SYSTEM & NETWORK ADMINISTRATION

BY

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This Report Presented in Partial Fulfillment of the Requirements for the Degree of Bachelor of Science in Computer Science and Engineering

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DAFFODIL INTERNATIONAL UNIVERSITY

DHAKA, BANGLADESH

September- 2019

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DECLARATION

I hereby declare that, this project has been done by us under the supervision of **Most. Hasna Hena, Senior Lecturer, Department of CSE** Daffodil International University. I also declare that neither this project nor any part of this project has been submitted elsewhere for award of any degree or diploma.

Supervised by:

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Senior Lecturer
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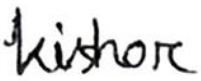
Daffodil International University

Submitted by:



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Finally, I thank **Most. Hasna Hena, Senior Lecturer** Daffodil International University for comments my internship and greatly improved the manuscript.

ABSTRACT

Intern to gain practical experience in Computer Engineering. It is important to make our theoretical knowledge with the practical field. The price of Mikrotik router is much lower so it can be used easily. Being available in the market can be easily done at low cost. It is used for control. The bandwidth is able to be shared by all customers with the overall network administration. As everyone gets bandwidth and is convenient to work, the use of Mikrotik router is increasing day by day. Some of which use the protocol. Mikrotik routers come in many types, such as bridges, backup files and file recovery, interfaces, routes, add IP addresses, DHCP, plain queues, DNS. After the IP is installed on the PC, it gets the intranet. Again working in DHCP mode is available on the Internet PC.

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CHAPTER 01

Introduction

1.1 Introduction

Globalization and advancement of science and technology, it is impossible to even think without information technology. Information plays a huge role in every aspect of life whether in communication, studies, business and everyday life. This Internship Report is named as "**SYSTEM & NETWORK ADMINISTRATION of Daffodil Online IT LIMITED.**"In my Internship Report, I have used Networking Device and there to operate **of Daffodil Online IT LIMITED.**

1.2 Motivation

Experience in Computer Engineering is very important to choose internship for experience. Professional experience in engineering field is required in the market. Experience is important for sharing our knowledge of the practical field. Follow the rules and regulations when working on internship. Hopefully my internship skills will help me meet the challenges in the current market.

1.2 Objectives of Internship Program

The primary cause of training is to accumulate know-how. I desired a brand new venture and could learn, enhance and increase new sets of talents. Responsibility of obligations and sports as a community aid engineer and their analysis from different perspectives. I present my actual expertise as nicely:

- Knowledge of the Mikrotik
- About networking components
- Mikrotik configuration
- How to contact the clients
- How to offer desirable services to customers.

1.4 Introduction to the Company

Daffodil Online IT LIMITED is one of the TOP ISP service provider in Bangladesh since 2000. The most experienced ICT field our basic business ethics is Long Tern Relationship with our customers.

Customer Service by the strongest integration among distinct departments.
Providing absolute satisfaction to the customers in terms of ISP solution to achieve long term relation with them and adapt with new technologies growth in market share. [1]

Head Office

Table-1: Company address Details

Name	Daffodil online limited
Address	102,sukrabad(3rdfloor), Mirpur road,Dhanmondi, Dhaka- 1207,Bangladesh
Telephone	02-9143258-60
Fax	880-2-8116103
Email	info@daffodilnet.com
Type of Organization	Nationwide internet service provider(ISP)
Employees	14

1.5 Report Layout

1, The concept of the internship and introduction of the organization is defined.

2, Internship method and this chapter offers statistics about in which the internship is attached to launch this software. about the organisation, DoL's IT carrier offerings .

3, Described about events, activities and activities.

4, Smart Plan, Competencies Earned.

5, Future Scope and Conclusion.

CHAPTER 02

Organization Overview

2.1 Introduction

The Internship and ICT Service (DOL) began in July 2002. A company that is important for delivering solutions. Own fiber optic and radio link WAN has its own clients, corporate, SME services to provide to individual clients. Working with high esteem, many established national projects and international organizations. Services are being upgraded using the latest technology [1].

2.2 Product and Market Situation

Daffodil online confined in imparting meet patron call for. Actually Daffodil on line limited corporation linkage of many different corporation. I am make sure Daffodil on line constrained is the maximum crucial of IT zone for market scenario.

2.3 Target Group

Daffodil on line confined well-known for IT answer, software program & hardware all over the United States.

The company is planning to focus on clients. This will require the biggest growth for the company with new quality speed offers. The company's customers and consumers are all within the business, including small to medium start-ups. Working with Web Solutions across departments is key and requires more dedicated, reliable customer service [1].

2.5 Organizational Structure

Daffodil Online Ltd (Doll) is one of the most critical institution for internet delivery and it's answers and provides ICT services on account that July 2002. It has its own radio link WAN infrastructure and fiber optic to serve corporate, SMEs and individual customers. Institute Works with many countrywide initiatives, excessive regards all stakeholders worried.

with global institution. It wishes the contemporary generation and desires offerings where it wishes to be upgraded. Daffodil Online Limited (Doll) is very critical organizations because of the good work achieved within the job sector. Many devices have many uses. Such as Mikrotik router, optical fiber cable, and plenty of different PCs. Easy to apply for each device business enterprise for internship [1].

CHAPTER-3

Tasks, Projects and Activities

3.1 IP Address Sub-netting

Provides the necessary information to configure the router, such as how addresses are broken and how subnets work. Assigns an IP address with a unique subnet to each interface of the router.

- **Address -** To use the unique number ID assigned to the host or interface.
- **Subnet -** Shares the specified subnet address
- **Subnet mask -** The subnet of the address is meant for.
- **Interface -** Network connection.

Table-2: IP address

Class	Range	No of Networks	No of address per network
A	0-127	27=128	224=16777216
B	128-191	214-=16384	216=65536
C	192-223	221=2097152	28=256

3.1.1 Private & Public IP Addresses :

Each device takes an Internet connection and receives the connection from each router through the DHCP protocol and receives a private IP address. You can also use private IP on your home PC. Your pivot IP can be used in public IP for every purpose. The private IP address can be accessed directly on the computer within your personal space. This is the global IP address assigned to the computing device.[3]

Table-3: Private IPv4 Network ranges

Class	Private IP	Subnet Mask	Address Range
A	10.0.0.0	255.0.0.0	10.0.0.0-10.255.255.255
B	172.16.0.0-172.31.0.0	255.240.0.0	172.16.0.0-172.31.255.255
C	192.168.0.0	255.255.0.0	192.168.0.0-192.168.255.255

Table-4: Public IPv4 Network ranges

Class	Public IP	Subnet Mask	Address Range
A	203.190.10.0/26	255.255.255.129	203.190.10.0-203.190.10.128

3.2 History of MikroTik :

MikroTik This company markets wireless network routers and their connected devices, operating systems, network switches, auxiliary software, access points. They also provide MikroTik network equipment. The first device market in the market started in 1996. Electric Utility was the second largest exporter of Latvian exports in 2015 by revenue. [4]

Daily Task and Activities

1. Open VMware click on "Create New Virtual Machine".

VMware start View

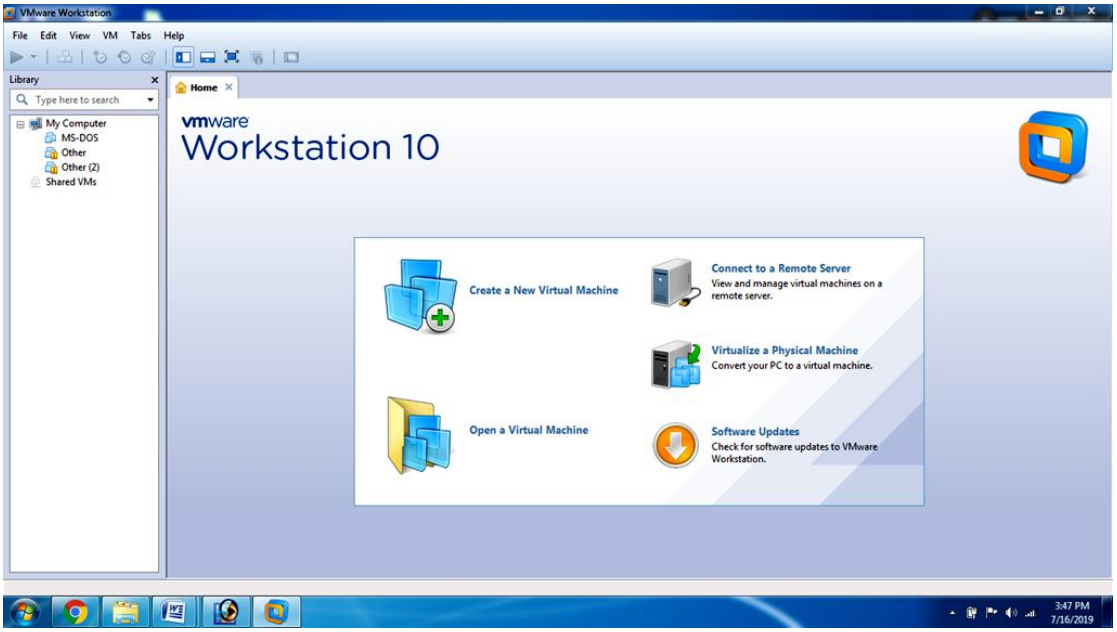


Fig: 3.1 VMware start View

2. Create bootable Flash Drive or CD/DVD with the ISO file.

Installation processes:

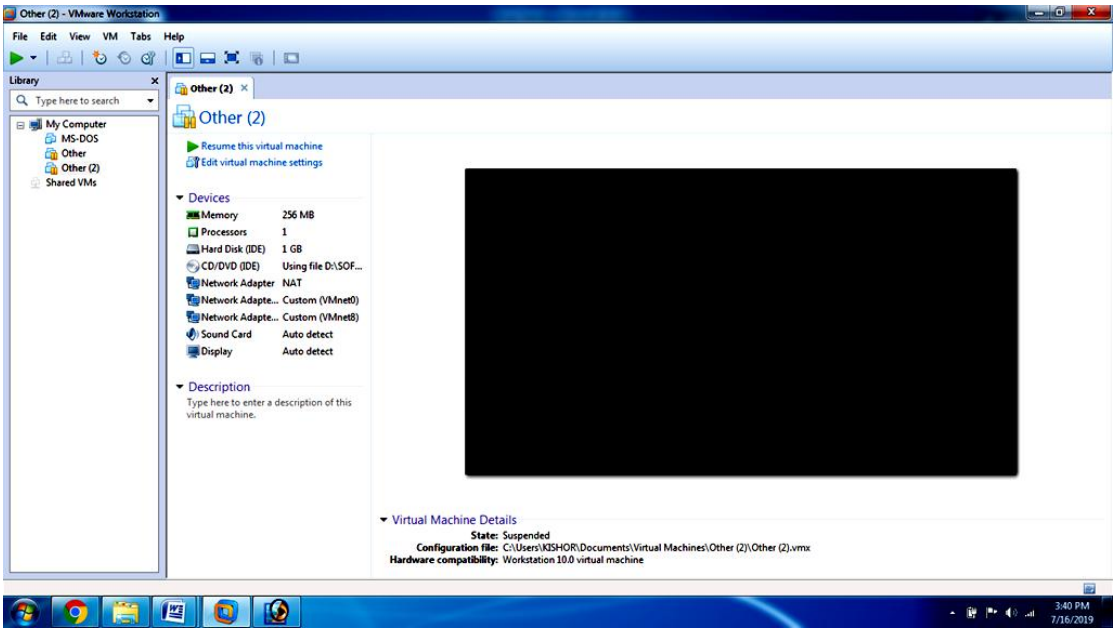


Fig: 3.2 Installation processes:

3. Click 'Next' -> 'Next'-> Select "I will install operating system later".

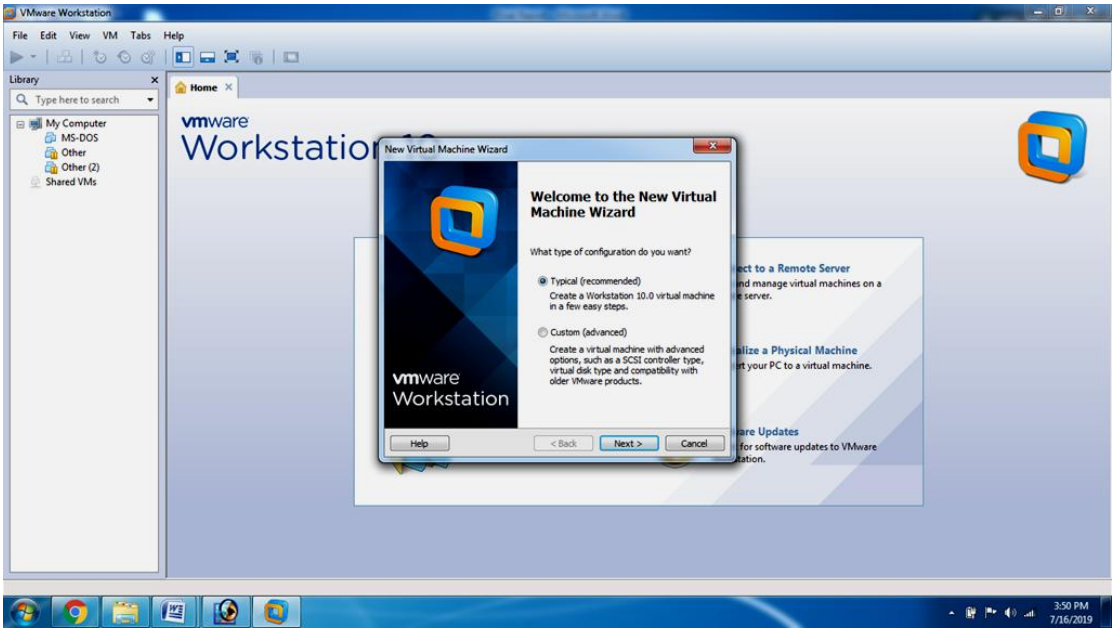


Fig: 3.3 Installation processes:

4. Select Guest Operating System Other and Version Other Click Next

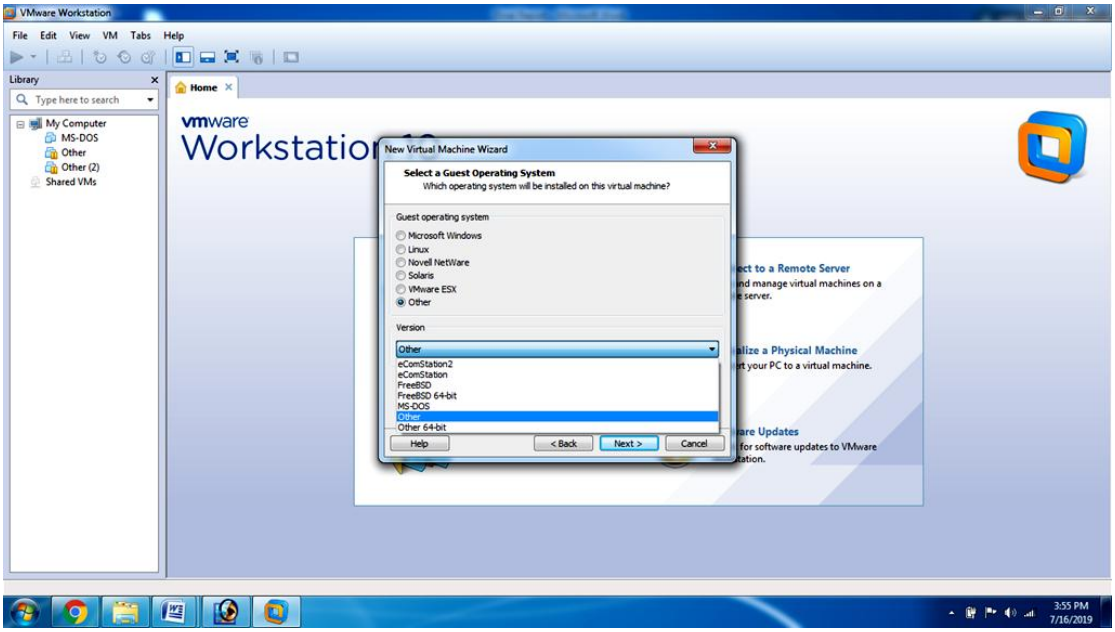


Fig: 3.4 Installation processes:

5. Give Virtual Machine Name "Other(2)" and show installation location.

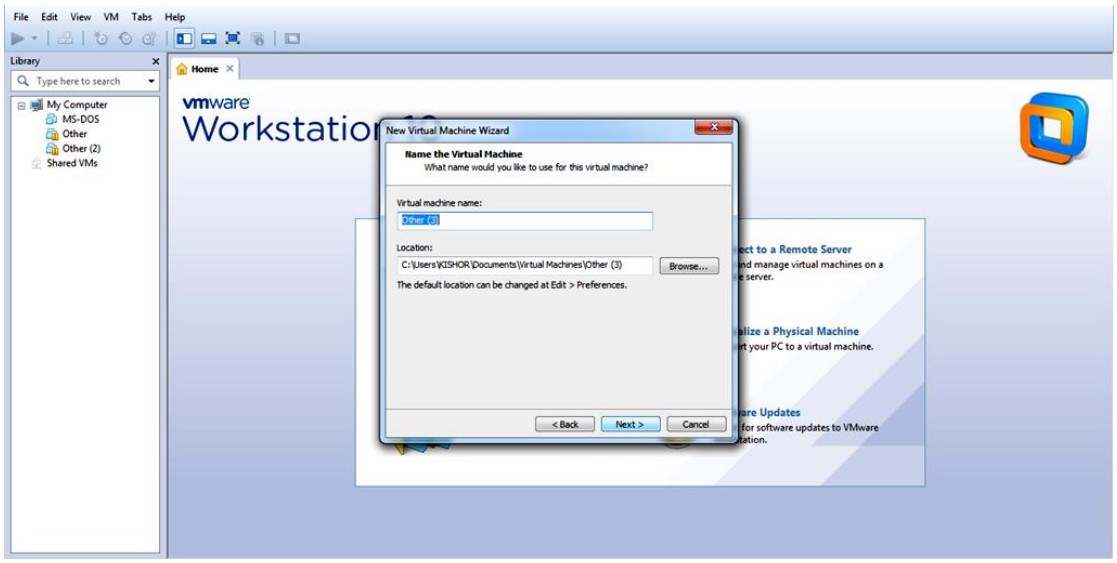


Fig: 3.5 Installation processes:

6. Maximum disk Size (GB): One GB

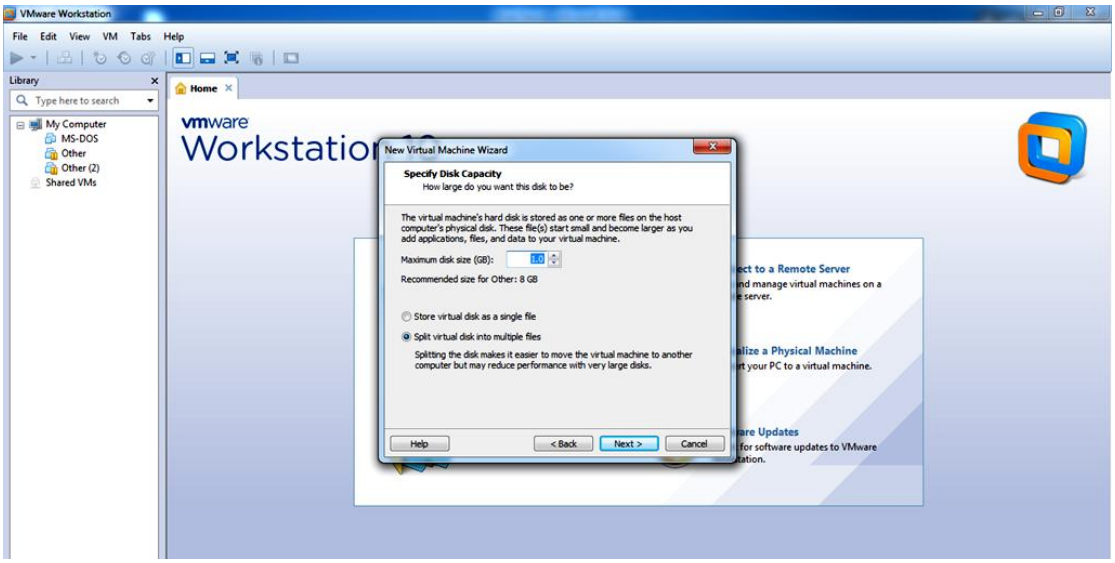


Fig: 3.6 Installation processes:

7. Power on virtual machine.

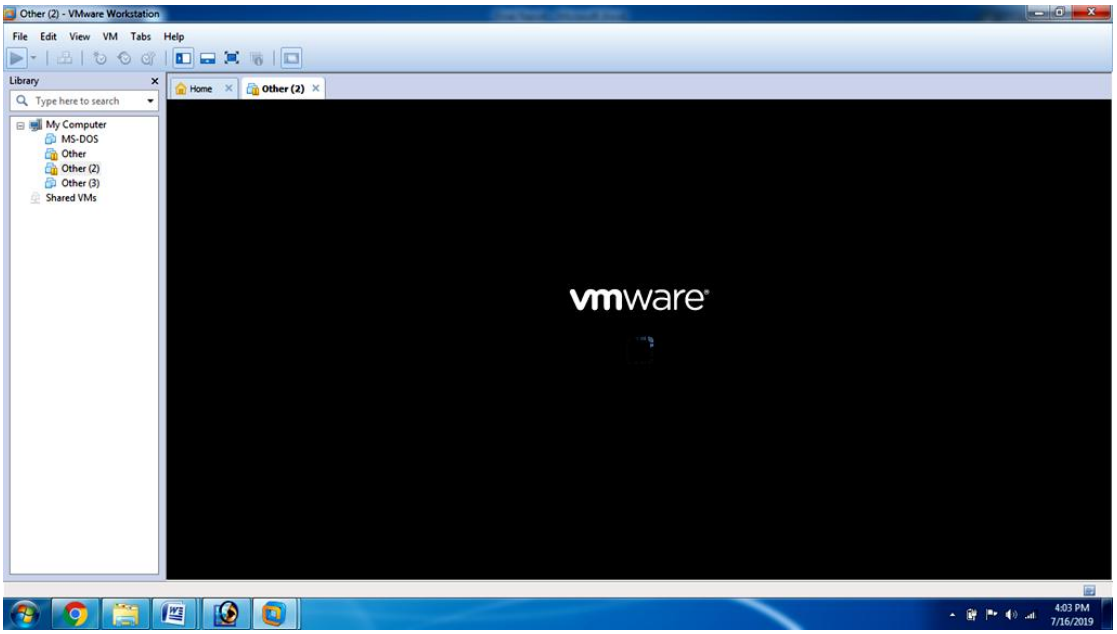
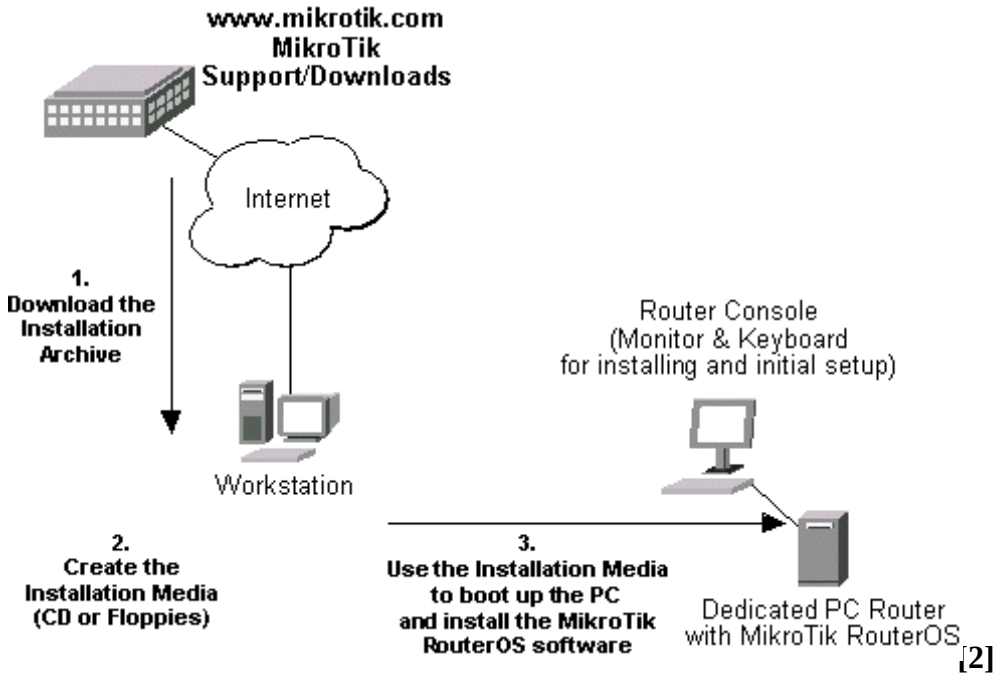


Fig: 3.7 Installation processes:

3.2.1 Installation of Mikrotik Router OS

Download the installation Archive Mikro Tik Support



[2]

Fig: 3.8 Mikrotik Router OS

3.2.1 installation of Mikrotik

Move around Menu Using ‘P’ and ‘n’ or arrow keys. Select with ‘spacebar’ Select all with ‘a’. Minimum with ‘M’. Press ‘i’ to install locally or ‘q’ to cancel and reboot.

1. Download Mikrotik, ISO file.
2. Then burn the CD, burn the photo ISO file
3. Then insert the CD / DVD ROM CD and set the primary boot inside the BIOS.
4. Press 'a' (pick all) then press 'i' (to put in) to install locally or ‘q’and then press 'y' and then press 'y'.

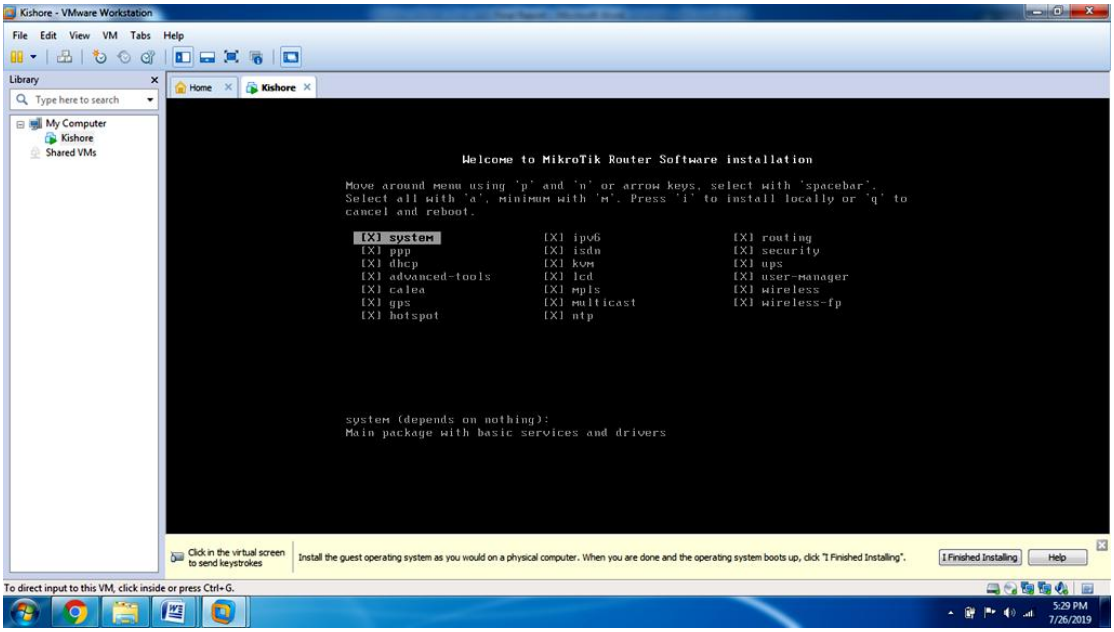


Fig: 3.9 Mikrotik Installation processes

5. Do you want to keep old configuration? [y/n]: y

6. Continue? [y/n]: y

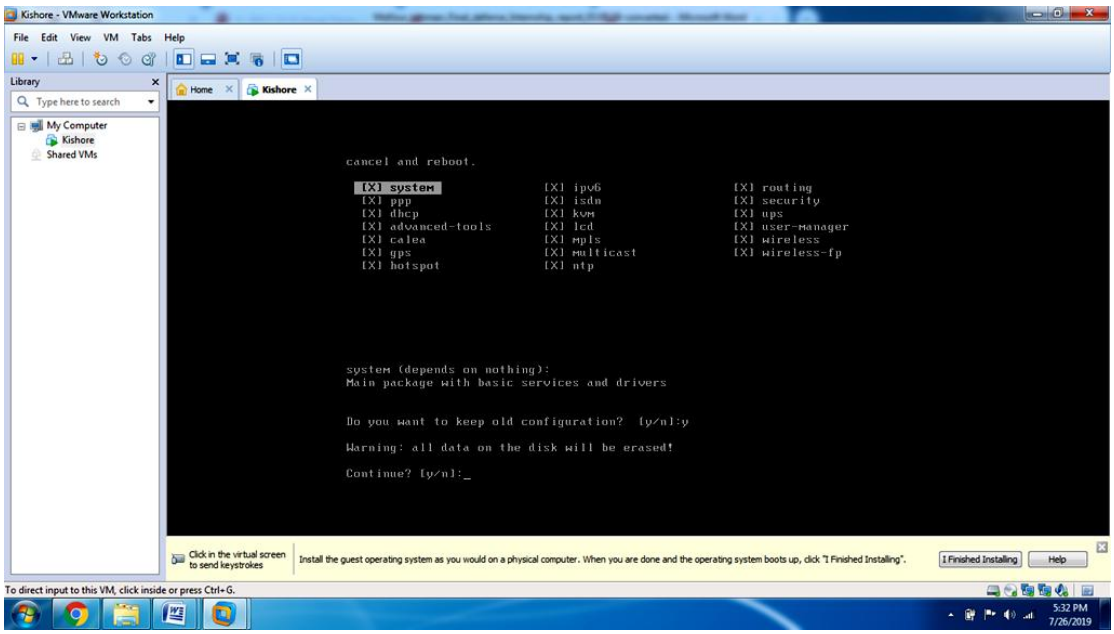


Fig: 3.10 Mikrotik Installation processes

7. Formatting disk……..

8. Installed system – 6.22

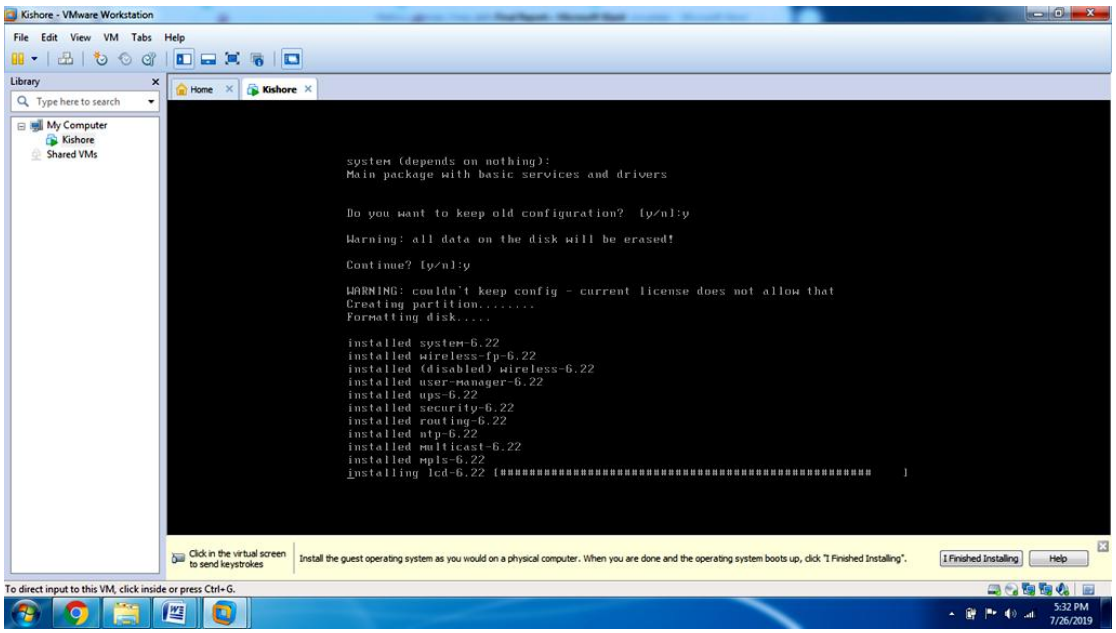


Fig: 3.11 Mikrotik Installation processes

8. Mikrotik 6.22
9. Mikrotik Login : admin
10. Password : admin

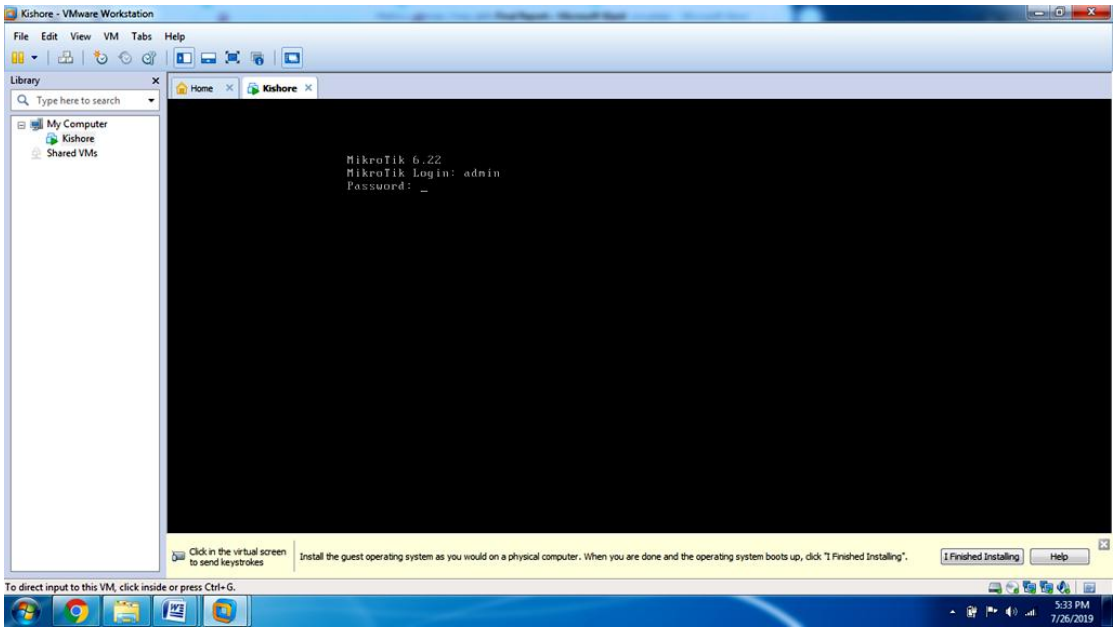


Fig: 3.12 Mikrotik Installation processes

11. Please Press “Enter” to Continue

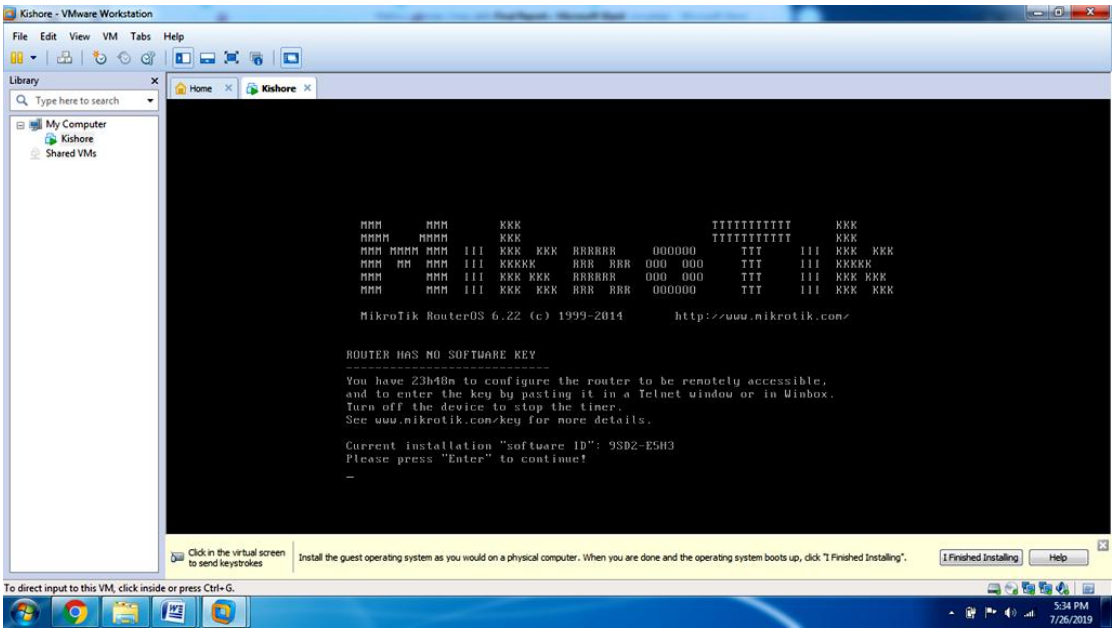


Fig: 3.13 Mikrotik Installation processes

12. [admin@Mikrotik]>

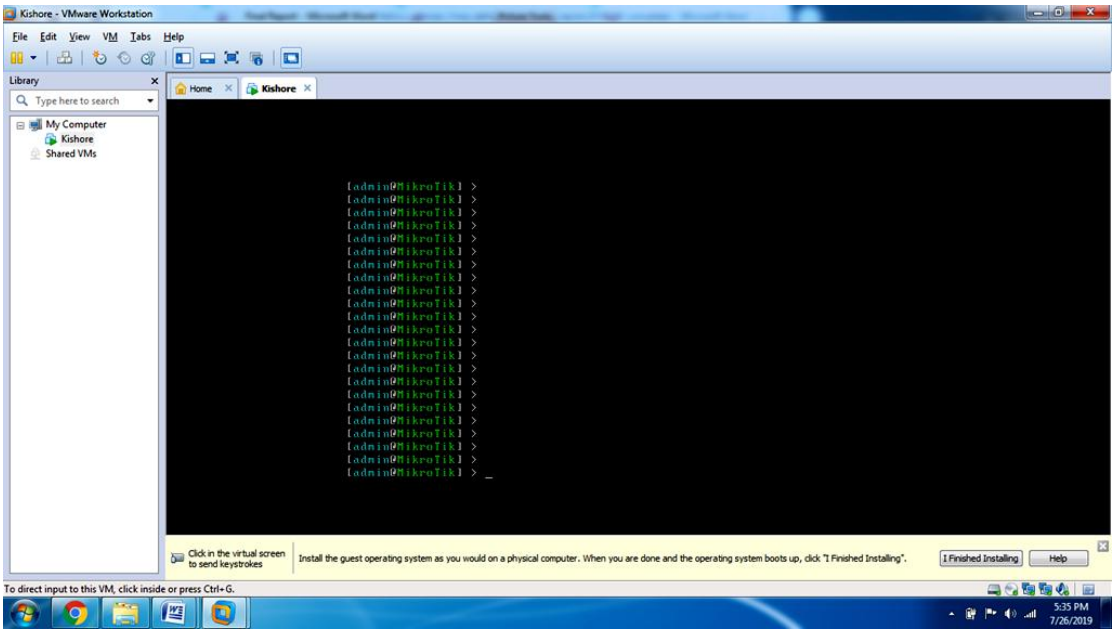


Fig: 3.14 Mikrotik Installation processes

3.2.2 Bandwdith Management procedure:

1. Click on Winbox.
2. Connect to our Router IP 192.168.88.1
3. Select the Login Name “admin”
4. Type the password “admin”
5. Select the option “Connect”

Starting with Winbox

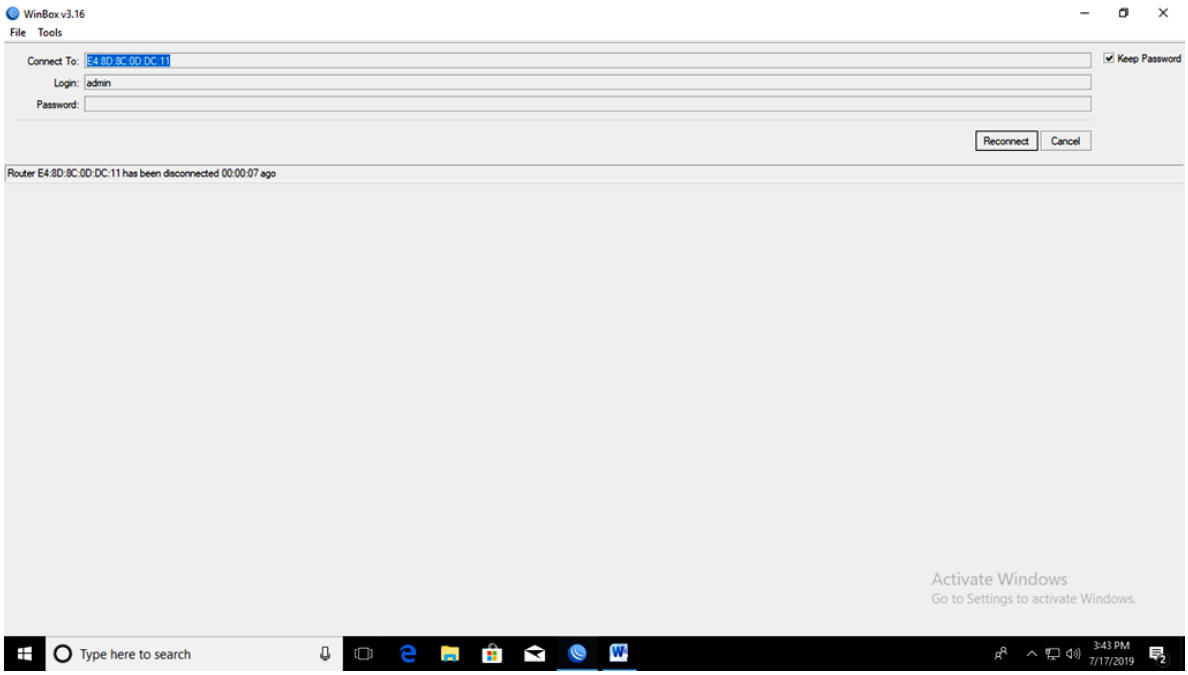


Fig: 3.15 Starting with Winbox

6. New Terminal system reset-configuration
7. system reset-configuration for Yes /Y

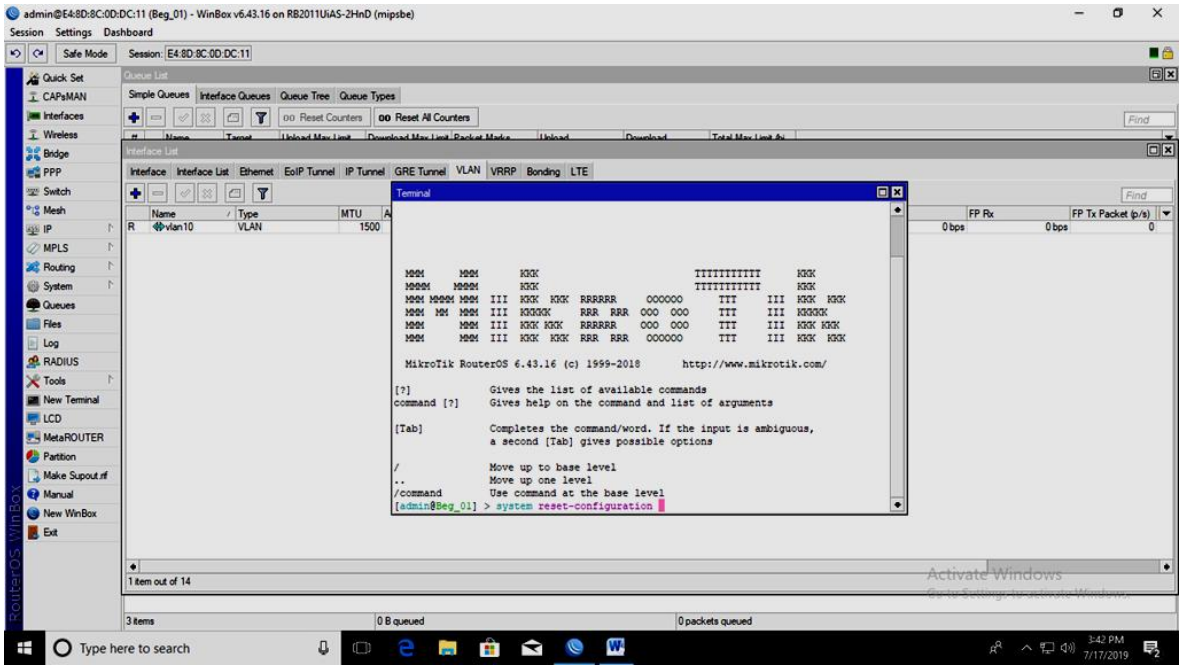


Fig: 3.16 Winbox new Terminal

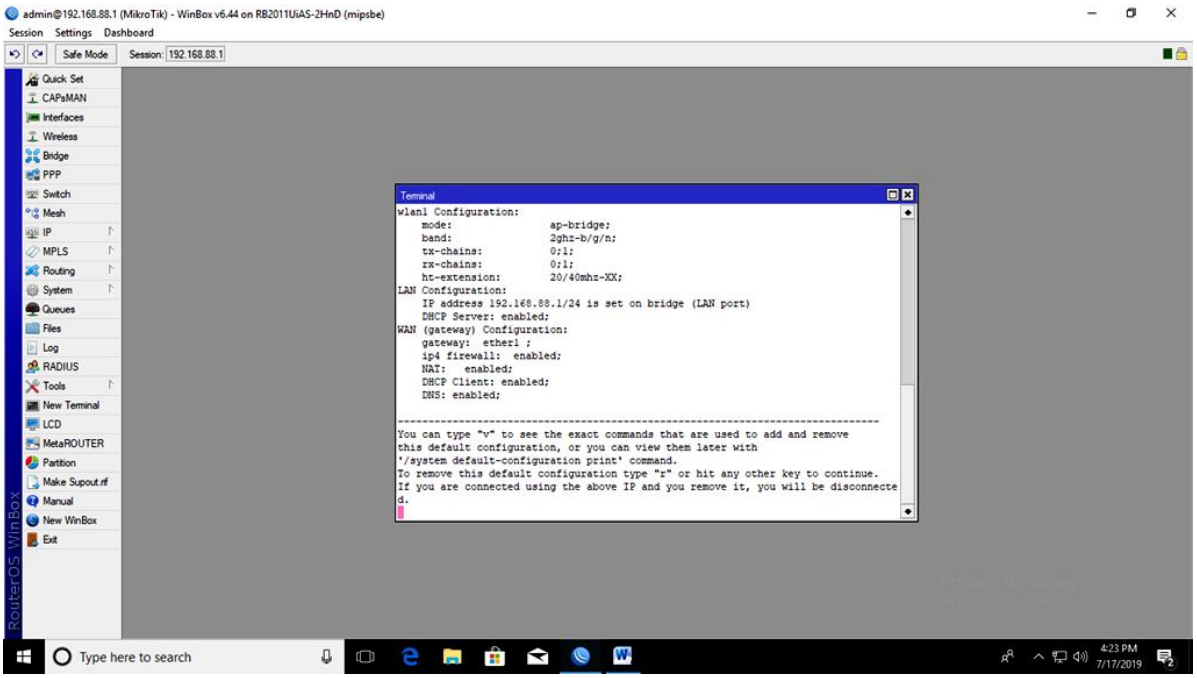


Fig: 3.17 Winbox new Terminal

8. Lan IP 192.168.50.220/24 Address, Network 192.168.1.0, Interface ether1.
9. Wan IP 172.16.1.1/24 Address, Network 172.16.1.0, Interface ether2.

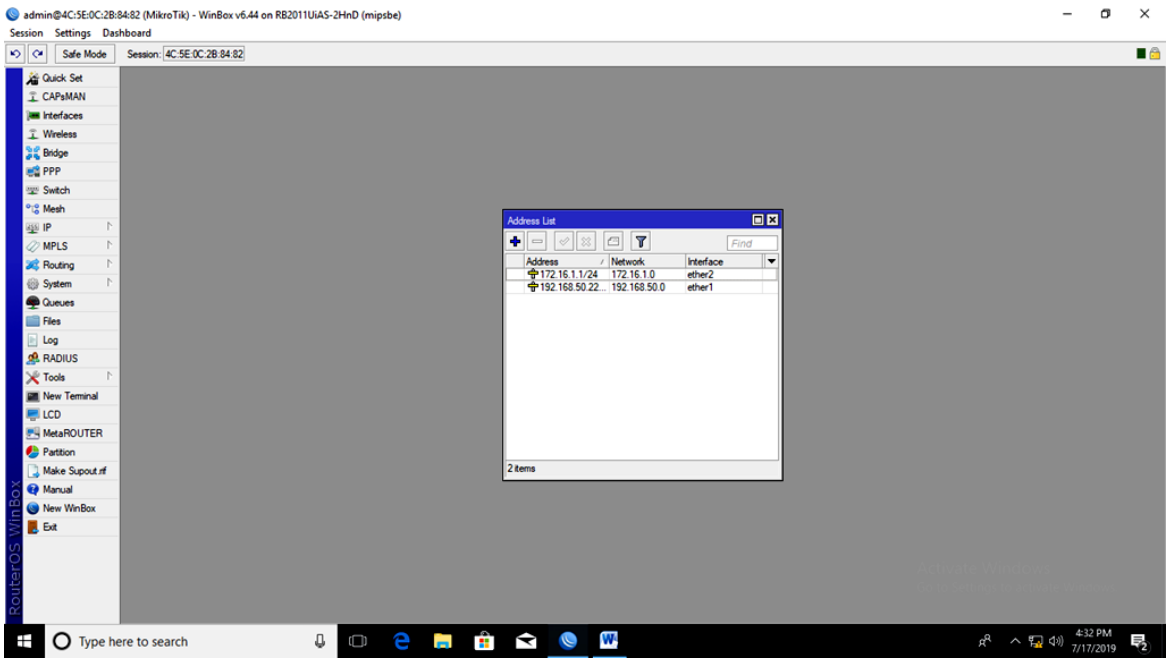


Fig: 3.18 Winbox Address List

10. DNS Servers IP 203.190.10.252 /8.8.8.8

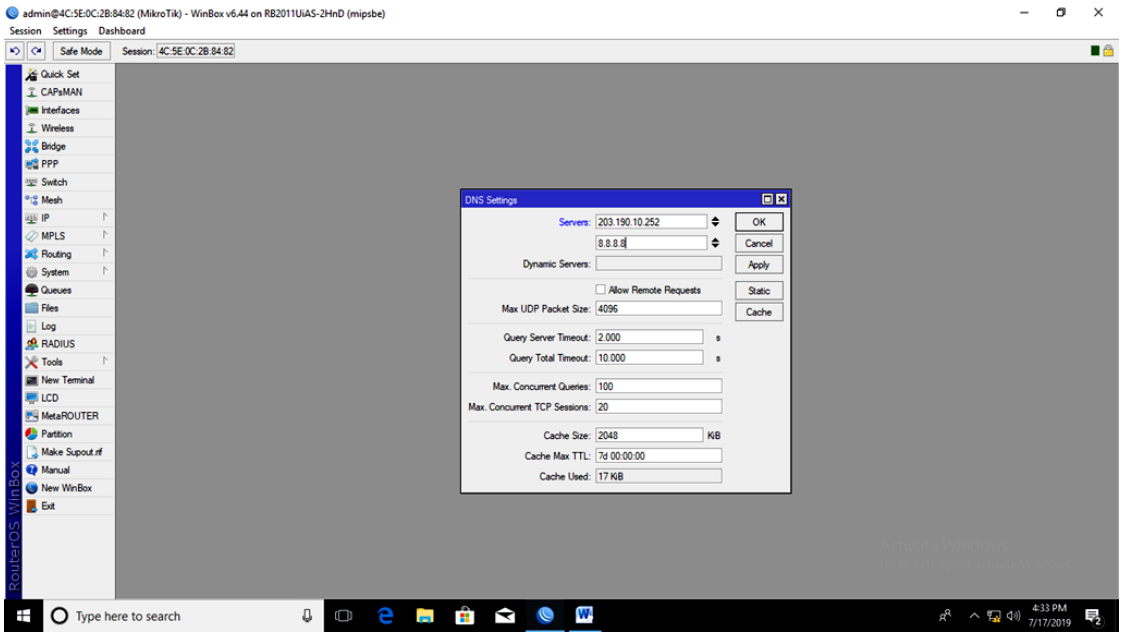


Fig: 3.19 DNS Settings

11. IP-> Routes-> +(Add) Gatway 192.168.50.1

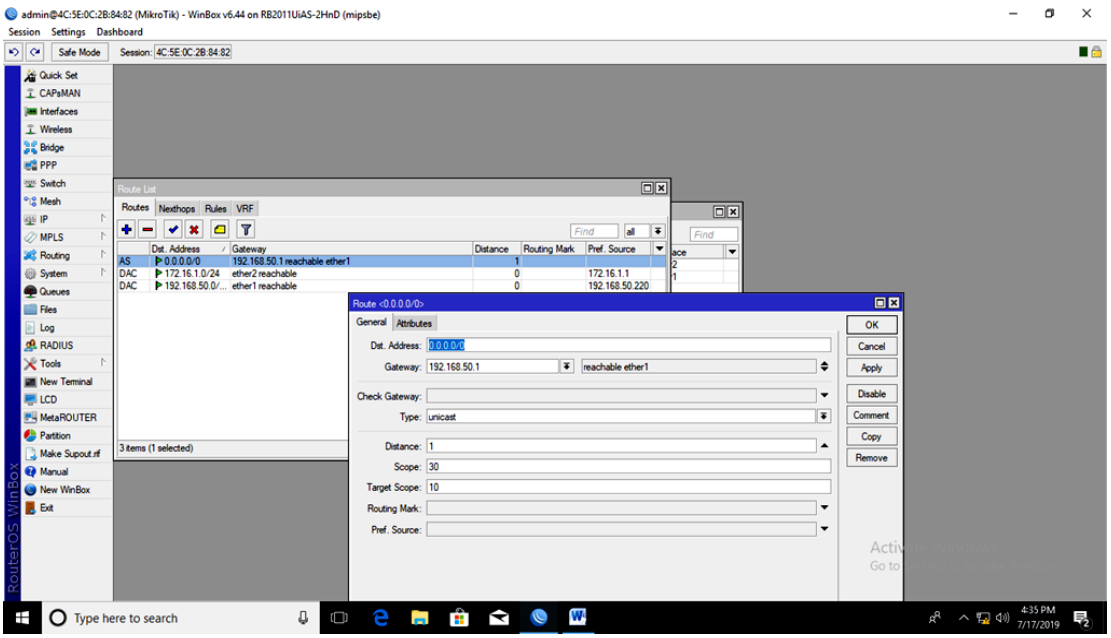


Fig: 3.20 Route List

12. IP -> Firewall -> NAT -> Add(+) Src Address 172.16.1.0/24
13. IP -> Firewall -> NAT -> Action -> masquerade.

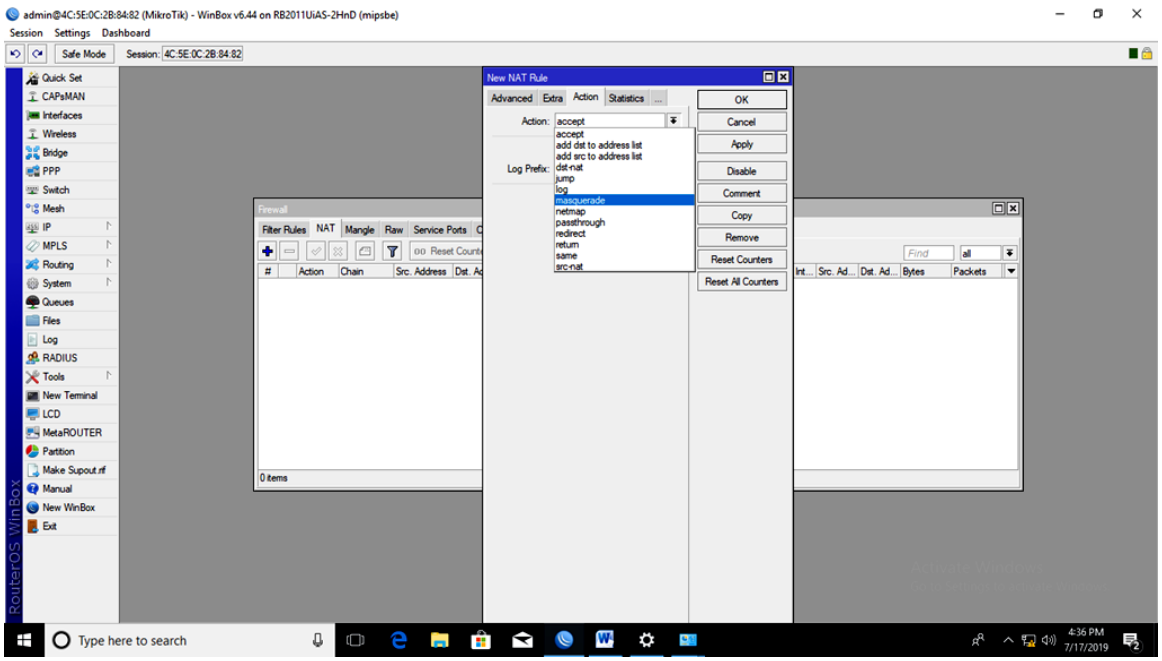


Fig: 3.21 New NAT Rule

14. The Internet Protocol Version 4 (TCP/IPv4).

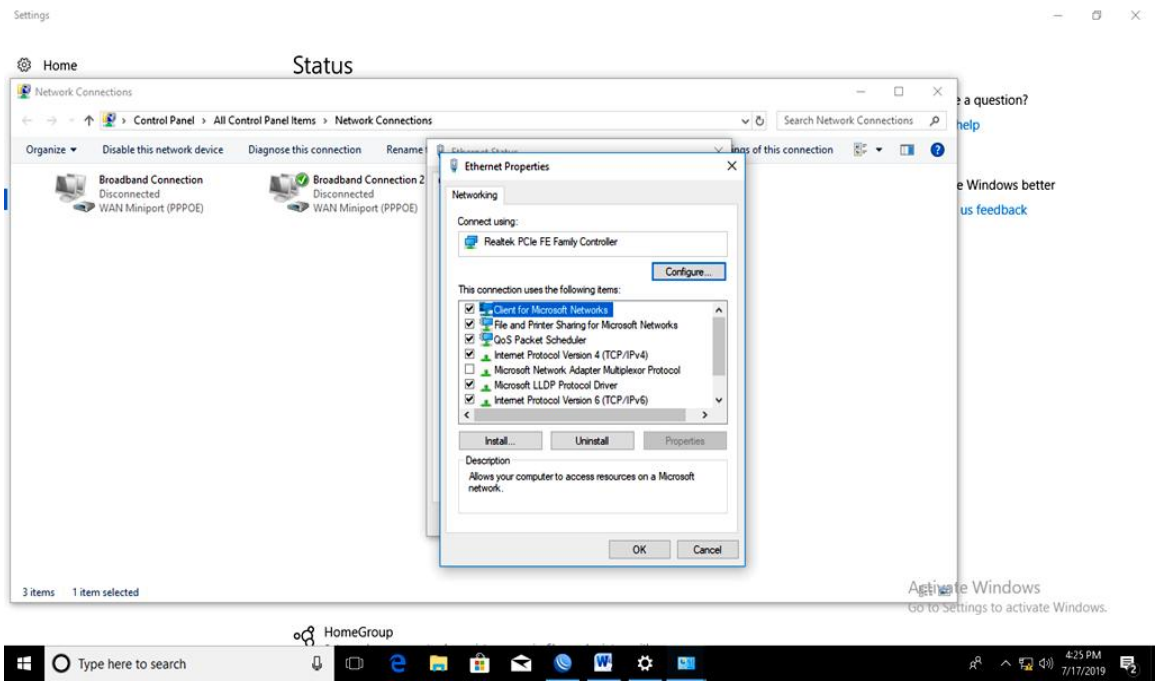


Fig: 3.22 PC Ethernet Properties

15. IP Address: 172.16.1.2, Subnet Mask: 255.255.0.0, Default Gateway: 172.16.1.1, Preferred DNS Server: 203.190.10.252, Altemate DNS Server: 8.8.8.8

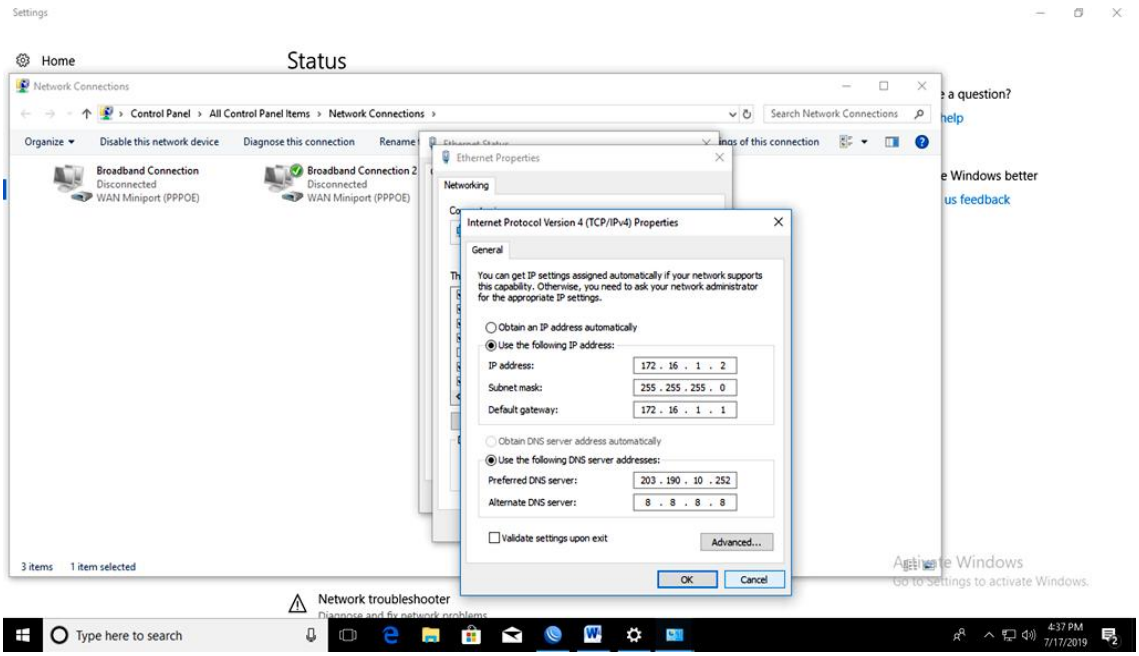


Fig: 3.23 Internet Protocol Version 4 (TCP/IPv4) Properties

16. DHCP Server IP -> DHCP Server Interface Select -> Next -> Lease Time.

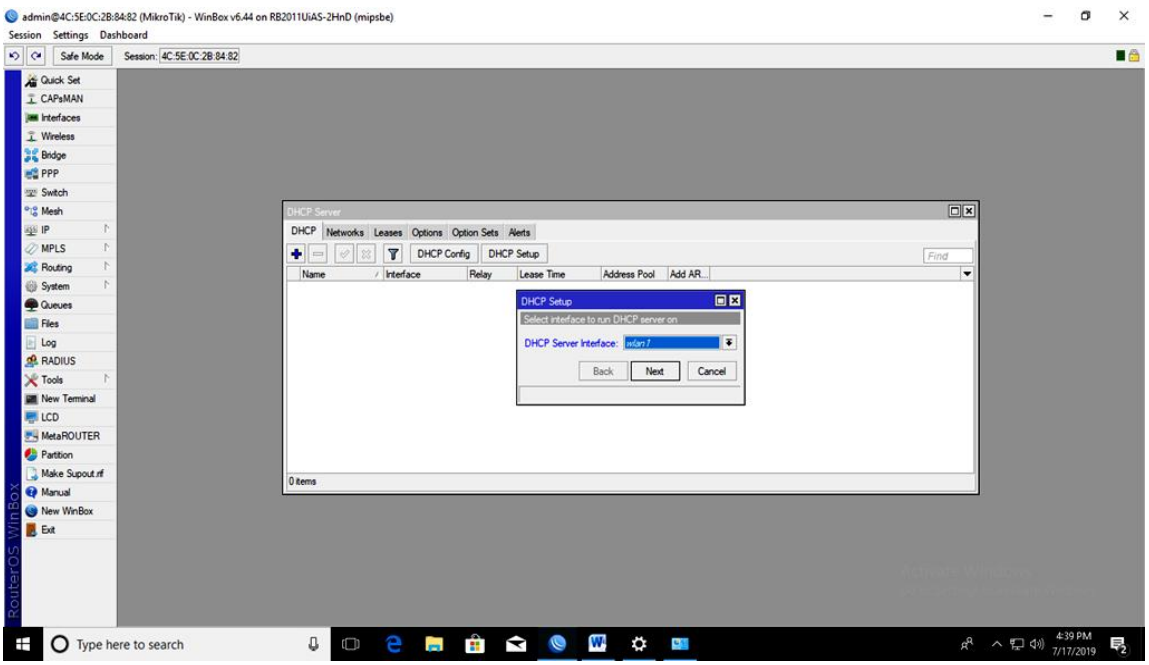


Fig: 3.24 DHCP Server

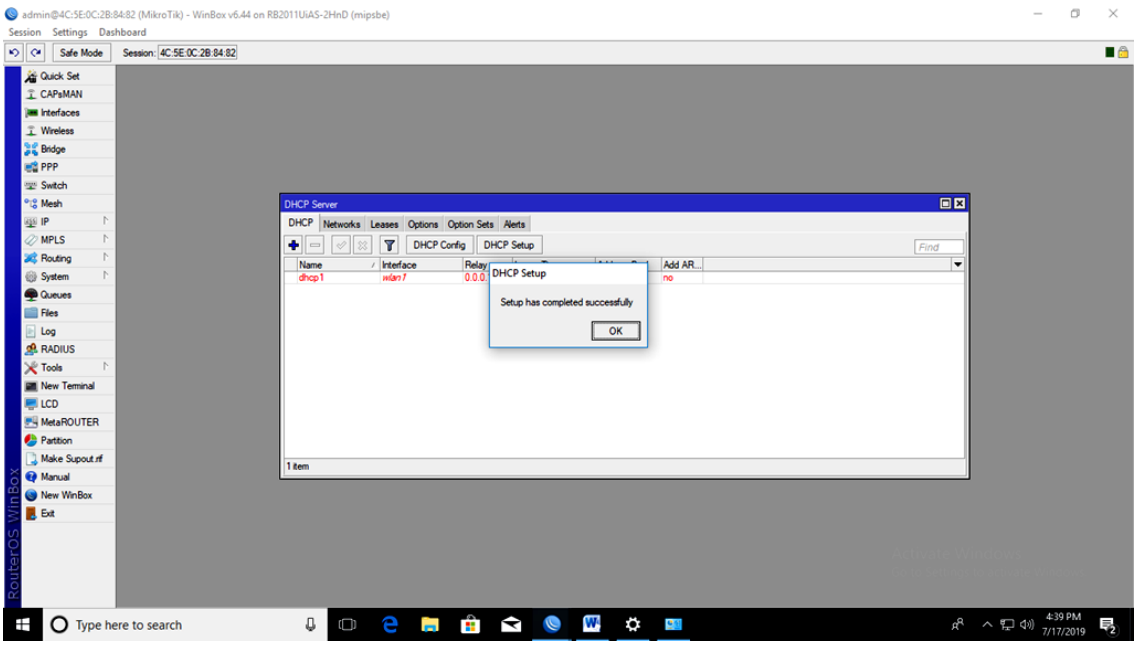


Fig: 3.25 DHCP Server Setup has Completed

17. Left Bottom -> Make Static.

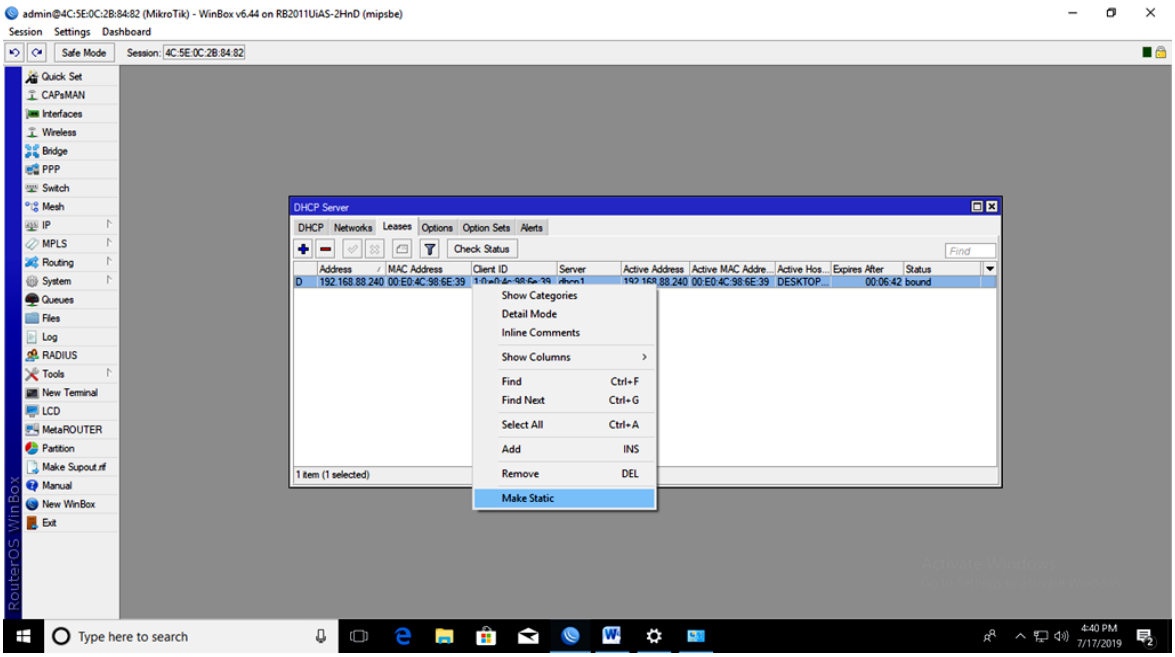


Fig: 3.26 DHCP Server Make Static

18. Bridge -> Add -> Name (Kishor).

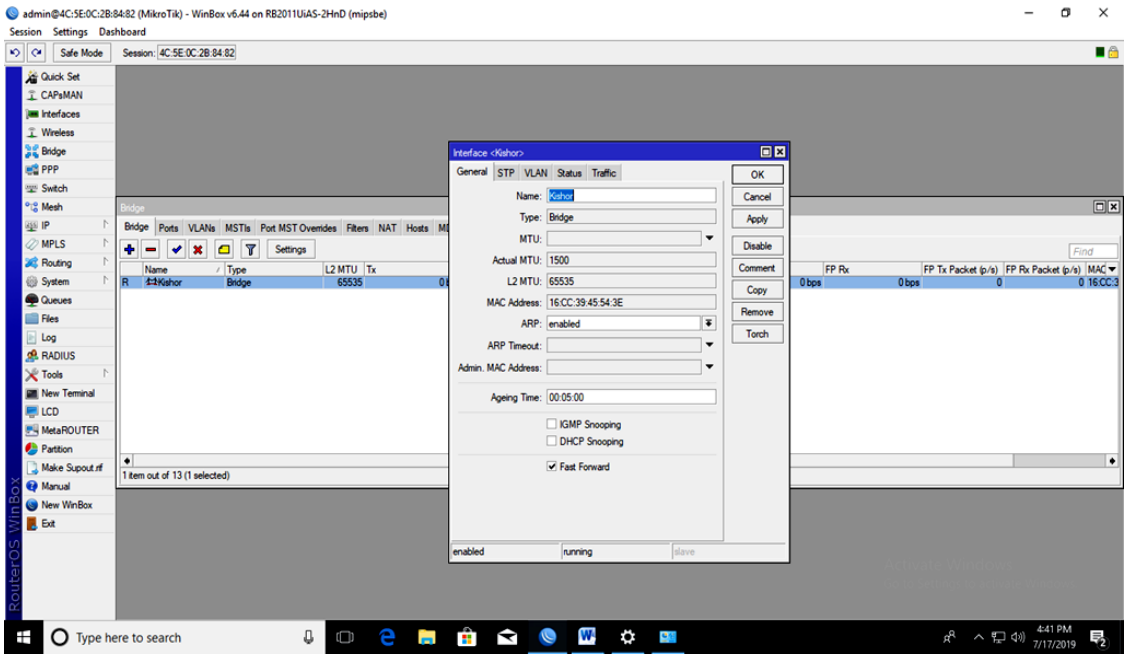


Fig: 3.27 Bridge Interface

19. Bridge -> Ports -> Add Select Interface ether 2, Bridge Select Kishor(Bridge Name).

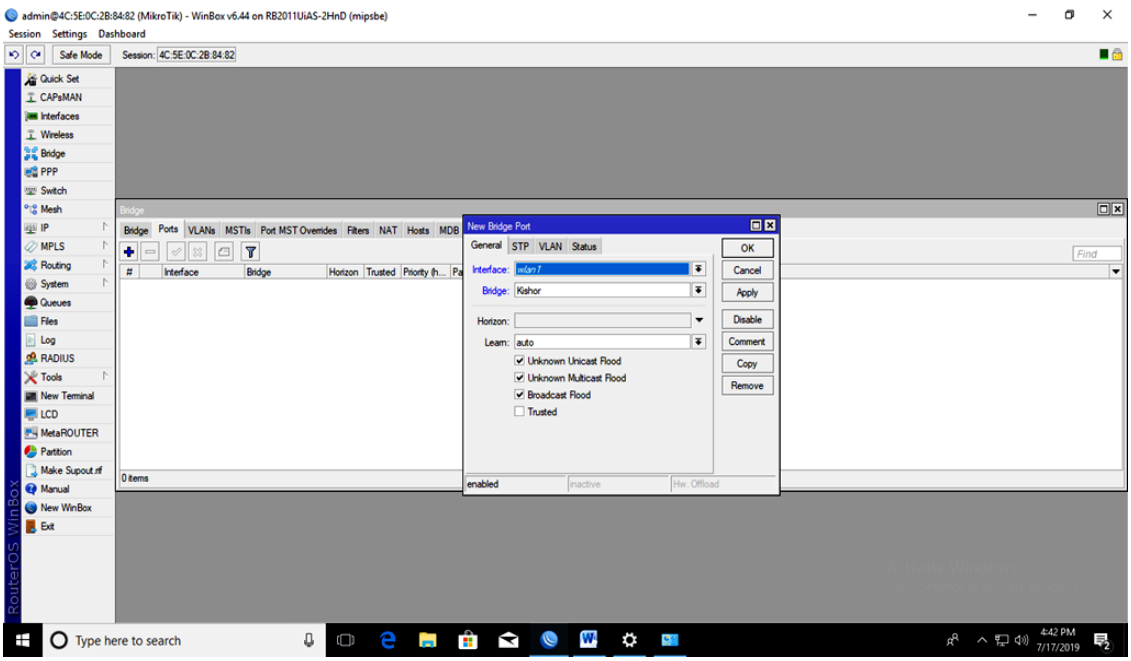


Fig: 3.28 New Bridge Port

20. All Bridge ether 2….. ether 10 ports.

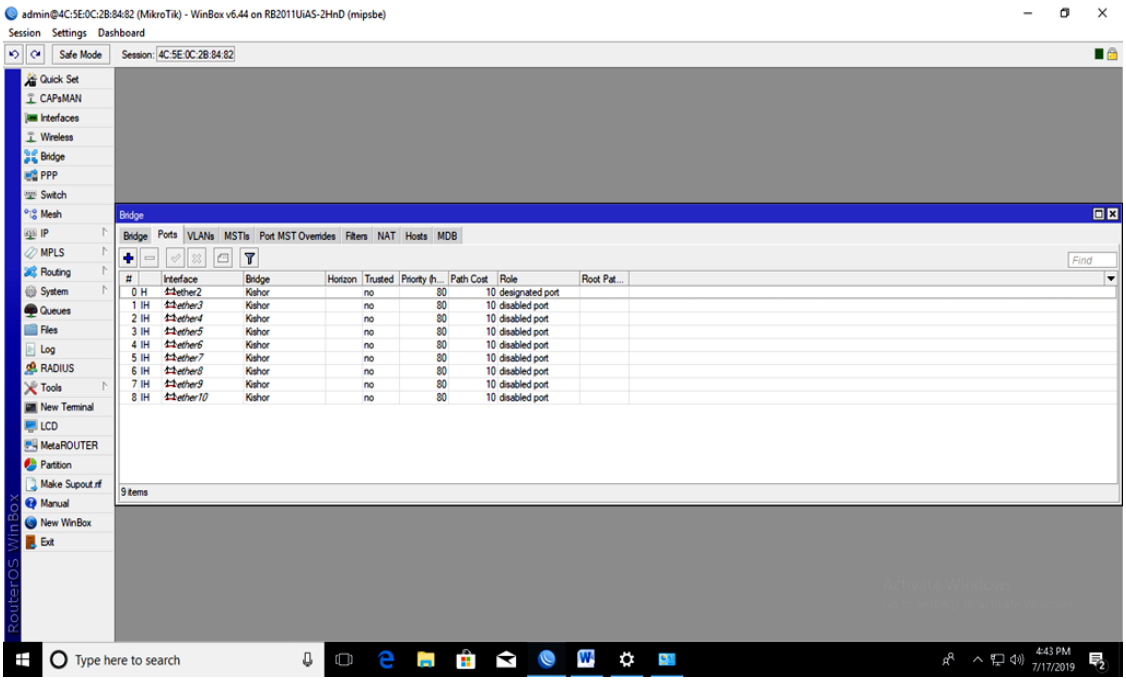


Fig: 3.29 New Eight Bridge Port

21. Bandwidth Shear Queues List -> + ->Daud (Name) -> Target Pc Ip 192.168.43.1 -> Target Upload 5M, Target Download 10M.

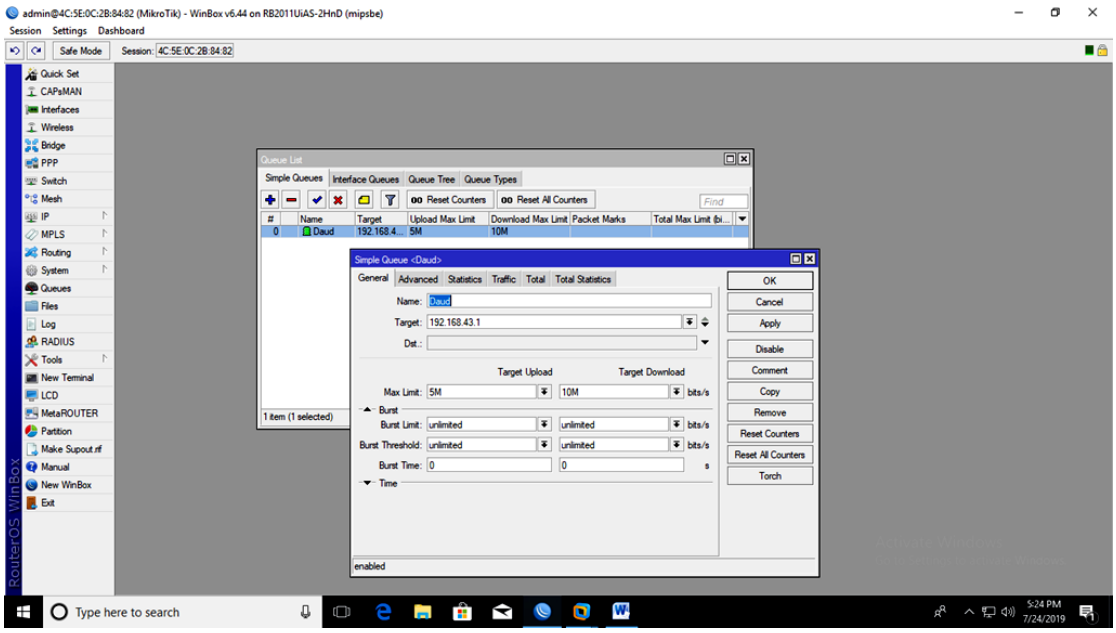


Fig: 3.30 Queue List

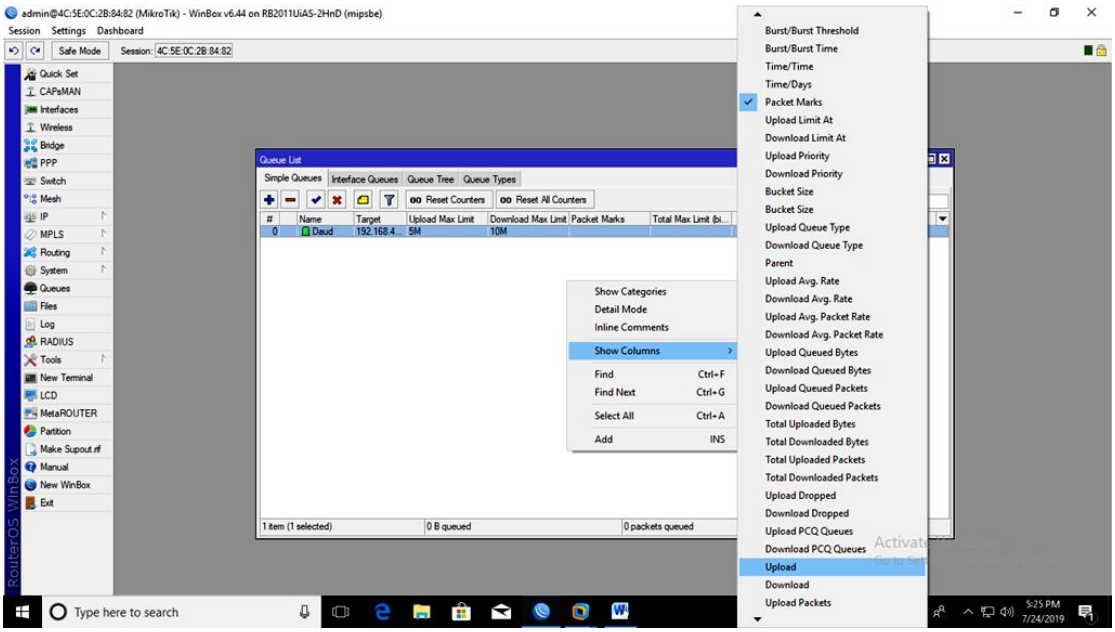


Fig: 3.31 Queue List

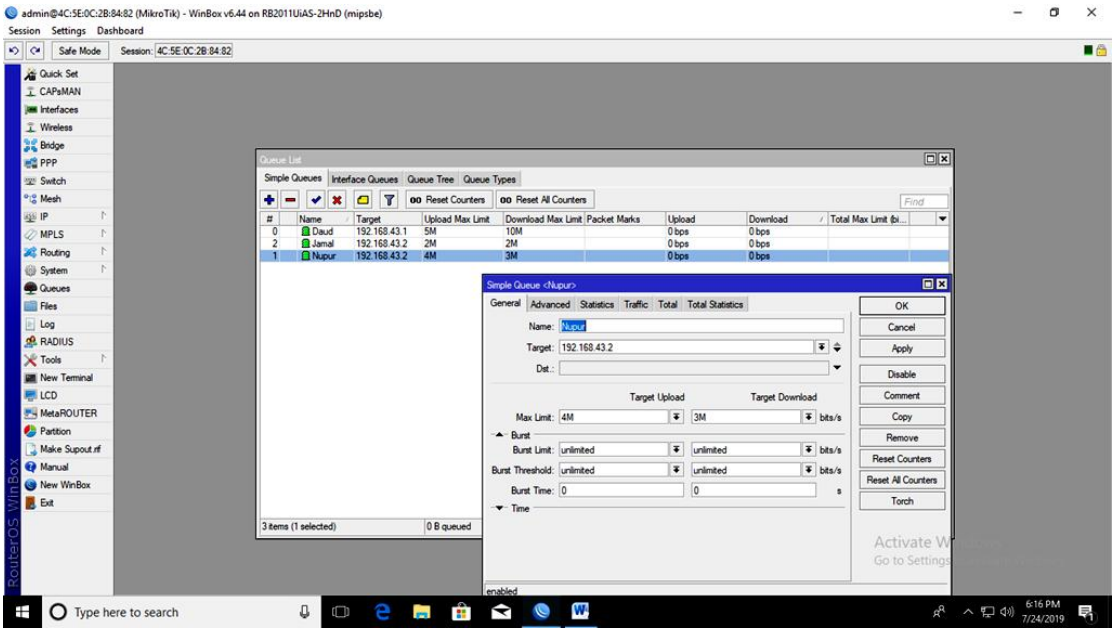


Fig: 3.32 Queue List

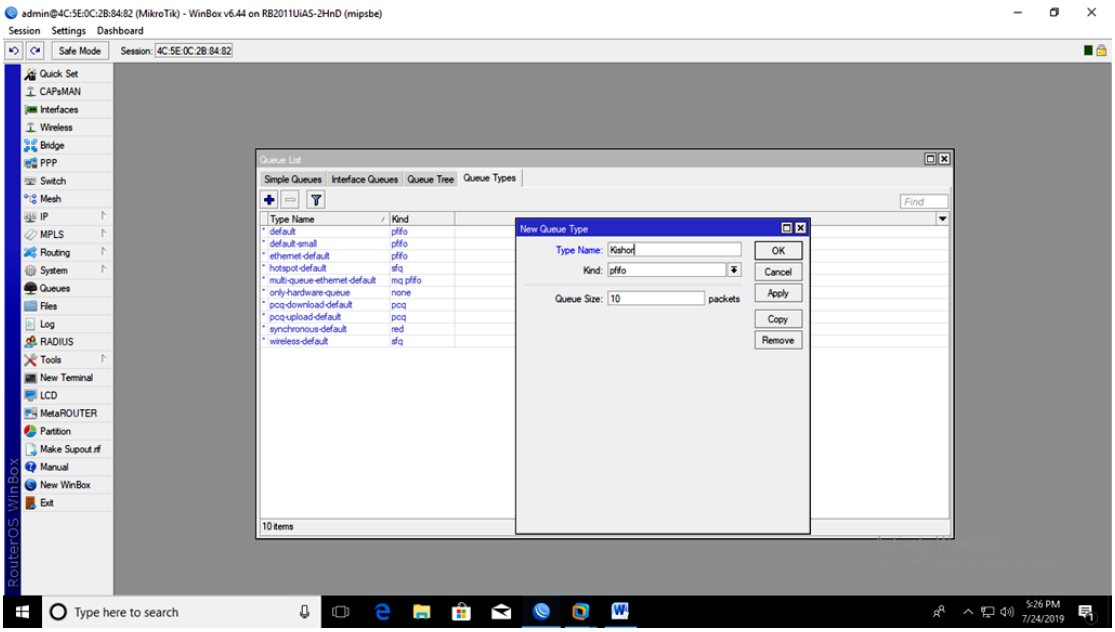


Fig: 3.33 Queue Types

22. Web Page Blok: IP -> Firewall -> Filter Rules -> add -> General Src.Address 172.16.1.0/24

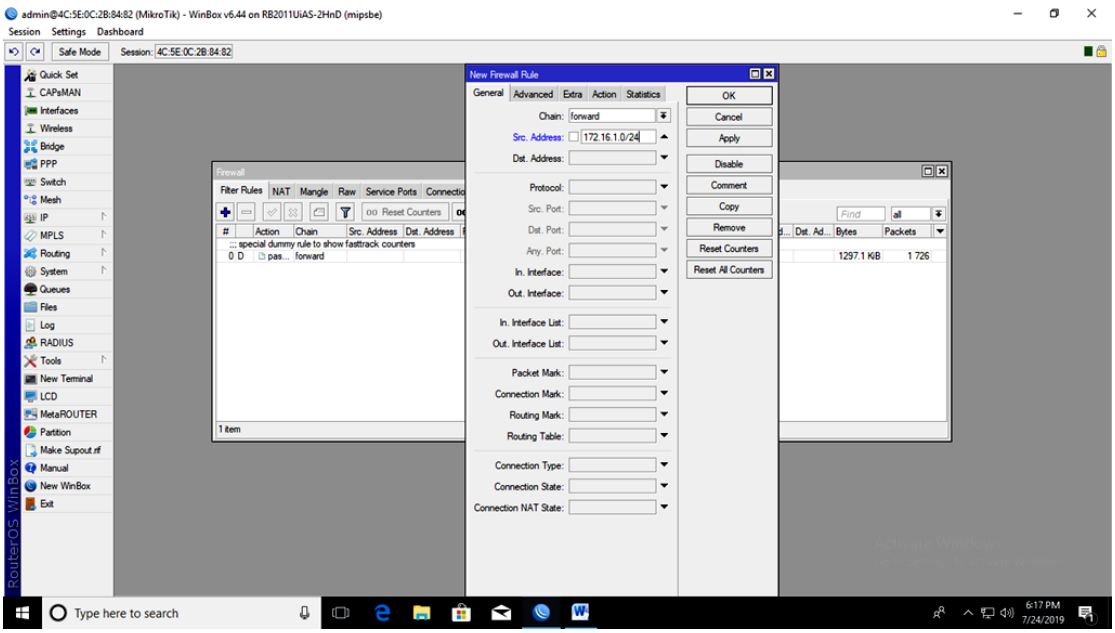


Fig: 3.34 New Firewall Rules

23. IP -> Firewall -> Filter Rules -> add -> Action -> Drop.

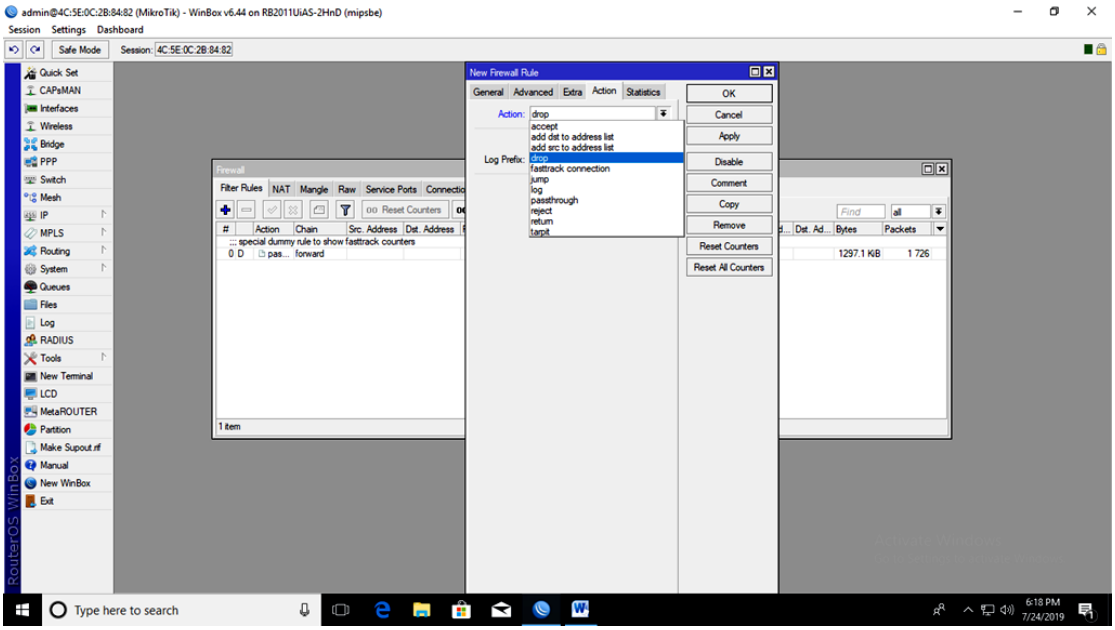


Fig: 3.35 New Firewall Rules Drop

24. Domain is closed: IP -> Firewall -> Layer 7 Protocols -> add -> Name (Facebook) -> ^.+(Facebook.com).*$.

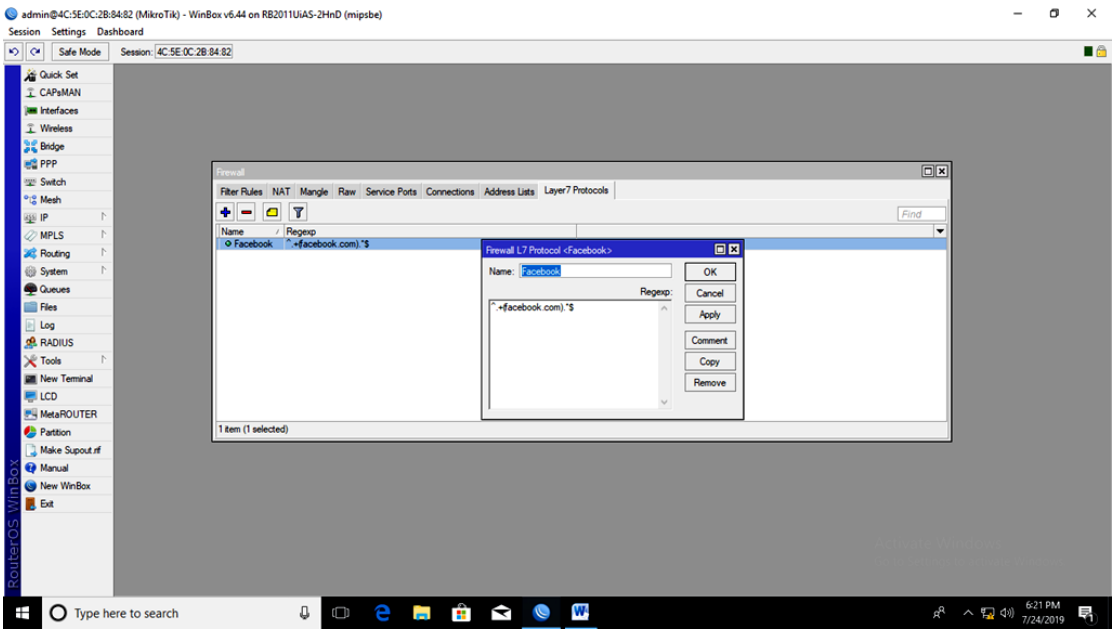


Fig: 3.36 Firewall L7 Protocol <Facebook>

3.3 Linux

[root@localhost Desktop]#

Localhost – host Name

:- Super User.

pwd :– To know where it is.

clear, Ctrl->L

ls :– To view the list.

cd/home/ :- To access the file.

Cd :- Command.

Home :– Arguments.

~ :- root

Ctrl+Shift(+) :– To make the terminal bigger.

Ctrl (-) :- For shortening the terminal.

Ctrl F2, Ctrl F3, Ctrl F4, Ctrl F5, Ctrl F6 :– For the new terminal.

Ctrl+Alt+F1 :– To get out of the terminal.

Free –m :- To know how much RAM.

df –ht :- For hard disk viewing.

reboot, init 6 :– For system reset.

touch :– For creating files.

mkdir :- For creating folders.

cd :- For entering the folder.

mkdir day {-03,-04,-05,-06} :– Many folders to create together.

touch file {1,2,3,4,5,6,7} :– So many files to create together.

rm file* Y/N :– To remove the file.

rm –rf file* :- Too many files to delete.

poweroff, init 0, shutdown-h now :– To shut down the system.

cp :– To copy.

mv :– To cut.

mv file :– To change the file name.

vim :- For file distribution to work.

: wq :- Save time to exit after working within the file.

: q! :– If you do not want to save something by typing this command then this command.

: w :- Just to save.

: set nu :- To set the line number.

: 5 :- To move a line to a specific number.

Shift G :– To go down all the lines.

Shift h :– To go over all the lines.

3.4 Events And Activities

One of the main strides to unraveling a PC bother (or some other programmable gadget) is to decide if it is because of an equipment disappointment or defective programming program. Mistakes show up or show up, blunders before the whipping that demonstrate that a couple of styles of equipment have an equipment inconvenience. So far inside the activity of the instrument, the straightforward BIOS and essential framework equipment changed into alive. After the catastrophe happens, the apparatus' present day gadget does not become an integral factor yet again. I can in any case get the association wrong before that blare inside the exceptional preparing

Both design inconveniences and boot-up issues might be brought about by an equipment or operational disappointment. On the off chance that the design putting is precise, yet those signs and side effects are available, an equipment inconvenience is analyzed on the grounds that the rationale of the issue. Alternately, boot inconveniences are related with the framework

3.5 Challenges

I created the internship report that I learned in real life. They are helping us create this report by writing a black board. And work hand-in-hand with their device. Demonstrated tasks with professional tuners. We learned a few things together and learned to work competitively. If there is a slight problem, I have all worked forward by showing him the work he was doing. Asking each other questions. There is a way I can do this. I am doing an internship to create job opportunities.

CHAPTER 4
Competencies And Smart Plan

4.1 Competencies Earned

The customer can't reap an IP address if a DHCP sponsor does no longer have a configured IP agreement, it usually suggests that the consumer is able to touching a DHCP server can be a network disturbance, or due to the fact the DHCP server is unavailable. If the DHCP server starts and distinctive customers can acquire legitimate addresses, verify that the customer has legitimate connections and that everyone related patronized hardware devices (including cables and network adapters) are walking properly.

The DHCP server is unavailable if the DHCP server not provides a registered cope with for clients, but this is basically because the DHCP carrier is not in this example, the server community might not be allowed to work. If you had been capable of first of all start a DHCP service, but it become because of shutting down, use the occasion viewer to check the device log for an advert that could provide an explanation

4.2 Smart Plan

My Smart plan is to offer each business venture undertaking from the Net Carrier Issues (ISP) appropriation data transfer capacity to all organizations. In truth, it utilizes mile-switch's quick data transmission for quick system get admission to speed. Shrewd data transfer capacity control with switch running framework The fine system of Mikrotik transmission capacity control. Since it is easy to design for LAN, WAN and DHCP servers. In truth, in the event that each organization wants to give ISP or DHCP server, at that point I use Mikrotik control utilizing data transmission in future way of life.

CHAPTER 5

Conclusion And Future Career

5.1 Discussion and Conclusion

Currently the majority of multi-day companies are under the Internet for their executives and administration. Who has to deal with the correct structure system. The achievements of the Association are in the field of imagination. Accordingly, information about the system's structure is required. Mikrotik is a router that is reasonable for ease. Mikrotik can access another Winbox. Mikrotik Dara can be effectively monitored. Similarly the Rule 7 protocols provide bandwidth shaping, filter rules, to provide sufficient security to the system. Mikrotik Web Proxy Server provides powerful wireless access points. To know about the design, basic network and basically to use the Mikrotik router configuration to know the characteristics of Mikrotik routers. The internship taught us well during the workplace. The ability to design a network is a great experience for our internship. How to work and manage in reality.

5.2 Further Career

The main purpose of the internship was to use my knowledge in the field. Through this, I have learned how to design a network and use the Mikrotik router to supply the model and network required. Configuring the Mikrotik router lowers the bandwidth limit so that we can use the intranet to suit our needs. With the Mikrotik router we can design the network and manage the network properly.

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