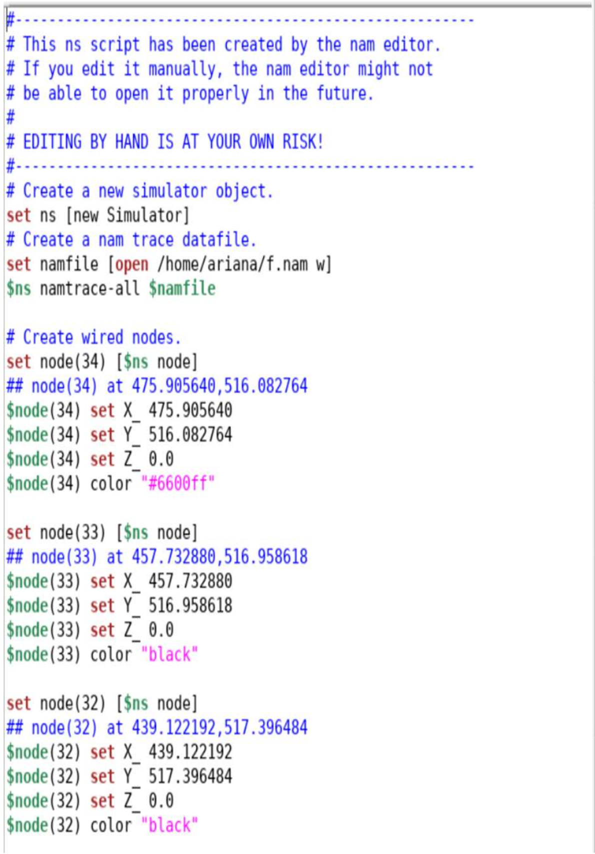
We created this excel sheet based on our scanned IP Addresses by using zenmap.

6. Introduction To NS2

Network Simulator (Version 2), widely known as NS2, is simply an event-driven simulation tool that has proved useful in studying the dynamic nature of communication networks. Simulation of wired as well as wireless network functions and protocols (routing algorithms, TCP, UDP) can be done using NS2. In general, NS2 provides users with a way of specifying such network protocols and simulating their corresponding behaviors.



7. Source Code of NS2

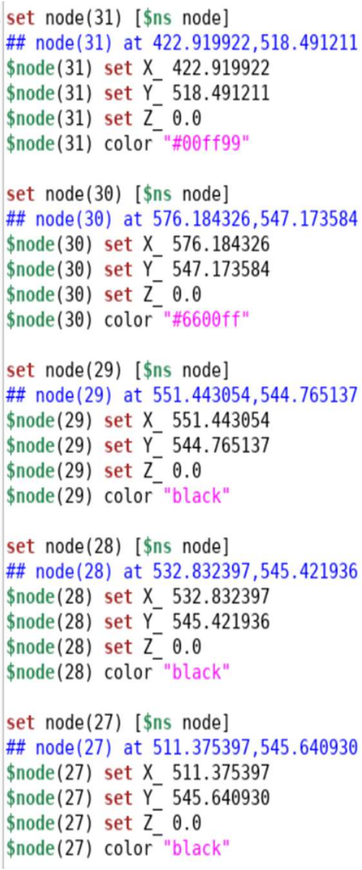


```
#-----------------------------------------------------
# This ns script has been created by the nam editor.
# If you edit it manually, the nam editor might not
# be able to open it properly in the future.
#
# EDITING BY HAND IS AT YOUR OWN RISK!
#-----------------------------------------------------
# Create a new simulator object.
set ns [new Simulator]
# Create a nam trace datafile.
set namfile [open /home/ariana/f.nam w]
$ns namtrace-all $namfile

# Create wired nodes.
set node(34) [$ns node]
## node(34) at 475.905640,516.082764
$node(34) set X_ 475.905640
$node(34) set Y_ 516.082764
$node(34) set Z_ 0.0
$node(34) color "#6600ff"

set node(33) [$ns node]
## node(33) at 457.732880,516.958618
$node(33) set X_ 457.732880
$node(33) set Y_ 516.958618
$node(33) set Z_ 0.0
$node(33) color "black"

set node(32) [$ns node]
## node(32) at 439.122192,517.396484
$node(32) set X_ 439.122192
$node(32) set Y_ 517.396484
$node(32) set Z_ 0.0
$node(32) color "black"
```



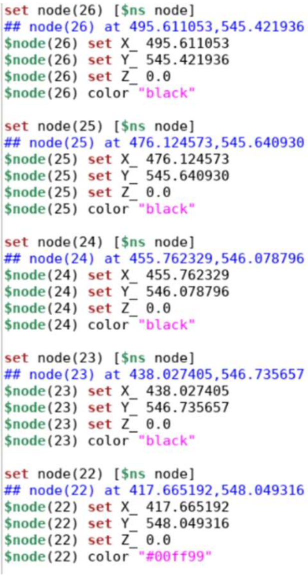
```
set node(31) [$ns node]
## node(31) at 422.919922,518.491211
$node(31) set X_ 422.919922
$node(31) set Y_ 518.491211
$node(31) set Z_ 0.0
$node(31) color "#00ff99"

set node(30) [$ns node]
## node(30) at 576.184326,547.173584
$node(30) set X_ 576.184326
$node(30) set Y_ 547.173584
$node(30) set Z_ 0.0
$node(30) color "#6600ff"

set node(29) [$ns node]
## node(29) at 551.443054,544.765137
$node(29) set X_ 551.443054
$node(29) set Y_ 544.765137
$node(29) set Z_ 0.0
$node(29) color "black"

set node(28) [$ns node]
## node(28) at 532.832397,545.421936
$node(28) set X_ 532.832397
$node(28) set Y_ 545.421936
$node(28) set Z_ 0.0
$node(28) color "black"

set node(27) [$ns node]
## node(27) at 511.375397,545.640930
$node(27) set X_ 511.375397
$node(27) set Y_ 545.640930
$node(27) set Z_ 0.0
$node(27) color "black"
```



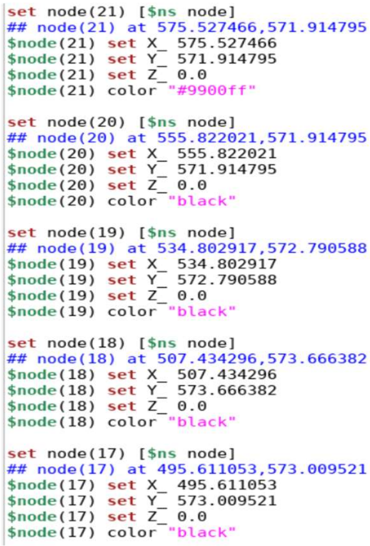
```
set node(26) [$ns node]
## node(26) at 495.611053,545.421936
$node(26) set X_ 495.611053
$node(26) set Y_ 545.421936
$node(26) set Z_ 0.0
$node(26) color "black"

set node(25) [$ns node]
## node(25) at 476.124573,545.640930
$node(25) set X_ 476.124573
$node(25) set Y_ 545.640930
$node(25) set Z_ 0.0
$node(25) color "black"

set node(24) [$ns node]
## node(24) at 455.762329,546.078796
$node(24) set X_ 455.762329
$node(24) set Y_ 546.078796
$node(24) set Z_ 0.0
$node(24) color "black"

set node(23) [$ns node]
## node(23) at 438.027405,546.735657
$node(23) set X_ 438.027405
$node(23) set Y_ 546.735657
$node(23) set Z_ 0.0
$node(23) color "black"

set node(22) [$ns node]
## node(22) at 417.665192,548.049316
$node(22) set X_ 417.665192
$node(22) set Y_ 548.049316
$node(22) set Z_ 0.0
$node(22) color "#00ff99"
```



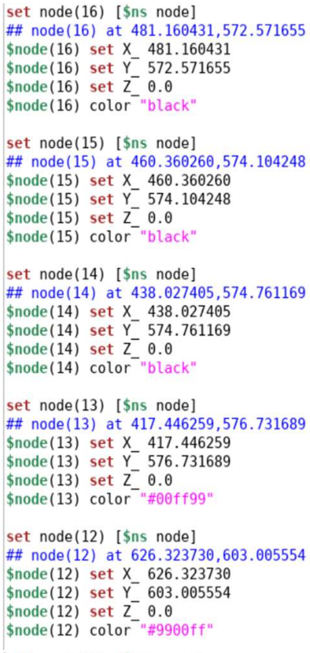
```
set node(21) [$ns node]
## node(21) at 575.527466,571.914795
$node(21) set X_ 575.527466
$node(21) set Y_ 571.914795
$node(21) set Z_ 0.0
$node(21) color "#9900ff"

set node(20) [$ns node]
## node(20) at 555.822021,571.914795
$node(20) set X_ 555.822021
$node(20) set Y_ 571.914795
$node(20) set Z_ 0.0
$node(20) color "black"

set node(19) [$ns node]
## node(19) at 534.802917,572.790588
$node(19) set X_ 534.802917
$node(19) set Y_ 572.790588
$node(19) set Z_ 0.0
$node(19) color "black"

set node(18) [$ns node]
## node(18) at 507.434296,573.666382
$node(18) set X_ 507.434296
$node(18) set Y_ 573.666382
$node(18) set Z_ 0.0
$node(18) color "black"

set node(17) [$ns node]
## node(17) at 495.611053,573.009521
$node(17) set X_ 495.611053
$node(17) set Y_ 573.009521
$node(17) set Z_ 0.0
$node(17) color "black"
```



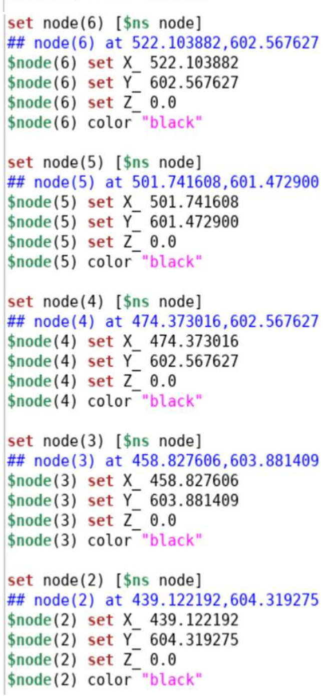
```
set node(16) [$ns node]
## node(16) at 481.160431,572.571655
$node(16) set X_ 481.160431
$node(16) set Y_ 572.571655
$node(16) set Z_ 0.0
$node(16) color "black"

set node(15) [$ns node]
## node(15) at 460.360260,574.104248
$node(15) set X_ 460.360260
$node(15) set Y_ 574.104248
$node(15) set Z_ 0.0
$node(15) color "black"

set node(14) [$ns node]
## node(14) at 438.027405,574.761169
$node(14) set X_ 438.027405
$node(14) set Y_ 574.761169
$node(14) set Z_ 0.0
$node(14) color "black"

set node(13) [$ns node]
## node(13) at 417.446259,576.731689
$node(13) set X_ 417.446259
$node(13) set Y_ 576.731689
$node(13) set Z_ 0.0
$node(13) color "#00ff99"

set node(12) [$ns node]
## node(12) at 626.323730,603.005554
$node(12) set X_ 626.323730
$node(12) set Y_ 603.005554
$node(12) set Z_ 0.0
$node(12) color "#9900ff"
```



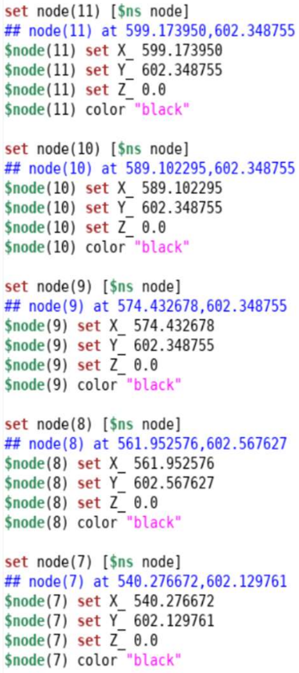
```
set node(6) [$ns node]
## node(6) at 522.103882,602.567627
$node(6) set X_ 522.103882
$node(6) set Y_ 602.567627
$node(6) set Z_ 0.0
$node(6) color "black"

set node(5) [$ns node]
## node(5) at 501.741608,601.472900
$node(5) set X_ 501.741608
$node(5) set Y_ 601.472900
$node(5) set Z_ 0.0
$node(5) color "black"

set node(4) [$ns node]
## node(4) at 474.373016,602.567627
$node(4) set X_ 474.373016
$node(4) set Y_ 602.567627
$node(4) set Z_ 0.0
$node(4) color "black"

set node(3) [$ns node]
## node(3) at 458.827606,603.881409
$node(3) set X_ 458.827606
$node(3) set Y_ 603.881409
$node(3) set Z_ 0.0
$node(3) color "black"

set node(2) [$ns node]
## node(2) at 439.122192,604.319275
$node(2) set X_ 439.122192
$node(2) set Y_ 604.319275
$node(2) set Z_ 0.0
$node(2) color "black"
```



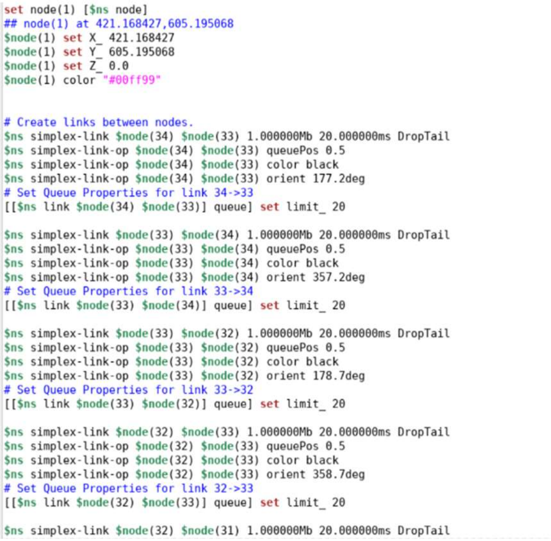
```
set node(11) [$ns node]
## node(11) at 599.173950,602.348755
$node(11) set X_ 599.173950
$node(11) set Y_ 602.348755
$node(11) set Z_ 0.0
$node(11) color "black"

set node(10) [$ns node]
## node(10) at 589.102295,602.348755
$node(10) set X_ 589.102295
$node(10) set Y_ 602.348755
$node(10) set Z_ 0.0
$node(10) color "black"

set node(9) [$ns node]
## node(9) at 574.432678,602.348755
$node(9) set X_ 574.432678
$node(9) set Y_ 602.348755
$node(9) set Z_ 0.0
$node(9) color "black"

set node(8) [$ns node]
## node(8) at 561.952576,602.567627
$node(8) set X_ 561.952576
$node(8) set Y_ 602.567627
$node(8) set Z_ 0.0
$node(8) color "black"

set node(7) [$ns node]
## node(7) at 540.276672,602.129761
$node(7) set X_ 540.276672
$node(7) set Y_ 602.129761
$node(7) set Z_ 0.0
$node(7) color "black"
```



```
set node(1) [$ns node]
## node(1) at 421.168427,605.195068
$node(1) set X_ 421.168427
$node(1) set Y_ 605.195068
$node(1) set Z_ 0.0
$node(1) color "#00ff99"


# Create links between nodes.
$ns simplex-link $node(34) $node(33) 1.000000Mb 20.000000ms DropTail
$ns simplex-link-op $node(34) $node(33) queuePos 0.5
$ns simplex-link-op $node(34) $node(33) color black
$ns simplex-link-op $node(34) $node(33) orient 177.2deg
# Set Queue Properties for link 34->33
[[$ns link $node(34) $node(33)] queue] set limit_ 20

$ns simplex-link $node(33) $node(34) 1.000000Mb 20.000000ms DropTail
$ns simplex-link-op $node(33) $node(34) queuePos 0.5
$ns simplex-link-op $node(33) $node(34) color black
$ns simplex-link-op $node(33) $node(34) orient 357.2deg
# Set Queue Properties for link 33->34
[[$ns link $node(33) $node(34)] queue] set limit_ 20

$ns simplex-link $node(33) $node(32) 1.000000Mb 20.000000ms DropTail
$ns simplex-link-op $node(33) $node(32) queuePos 0.5
$ns simplex-link-op $node(33) $node(32) color black
$ns simplex-link-op $node(33) $node(32) orient 178.7deg
# Set Queue Properties for link 33->32
[[$ns link $node(33) $node(32)] queue] set limit_ 20

$ns simplex-link $node(32) $node(33) 1.000000Mb 20.000000ms DropTail
$ns simplex-link-op $node(32) $node(33) queuePos 0.5
$ns simplex-link-op $node(32) $node(33) color black
$ns simplex-link-op $node(32) $node(33) orient 358.7deg
# Set Queue Properties for link 32->33
[[$ns link $node(32) $node(33)] queue] set limit_ 20

$ns simplex-link $node(32) $node(31) 1.000000Mb 20.000000ms DropTail
```

8. Output topology of NS2

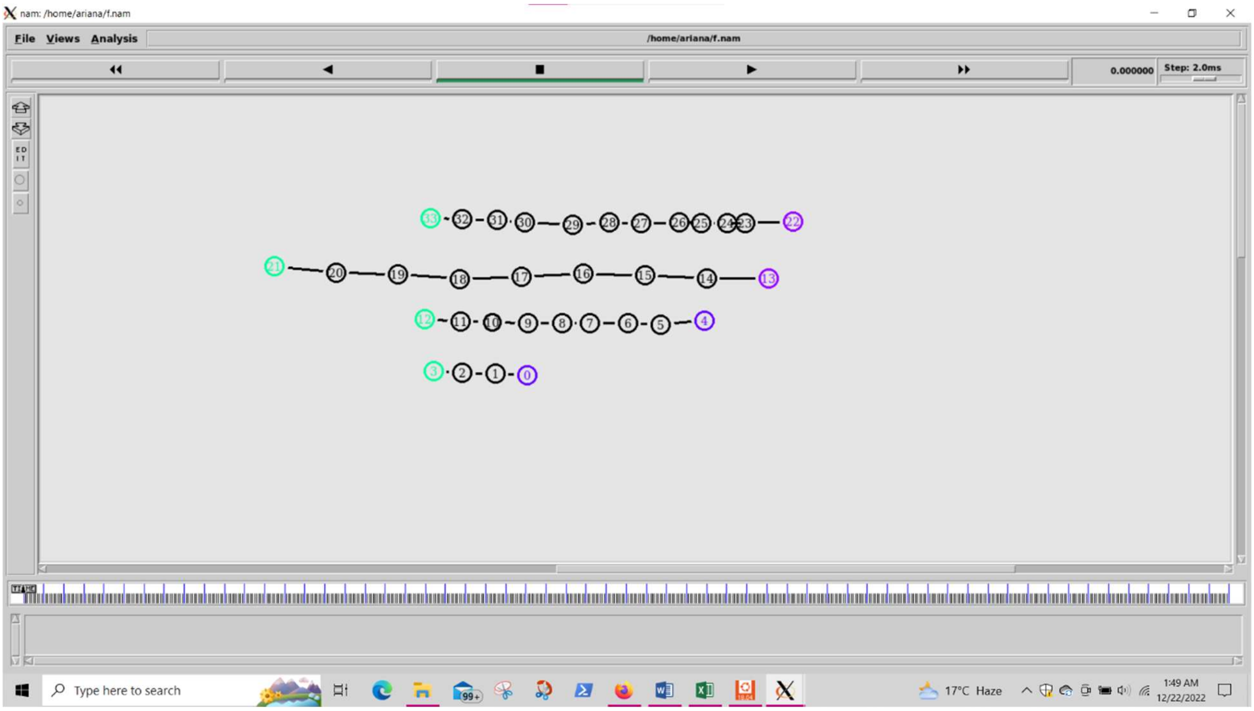


Fig: Starting time output of the ns2

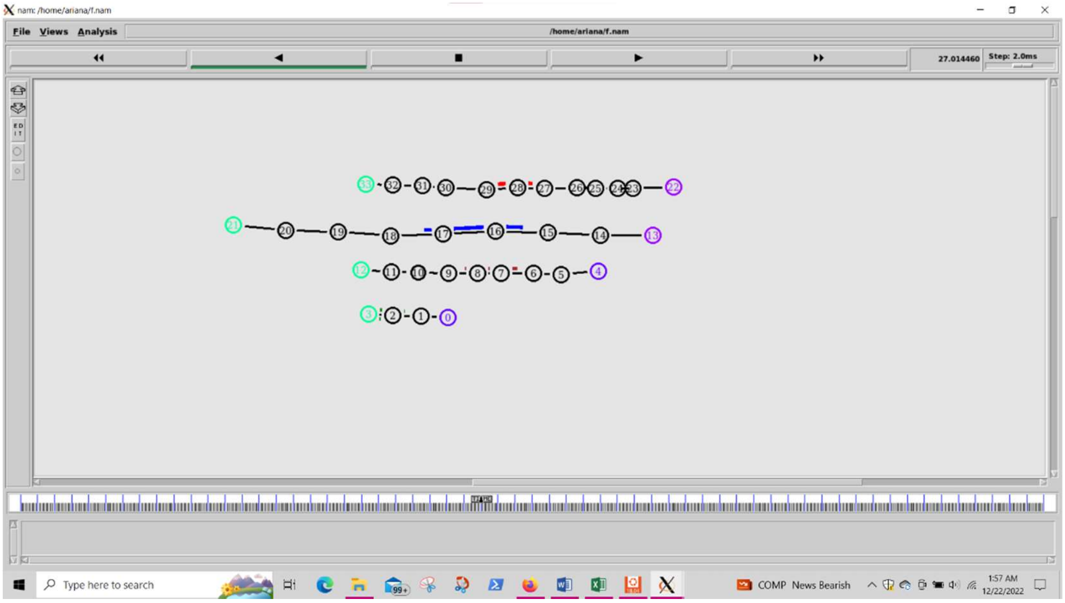


Fig: Middle time output of the ns2

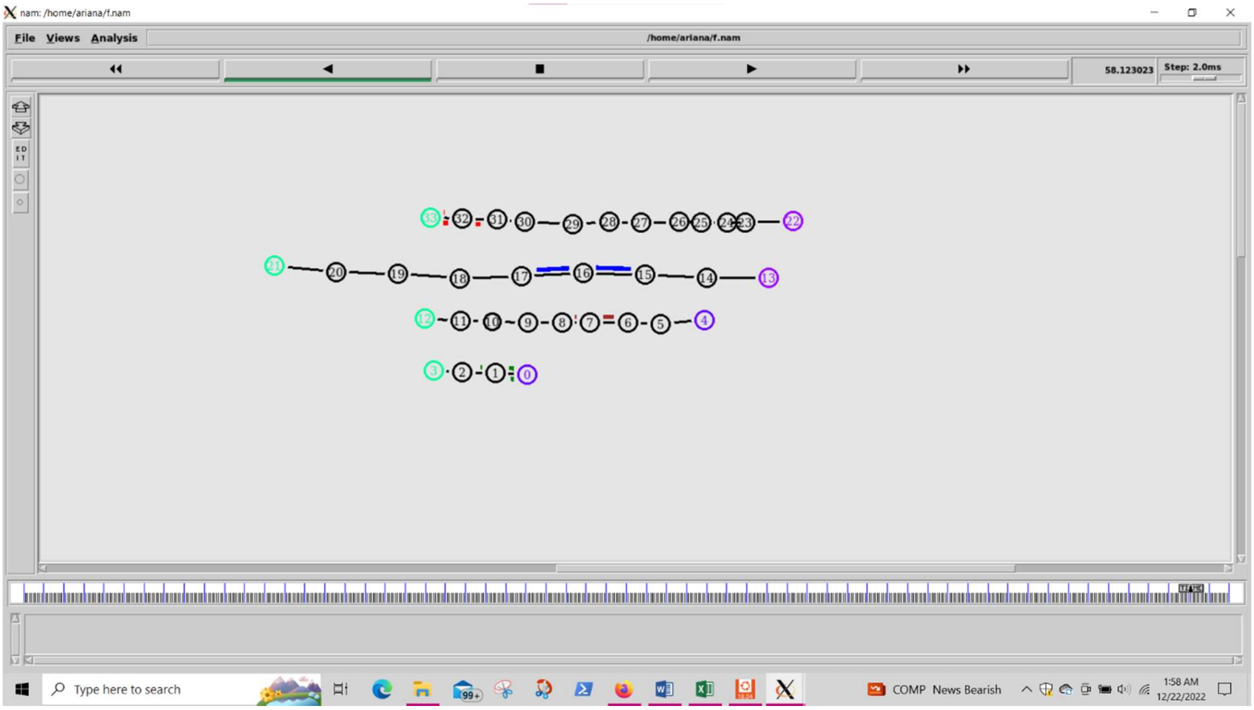


Fig: Ending time output of ns2

9. Summarization of the design network

- Nenmap is used for auditing network systems as it can detect new servers.
- You can create here topology map of discovered networks
- After scanning from 4 domain host network (facebook.com) we find 4 different topology of it.
- Then we create an excel sheet from scanned IP address.
- Then we install Network simulator version 2 in Ubuntu 18.04.5LTS and xming for showing the network flow.

10. Conclusion

One of the drawbacks of the standard Nmap utility is that it does not come with a graphical user interface, unlike a number of other open-source alternatives such as Zenmap. It takes a bit of time to get familiar with the solution and its options.

11. References

1.
https://link.springer.com

2.
https://www.cs.ucf.edu

3.

https://www.tutorialsweb.com