

ACKNOWLEDGEMENT

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Throughout this internship, I am very honored and lucky with the encouragement and guidance from my supervisors **Mr. Yuvraj Karki, Mr. Anup Pandey, Mr. Krishna Karki** and my academic supervisor **Mr. Deepak Thakur**.

I thank all the staff of Namaste infotech for being supportive and sparing the time to share their knowledge in various aspects.

In addition, I offer sincere thanks to my fellow trainees for making learning an interesting team work adventure.

Dipesh Bhandari

TU Exam Roll: 5677/2071

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LIST OF ACRONYMS & ABBREVIATIONS

A

AP: Access Point, 7

C

CLI: Command Line Interface, 24

D

DHCP: Dynamic Host Configuration Protocol, 9

G

GUI: Graphical User Interface, 24

I

ICT: Information and Communication Technology, 3

IP: Internet Protocol, 9

ISP: Internet Service Provider, 16

IT: Information Technology, 1

K

KMC: Kathmandu Metropolitan City, 10

L

L2: Layer 2, 8

L3: Layer 3, 8

N

NAT: Network Address Translation, 9

NIPL: Namaste Infotech Private Limited, 5

P

PoE: Power over Ethernet, 20

U

URL: Uniform Resource Locator, 31

UTM: Unified Threat Management, 31

V

VLAN: Virtual Local Area Network, 7

W

Wi-Fi: Wireless Fidelity, 21

WLAN: Wireless Local Area Network, 8

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EXECUTIVE SUMMARY

This report is about to explain what I did and learned during my internship period with Namaste Infotech Pvt Ltd. As the main purpose of internship is to learn by working in practical environment and o apply the knowledge acquired during the studies in a real-world scenario in order to tackle the problems using the knowledge and skill learned during the academic process.

I have discussed about every major aspect of the hardware and network of various clients, which I observed and perceived during my internship program.

The report is divided into four sections. Section one will discuss about the introduction of the internship and the company that provided me this opportunity. Section two will get the overall internship experience from joining the company to working in different clients along with my development and challenges. Section three discusses the overall benefit I got from the internship. The last section is about the conclusion and recommendations of the previous sections.

The most important aspect in an internship program is that the students should spend their time in true manner and with the spirit to learn practical orientation of theoretical study framework. This report is about my internship that I have undergone at Namaste Infotech Pvt Ltd from 19th September 2018 to 17th January 2019. During my internship I am able to learn practical aspect of hardware and network and get good working experience.

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1. INTRODUCTION

This project report pertains to three months internship training that I had underwent at NAMASTE INFOTECH PVT LTD, Kathmandu as part of curriculum of degree in Bachelors of Science in Computer Science and Information Technology as requested by St. Lawrence College (affiliated to Tribhuvan University)

I learnt a lot from professional and skilled technicians and engineers. I had a great learning experience as trainee in this firm. I learnt a lot about how different networks are managed. I also learnt about different problems that may occur in hardware resources as well as network and the methods of solving them.

Justification cannot be done to whatever I have learnt in these three months within a few pages but I have still tried my best to cover as much as possible in this report. In this report I have tried to sum up the technical knowledge I have gained in my three months of training.

1.1 Company Sketch

Namaste Infotech Pvt. Ltd is a company dedicated in technology service with over 10 years of experience in IT Engineering. In view of the rapid changes in the Information Technology (IT)

industry Namaste InfoTech offers strategic solutions especially designed to meet the client's needs across a wide range of sectors: government, semi-government, financial institutions, non-profit, businesses and others. Shortly, Namaste provides wireless network design, installation, security, and maintenance to office, individual, hotels, cafes, restaurants, and corporate houses and provides IT consultancy even hardware.

1.1.1 What do the company provide

The company provides a wide range of IT services from basic system installation to complete server setup. The services the company provides are:

- ❖ Network and system Design
- ❖ Installation
- ❖ Security
- ❖ Maintenance
- ❖ IT Consultancy

1.1.2 Who does the company serve

Having 10 years of experience in IT service sector Namaste Infotech has clients from government institutions to private companies.

- ❖ Government Offices
- ❖ Financial Institutions
- ❖ Non-Profit Organization
- ❖ Hospitality Sector
- ❖ Health Institution
- ❖ Educational Institutions
- ❖ Corporate Business

1.2 Company Blueprint

1.2.1 Purpose

- ❖ Be a top helping hand
- ❖ Make the solution simple
- ❖ Powerful Advisor

1.2.2 Mission

The mission of Namaste is to build on our reputation for integrity, excellence, experience and leadership as the nations' finest Service Provider by:

- ❖ Providing quality work and services
- ❖ Striving constantly to exceed every customer expectation
- ❖ Focusing support dedicated to the customers

1.2.3 Vision

The core visions of Namaste are:

- ❖ To enhance IT System of Business Houses
- ❖ To allow users to access the knowledge and power of IT
- ❖ To provide quality and friendly service to the customer

1.3 Range of works

1.3.1 Managed IT Service

- ❖ Annual Maintenance Service
- ❖ ICT Consultancy

- ❖ System Design and Implementation
- ❖ System Audit

1.3.2 Network Solution

- ❖ Network Security
- ❖ Network Designing and Configuration
- ❖ Structure Cabling

1.3.3 Web Service

- ❖ Domain Registration
- ❖ Hosting
- ❖ Web Developing
- ❖ Search Engine Optimization

1.4 NIPL organization

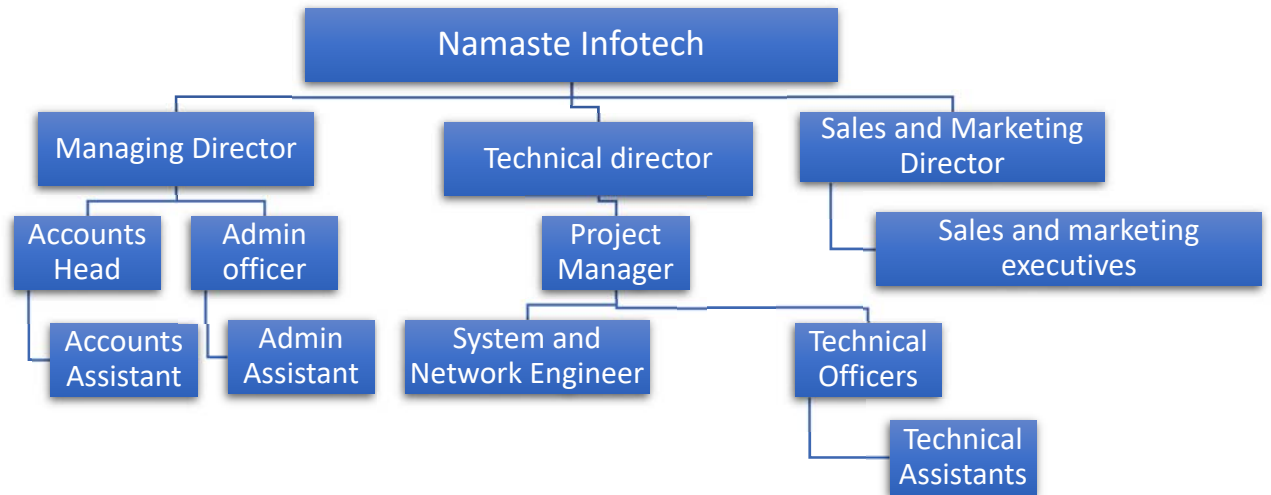


Figure 1: Hierarchical Structure of NIPL

2. OVERALL INTERNSHIP EXPERIENCE

2.1 How I got into the company

In the midst of hundreds of companies that are competing in the field of technology, getting into Namaste Infotech was a sheer luck. I came to know about the company via a friend whose uncle worked there as a marketing director. I joined the company with the mindset of getting knowledge on networking. The expectation was overcome by the exposure in complete field of hardware and network.

2.2 Duration of Internship

According to Tribhuvan University, the final semester student of BSc. CSIT must involve in an Internship program. The students require at least six credit hours (minimum if ten weeks or 180 hours long) internship for attaining a successful completion of the degree. As per requirement, the students were to do internship under sectors involving IT for at least 3 months. The details about duration of my internship is given below:

Table 1: Duration of Internship

Start Date	19-Sep-18
End Date	17-Jan-19
Organization	Namaste Infotech Pvt. Ltd.
Total Duration	4 months
Position	Intern (Network Assistant)
Supervisor	Mr. Yuvraj Karki
Office hour	10:00 am – 5:00 pm
Working Days	6 days a week

2.2 Section of company I have been working on

I got chance to get involved in three major aspects of technology: hardware, network and security.

2.2.1 Hardware Overview

Being personnel working in computer field or rather technology field knowledge of various devices is a must. I got the opportunity to know about various hardware resources. I got to know about various components of computer as well as various physical network devices.

The list includes various routers, switches both manageable and unmanageable, APs and firewall. I got chance to use different home routers as well as MikroTik router. The AP included those of Cambium and Unify and Fortinet was used as firewall device.

Home Router

Home routers are the common routers that we see in home and small offices. These routers have basic default configuration for internet and do not provide much security. They are the basic device used to use internet in our home and offices which can be managed and configured by normal users.

MikroTik Router

MikroTik routers are the advanced router that has the feature of routing, switching and security. They require experts for complete configuration. These routers have features like bandwidth control, user management, hotspot management, VLAN creation, web filtering, and sub-interface policies.

Manageable Switch

Manageable switches are the switches that can be configured through the use of SSH or Console. These are used in bigger institutions and offices having bigger number of internet users that need to be managed. These switch unlike common switch, have the benefits of using VLAN policies for providing different network through same switch. We can find L2 and L3 manageable switch.

Unmanageable Switch

These are the common switch with 4 to 28 ports. All the ports of the switch have same configuration. We cannot configure interfaces or create VLAN like that of manageable switch.

Access Points

In a wireless local area network (WLAN), an access point is a station that transmits and receives data (sometimes referred to as a transceiver). An access point connects users to other users within the network and also can serve as the point of interconnection between the WLAN and a fixed wire network. Each access point can serve multiple users within a defined network area; as people move beyond the range of one access point, they are automatically handed over to the next one. A small WLAN may only require a single access point; the number required increases as a function of the number of network users and the physical size of the network.

Firewall

A firewall is a network security device that monitors incoming and outgoing network traffic and decides whether to allow or block specific traffic based on a defined set of security rules.

Firewalls have been a first line of defense in network security for over 25 years. They establish a barrier between secured and controlled internal networks that can be trusted and untrusted outside networks, such as the Internet.

2.2.2 Network Overview

IP

The IP address is a familiar term for most computer users. An IP address is the unique numerical address of a device in a computer network that uses Internet Protocol for communication. The IP address allow us to pinpoint a particular device from the billions of devices on the Internet.

An IP address consists of four numbers; each can contain one to three digits. These numbers are separated with a single dot (.). These four numbers can range from 0 to 255.

Subnet

Subnetting allows us to create multiple logical networks that exist within a single Class A, B, or C network. If we do not subnet, we are only able to use one network from our Class A, B, or C network, which is unrealistic.

DHCP

It is a protocol that provides dynamic IP address to the network devices. We can define the range of IP address to assign for the devices and apply lease time for the IP by the device.

NAT

Network Address Translation is the method to translate private IPs into public IPs and vice versa. We need NAT to be configured in order to communicate with the devices of different network.

2.2.3 Security

Fortinet

Fortinet is the firewall device that provides services such as anti-virus, intrusion prevention and endpoint security. Fortinet uses license key to communicate with the server i.e. the server stores the information about threats and malicious sites which can be accessed by Fortinet only after licensed.

FortiGuard WebFilter

FortiGuard WebFilter is the server for Fortinet firewall. It has all the policies related to web filtering and threats. It regularly checks the upcoming new threats (virus) and new potentially dangerous websites. It also categorizes the websites into different sections so that the policy on firewall can be made easily. For example, Facebook is categorized as social site whereas torrent sites are categorized as unethical.

2.3 The workflow in Kathmandu Metropolitan City (KMC)

One of the major clients of Namaste Infotech is the Kathmandu Metropolitan City. The company has contract with KMC for Network setup and maintenance. Also supplies of required hardware resources and servicing of those are also included in the contract.

NIPL has installed firewall and implemented about 255 policies for the organizations that falls under KMC. The organizations include all the wards of KMC, Ratna Park, Balaju Udhyan Park, Basantapur Samrakshyan and Environment Department.

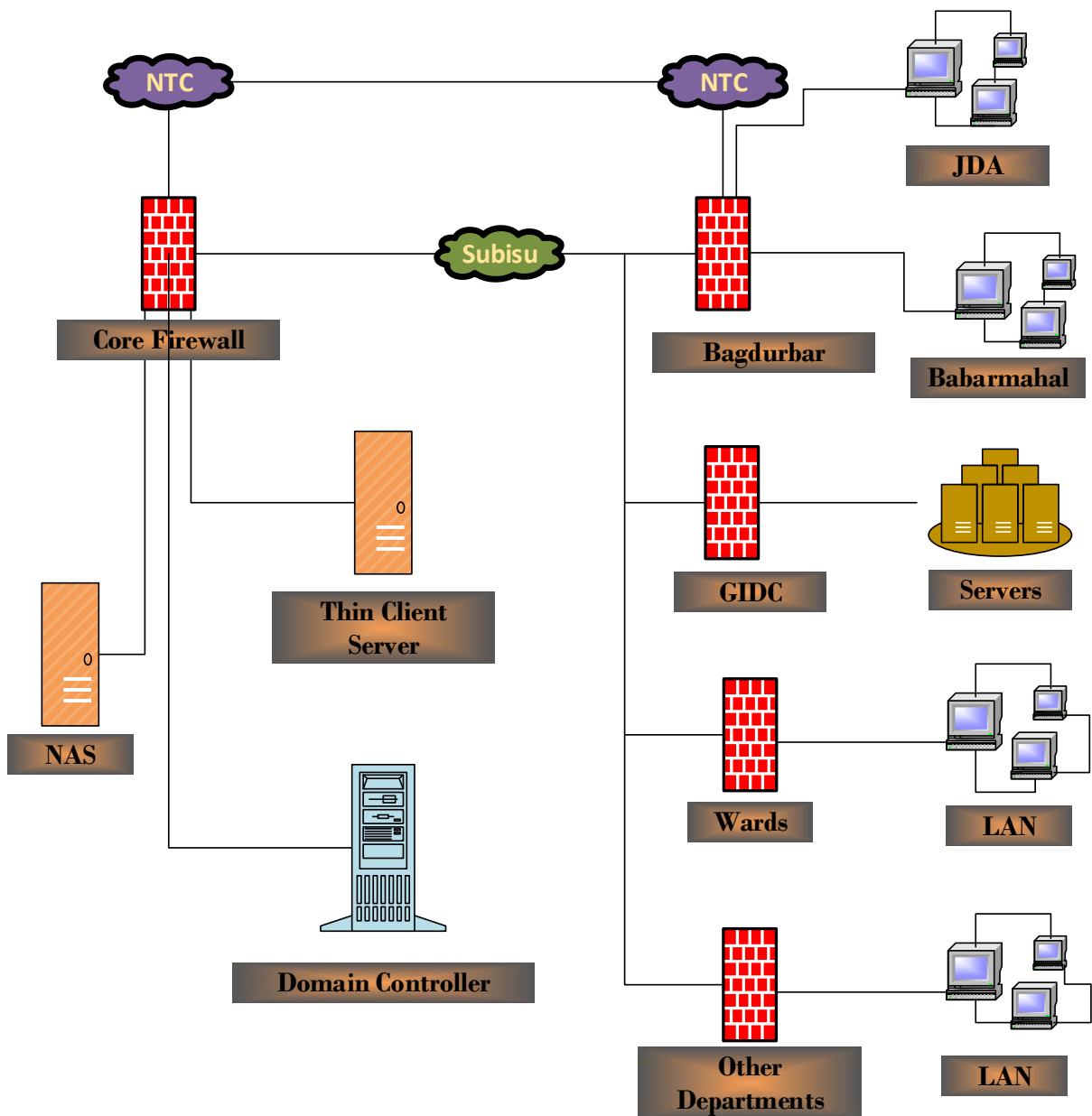


Figure 2: Network Diagram of KMC

Seq.#	Source	Destination	Schedule	Service	Authentication	Action	AV
050-KMC-JDA	GCloud_P-GW	(1 - 1)					
050-KMC-JDA	GIDL-GW	(2 - 2)					
050-KMC-JDA	KMC_TO_gCloud_P	(3 - 3)					
050-KMC-JDA	KMC-WARDS	(4 - 4)					
050-KMC-JDA	port1 (HO-LAN)	(5 - 5)					
050-KMC-JDA	port2 (IT-LAN)	(6 - 6)					
050-KMC-JDA	port3 (PUBLIC-SERVER)	(7 - 7)					
050-KMC-JDA	port4 (THIN-SERVER)	(8 - 8)					
050-KMC-JDA	SUBISU-BRANCH	(9 - 9)					
050-KMC-JDA	wan1 (INTERNET-NTC)	(10 - 10)					
050-KMC-JDA	WIFI-ZONE	(11 - 11)					
GCloud_P-GW	050-KMC-JDA	(12 - 12)					
GCloud_P-GW	KMC-WARDS	(13 - 13)					
GCloud_P-GW	port1 (HO-LAN)	(14 - 14)					
GCloud_P-GW	port4 (THIN-SERVER)	(15 - 15)					
GIDL-GW	050-KMC-JDA	(16 - 16)					
GIDL-GW	KMC_TO_gCloud_P	(17 - 17)					
GIDL-GW	KMC-WARDS	(18 - 18)					
18	all	all	always	ALL		Accept	
GIDL-GW	port1 (HO-LAN)	(19 - 19)					
GIDL-GW	port2 (IT-LAN)	(20 - 20)					

Figure 3: Some Policies for KMC

2.4 Major Work piece and work tasks I have been executing

2.4.1 MikroTik Configuration

Accessing Internet

To access the internet via MikroTik router we have to configure the following

- Interface

We can configure the interface by going to the interface tab in MikroTik.

Interface	Name	Type	Actual MTU	L2 MTU	Tx	Rx
R	ether1	Ethernet	1500	1598	0 bps	0
	ether2	Ethernet	1500	1598	63.4 kbps	4.6 k
	ether3	Ethernet	1500	1598	0 bps	0
	ether4	Ethernet	1500	1598	0 bps	0
	ether5	Ethernet	1500	1598	0 bps	0
X	wlan1	Wireless (Atheros AR9...	1500	1600	0 bps	0

6 items

Figure 4: Interface List in MikroTik

Interface <ether1>

General Ethernet Loop Protect Overall Stats Rx Stats ...

Name: WAN_PORT

Type: Ethernet

MTU: 1500

Actual MTU: 1500

L2 MTU: 1598

Max L2 MTU: 2028

MAC Address: 64:D1:54:C0:C5:5E

ARP: enabled

ARP Timeout:

enabled running slave no link

Interface <ether2>

General Ethernet Loop Protect Overall Stats Rx Stats ...

Name: LAN_PORT

Type: Ethernet

MTU: 1500

Actual MTU: 1500

L2 MTU: 1598

Max L2 MTU: 2028

MAC Address: 64:D1:54:C0:C5:5F

ARP: enabled

ARP Timeout:

enabled running slave link ok

Figure 5: Changing Interface in MikroTik

Interface	Name	Type	Actual MTU	L2 MTU	Tx	Rx
R	LAN_PORT	Ethernet	1500	1598	63.5 kbps	4.6 k
	WAN_PORT	Ethernet	1500	1598	0 bps	0
	ether3	Ethernet	1500	1598	0 bps	0
	ether4	Ethernet	1500	1598	0 bps	0
	ether5	Ethernet	1500	1598	0 bps	0
X	wlan1	Wireless (Atheros AR9...)	1500	1600	0 bps	0

6 items

Figure 6: Changed Interface after edit in MikroTik

- IP Address

To configure the IP address, we have to go to the IP tab and then to the address tab.

Address	Network	Interface
---------	---------	-----------

Figure 7: Initial IP address list in MikroTik

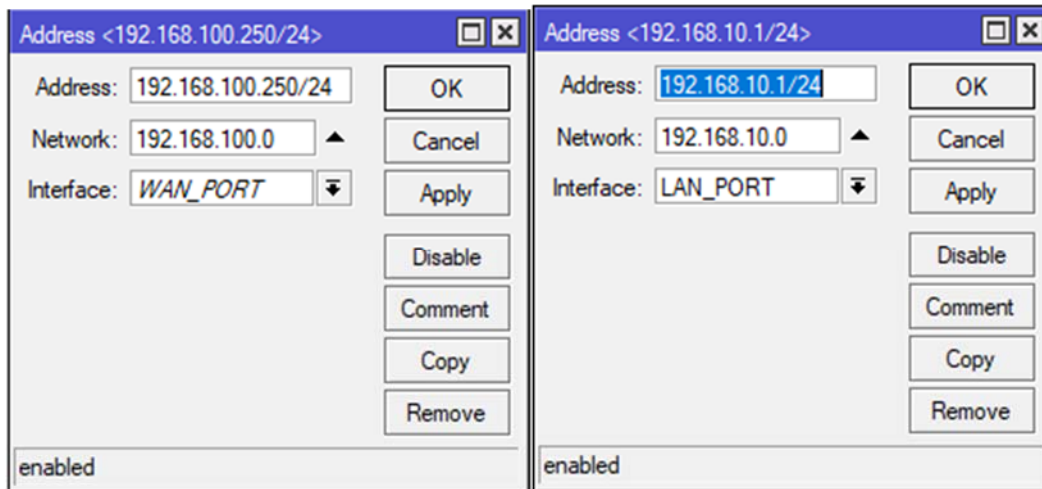


Figure 8: Adding address list in MikroTik

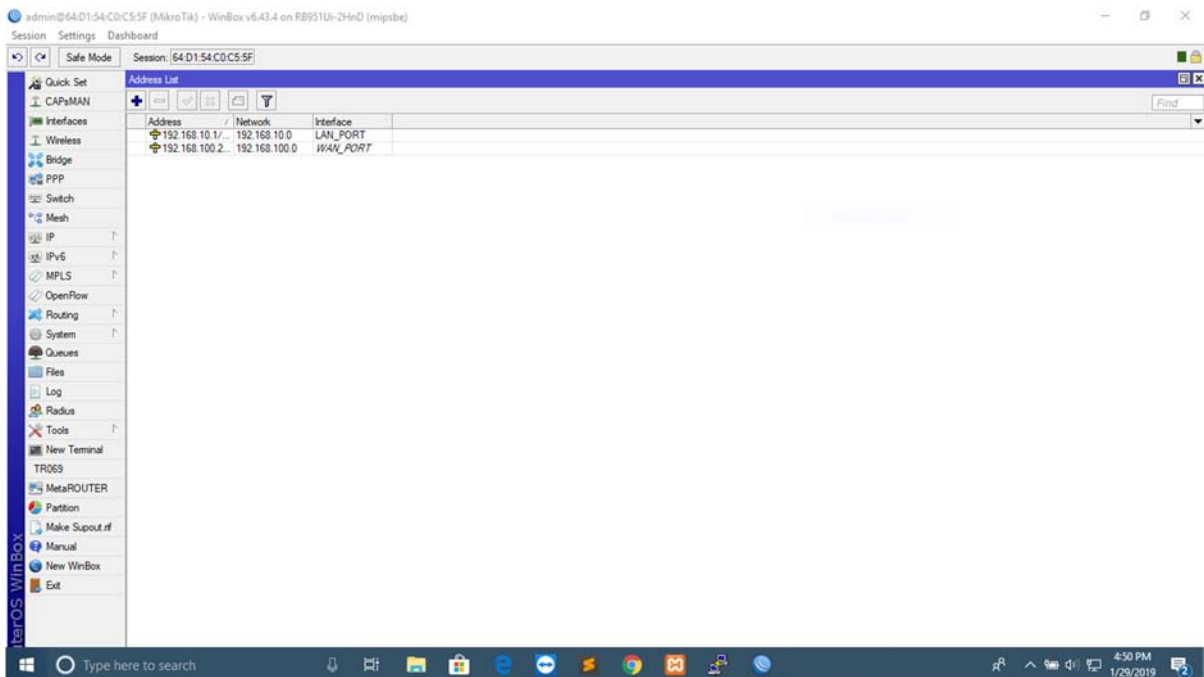


Figure 9: View of Interface list after adding addresses

- IP Routes

We can configure the routes by going to the IP tab and then to the routes tab. The initial route will automatically be configured after we configure the IP address.

The screenshot shows the 'Route List' window in MikroTik WinBox. It has tabs for 'Routes', 'Nexthops', 'Rules', and 'VRF'. Below the tabs are icons for adding, deleting, checking, unchecking, saving, and filtering, along with a 'Find' search bar. The main table displays the following routes:

	Dst. Address	Gateway	Distance	Routing Mark
DC	▶ 192.168.100.0/24	WAN_PORT unreachable	255	
DAC	▶ 192.168.10.0/24	LAN_PORT reachable	0	

At the bottom, it indicates '2 items'.

Figure 10: Initial Route List in MikroTik

We need to provide the global route to access the internet. For this we give the IP/Subnet as 0.0.0.0/0 for destination and the main gateway provided by ISP for gateway.

The screenshot shows the 'New Route' window in MikroTik WinBox. It has 'General' and 'Attributes' tabs. The 'General' tab is active, showing the following fields:

- Dst. Address: 0.0.0.0/0
- Gateway: 192.168.100.1
- Check Gateway: (dropdown menu)
- Type: unicast
- Distance: (dropdown menu)
- Scope: 30
- Target Scope: 10
- Routing Mark: (dropdown menu)
- Pref. Source: (dropdown menu)

On the right side, there are buttons: OK, Cancel, Apply, Disable, Comment, Copy, and Remove. At the bottom, there are checkboxes for 'enabled' and 'active'.

Figure 11: Adding new route in MikroTik

	Dst. Address	Gateway	Distance	Routing Metric
DC	192.168.100.0/24	WAN_PORT unreachable	255	
DAC	192.168.10.0/24	LAN_PORT reachable	0	
S	0.0.0.0/0	192.168.100.1 unreachable	1	

3 items

Figure 12: Final Route List

- NAT

NAT can be found under the NAT tab in firewall which is located in the IP tab.

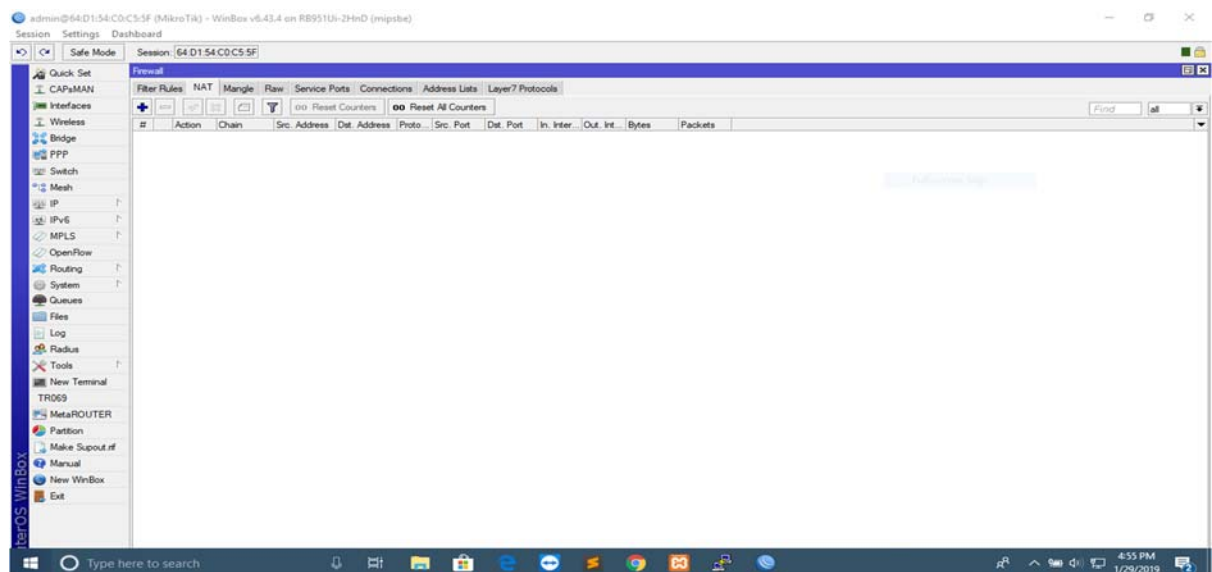


Figure 13: NAT in Mikrotik

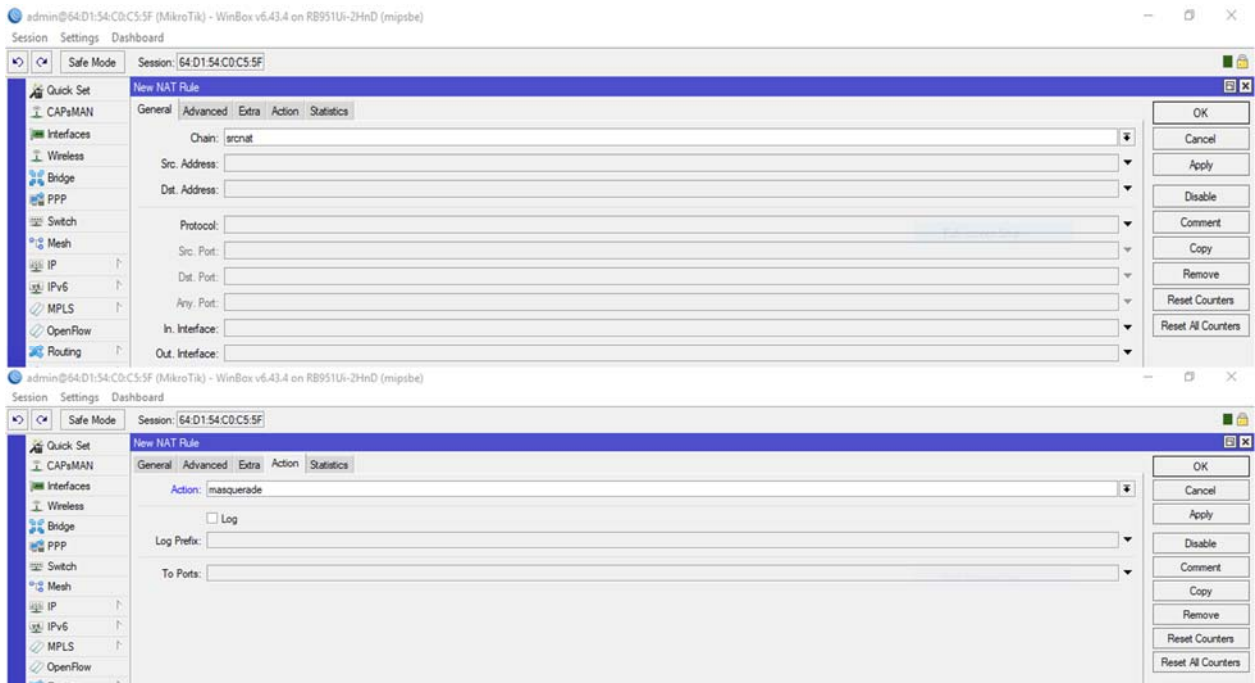


Figure 14: Configuring NAT

By the end of this step we can gain access to the outer network i.e. Internet. However, we can only gain access to the internet via IP address. Simply put in words, we can browse google webpage via its IP address but not with google.com

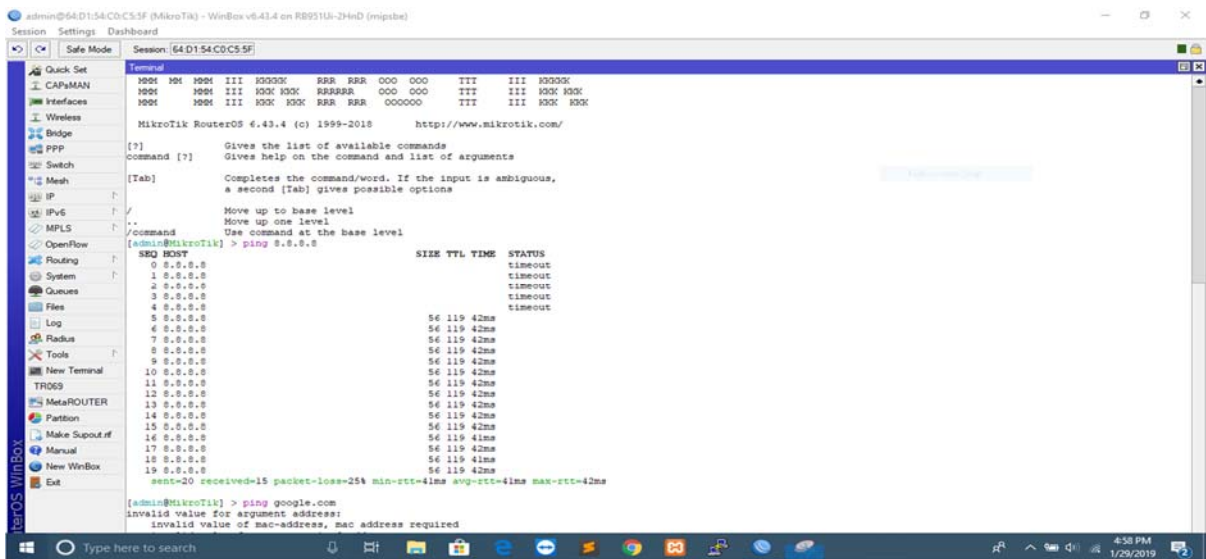


Figure 15: Performing Ping operation before setting DNS

In the above figure we can see that the ping was successful for 8.8.8.8 but not for google.com. To gain access by host name, we must also set DNS.

- DNS

We can set the DNS from the DNS tab in IP. We can keep the DNS provided by our ISP or we can put any open DNS. I have used Google Open DNS (8.8.8.8) in this configuration.

The image shows the 'DNS Settings' window in Mikrotik WinBox. The 'Servers' field is set to '8.8.8.8'. Below it, 'Dynamic Servers' is empty. There is an unchecked checkbox for 'Allow Remote Requests'. 'Max UDP Packet Size' is set to '4096'. 'Query Server Timeout' is '2.000' with a unit 's'. 'Query Total Timeout' is '10.000' with a unit 's'. 'Max. Concurrent Queries' is '100'. 'Max. Concurrent TCP Sessions' is '20'. 'Cache Size' is '2048' with a unit 'KiB'. 'Cache Max TTL' is '7d 00:00:00'. 'Cache Used' is '17 KiB'. On the right side, there are buttons for 'OK', 'Cancel', 'Apply', 'Static', and 'Cache'.

Figure 16: Setting DNS in MikroTik

After DNS has been set up, we can use hostname to access the Internet.

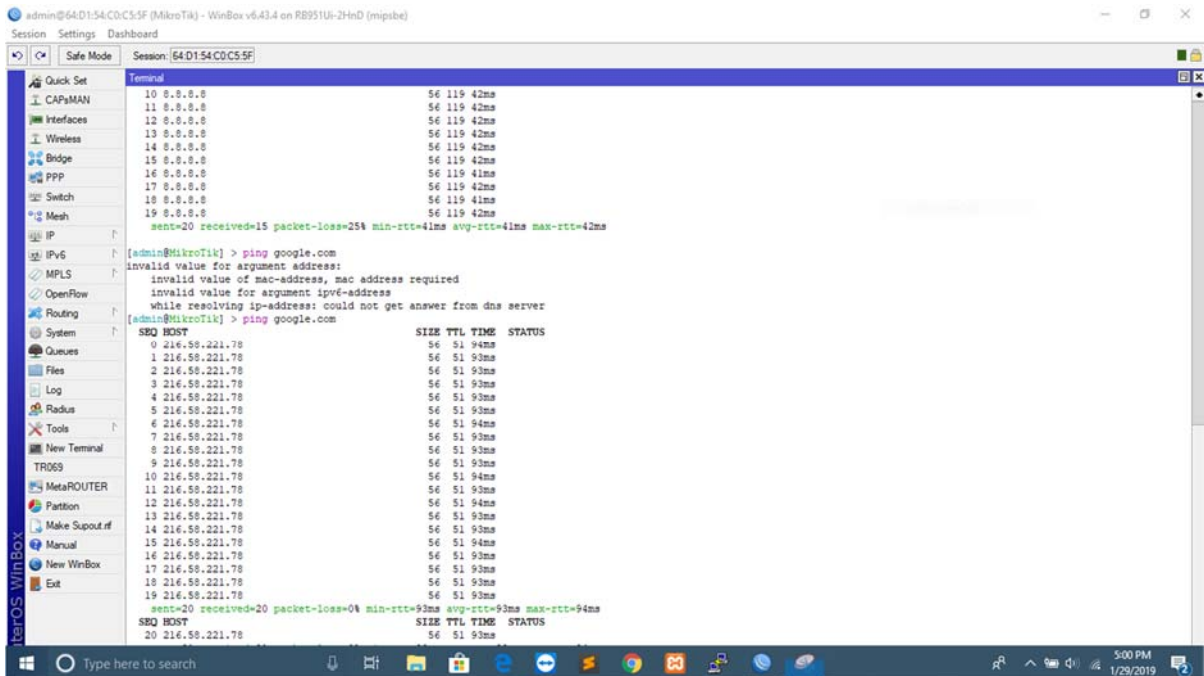


Figure 17: Ping Operation after setting DNS

We can access the internet after this stage. The IP of computer should be same as that of the router. For gaining IP dynamically, we must create DHCP server in the MikroTik. We can do so by going to the DHCP tab in IP.

2.4.2 Cambium AP Setup

I have shown configuration of Cambium E400 in this report. While configuring the cambium AP we have to first connect the AP with the computer via PoE. Initially the AP is set up at 192.168.0.1 so we have to set the IP of our laptop at 192.168.0.x and then browse the above IP. We can see the following login screen.

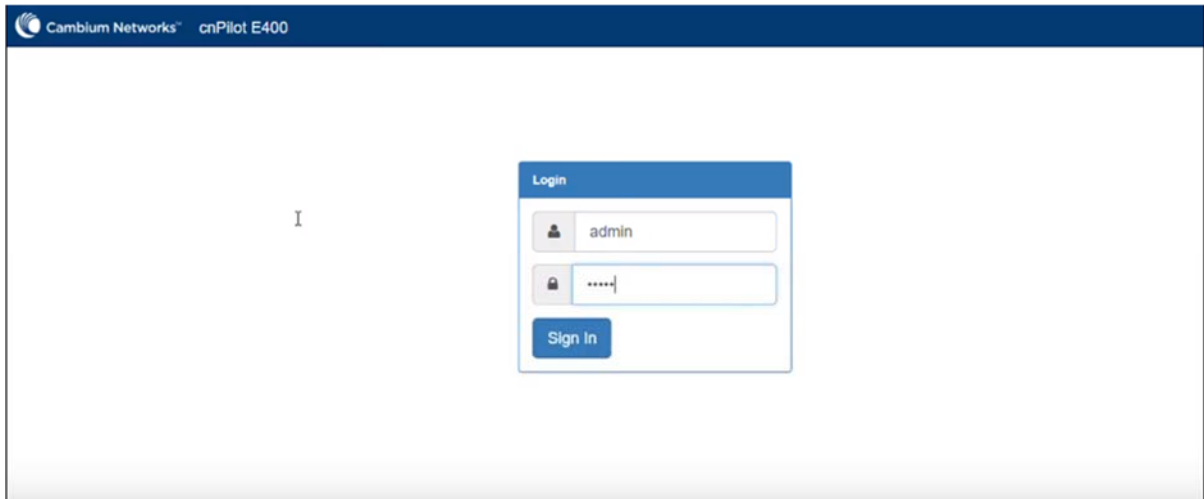


Figure 18: Login Page for Cambium E400

Generally, the username/password is admin/admin but sometimes there is no password. After logging in we have to set the system name and country code. We can keep the country code either India or Others. Then we go to network tab to change the network (IP and subnet) and enable the NAT option so that we can communicate with other networks. We should also provide the route and DNS information. We then finally set the WLAN tab to configure the Wi-Fi name and security.

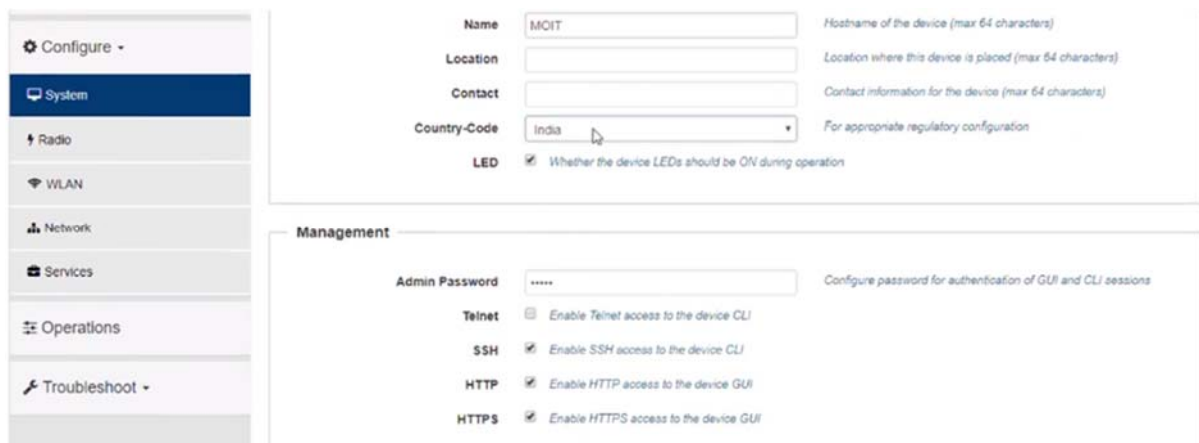


Figure 19: Configuring Country Code for E400

The screenshot shows the 'Configure / Network' section of the E400 interface. The left sidebar contains navigation links: Dashboard, Monitor, Configure, System, Radio, WLAN, Network (selected), Services, Operations, and Troubleshoot. The main content area is titled 'VLAN' and shows configuration for 'VLAN 1'. It includes fields for IP Address (Static IP: 172.16.100.11, Network Mask: 255.255.255.0), NAT (checked), Zeroconf IP (checked), Management Access (set to 'Allow from both Wired & Wireless'), DHCP Relay Agent (set to 'xxx.xxx.xxx.xxx'), DHCP Option82 Circuit ID (set to 'None'), and DHCP Option82 Remote ID (set to 'None'). Below this is the 'Routing & DNS' section, which includes fields for Default Route (172.16.100.1), Domain Name, DNS Server 1 (8.8.8.8), and DNS Server 2. A 'DNS Proxy' checkbox is also present.

Figure 20: Configuring IP and Route in E400

The screenshot shows the 'Configure / Wlan' section of the E400 interface. The left sidebar is the same as in Figure 20, with 'WLAN' now selected. The main content area is titled 'Wlan' and shows configuration for 'wlan 1'. It includes tabs for Basic, Radius Server, Guest Access, Usage Limits, Scheduled Access, Access, and Passpoint. The 'Basic' tab is active, showing fields for Enable (checked), Mesh (set to 'Mesh Base/Client/Recovery mode'), SSID, VLAN (set to 'Default VLAN assigned to clients on this WLAN (1-4094)'), Security (set to 'Set authentication and encryption type'), and Radios (set to 'Define radio types (2.4GHz, 5GHz) on which this WLAN should be supported').

Figure 21: WLAN Interface in E400

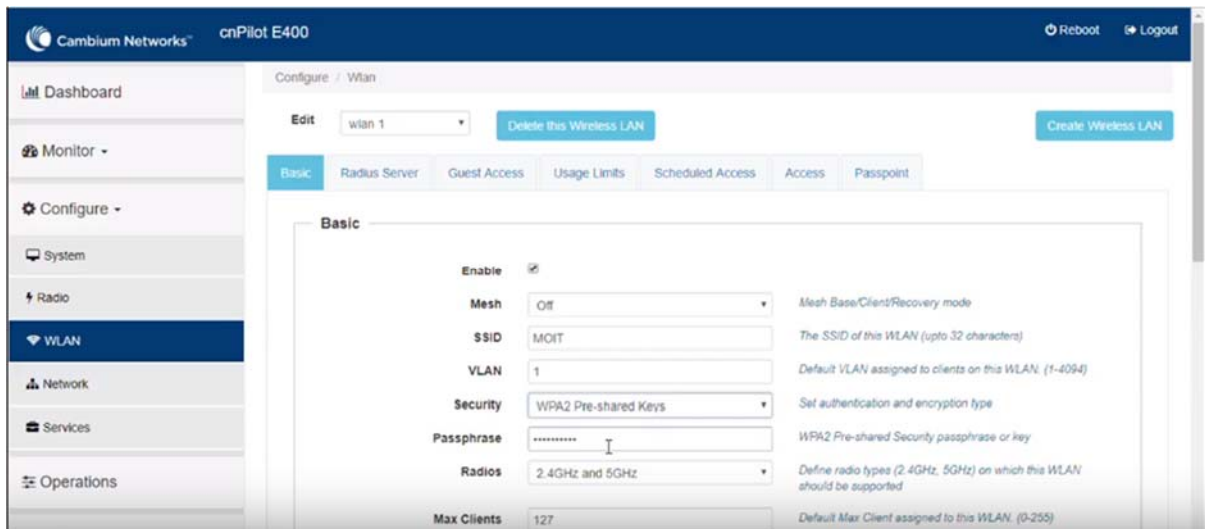


Figure 22: Setting up Wi-Fi SSID and Passphrase

2.4.3 Fortinet Setup

During the internship period I got to set the 30D and 40C. Whatever be the model. The basic setup is similar. We can do lots of stuffs in firewall. However, I have limited to the use of internet and blockade of some sites in this report.

Internet Configuration

To use the internet via Fortinet, we have to configure the basic three things: Interface, Routes and IPv4 Policy. The below figure shows the stepwise procedure for the use of internet.

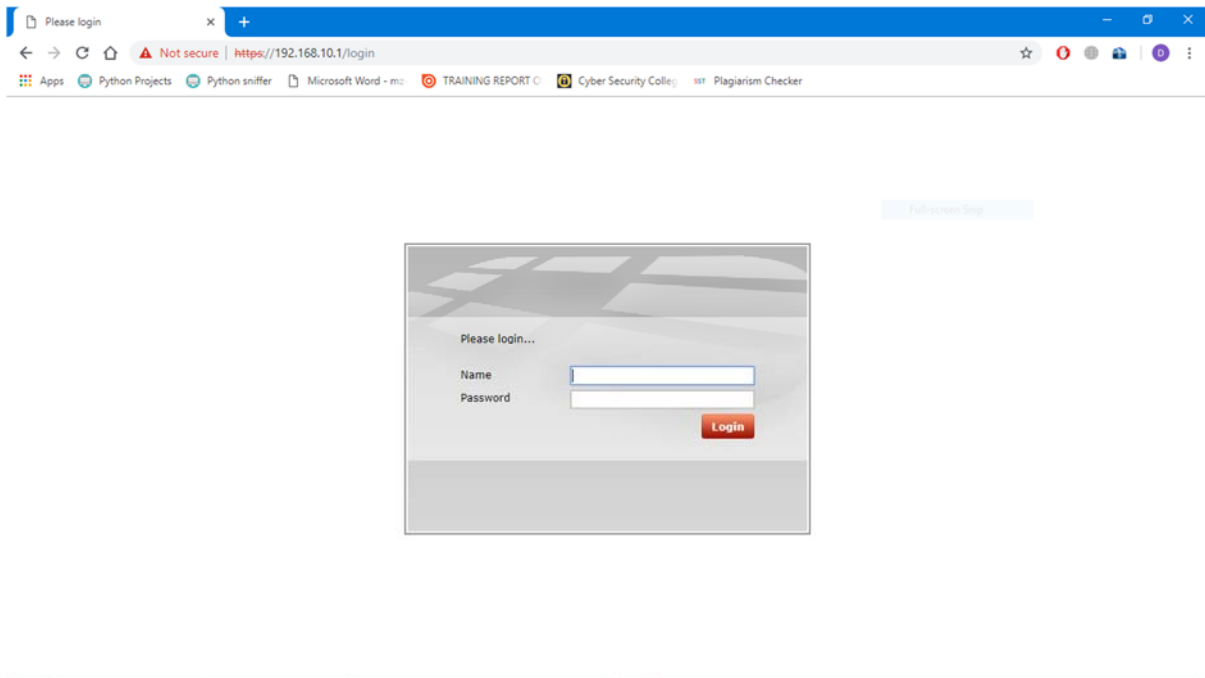


Figure 23: Login Screen (Fortinet)

The initial username for Fortinet is admin and there is no password. After logging in, the following dashboard screen can be seen. We can use both CLI as well as GUI to configure the device. For easier purpose I have shown the GUI interface in this report.

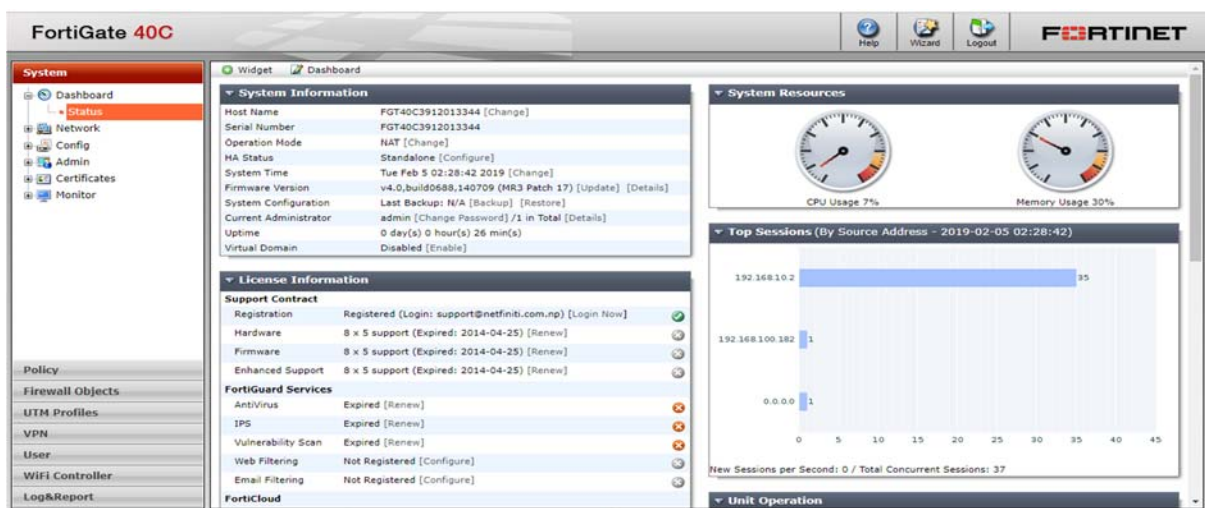


Figure 24: Dash Board (Fortinet)

Firstly, we have to provide IP address to the WAN and LAN interface. We can also assign the administrative access such as HTTPS, PING and FMG Access. To do so, we must first go to the network tab inside system and then go to interface tab. Click on the interface we want to edit and perform the operations.

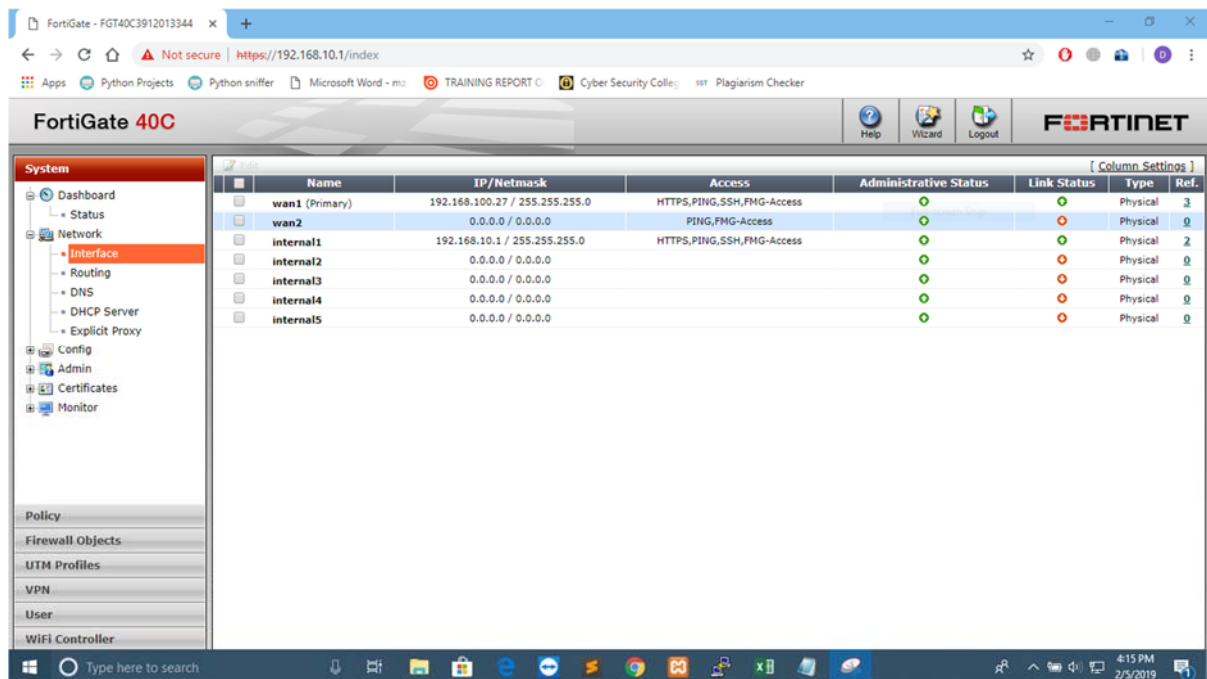


Figure 25: Interface in Fortinet

In this configuration I have used WAN1 as primary WAN interface and Internal1 as LAN interface. I have given the IP and the access control as per the advice of supervisor.

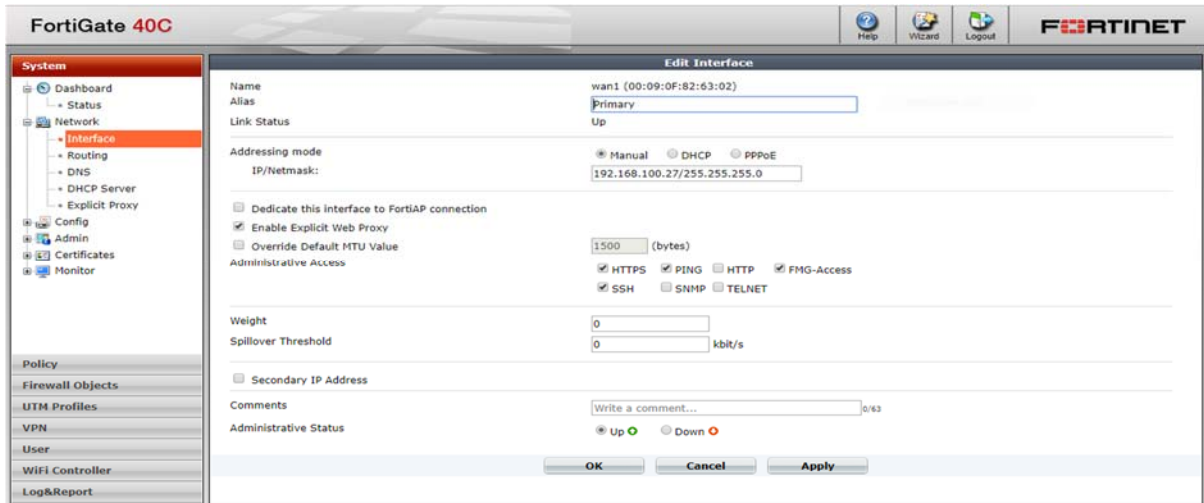


Figure 26: Setting WAN Interface in Fortinet

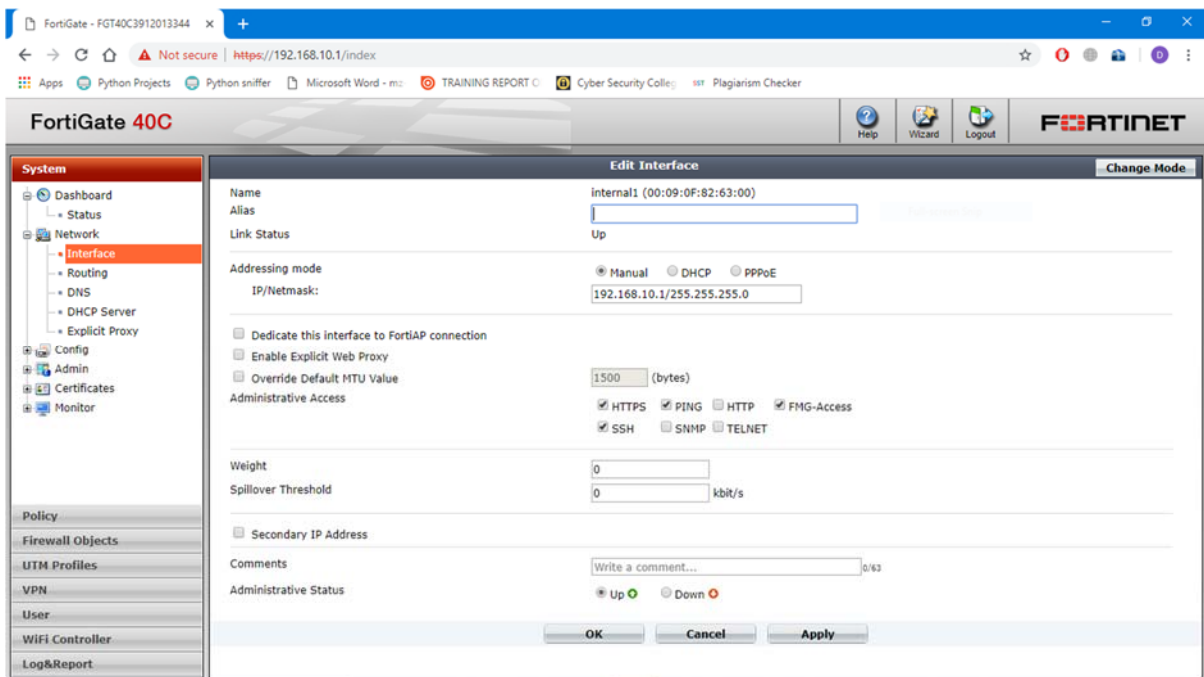


Figure 27: Setting LAN interface in Fortinet

After interface configuration we have to set up the route for the device. The route helps the device to know which address should it hop to next. The route can be set up from routing tab under the network.

We generally provide the destination IP as 0.0.0.0/0 to pass through WAN IP and provide the gateway provided by the ISP

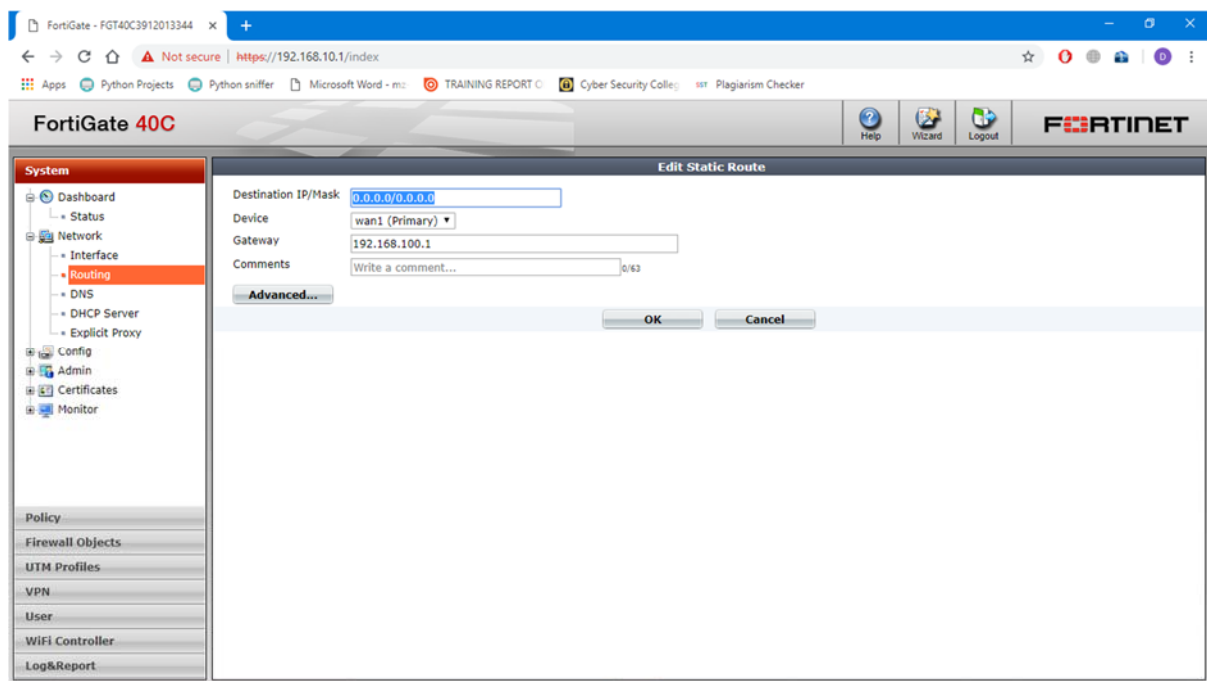


Figure 28: Setting Route in Fortinet

After setting up of routes, we then set up DNS and DHCP. Both of them can be found under the network tab. We can set the DNS and DHCP same as that of MikroTik. The figure below shows the setting up of DNS and DHCP that I performed.

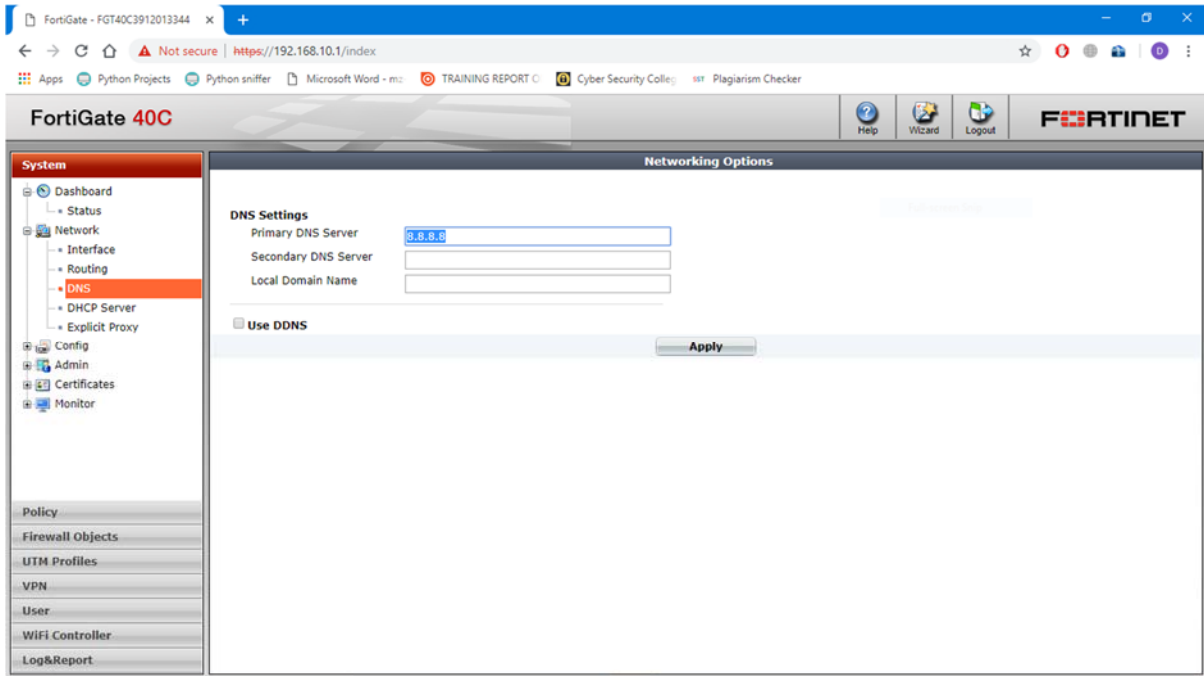


Figure 29: Setting DNS in Fortinet

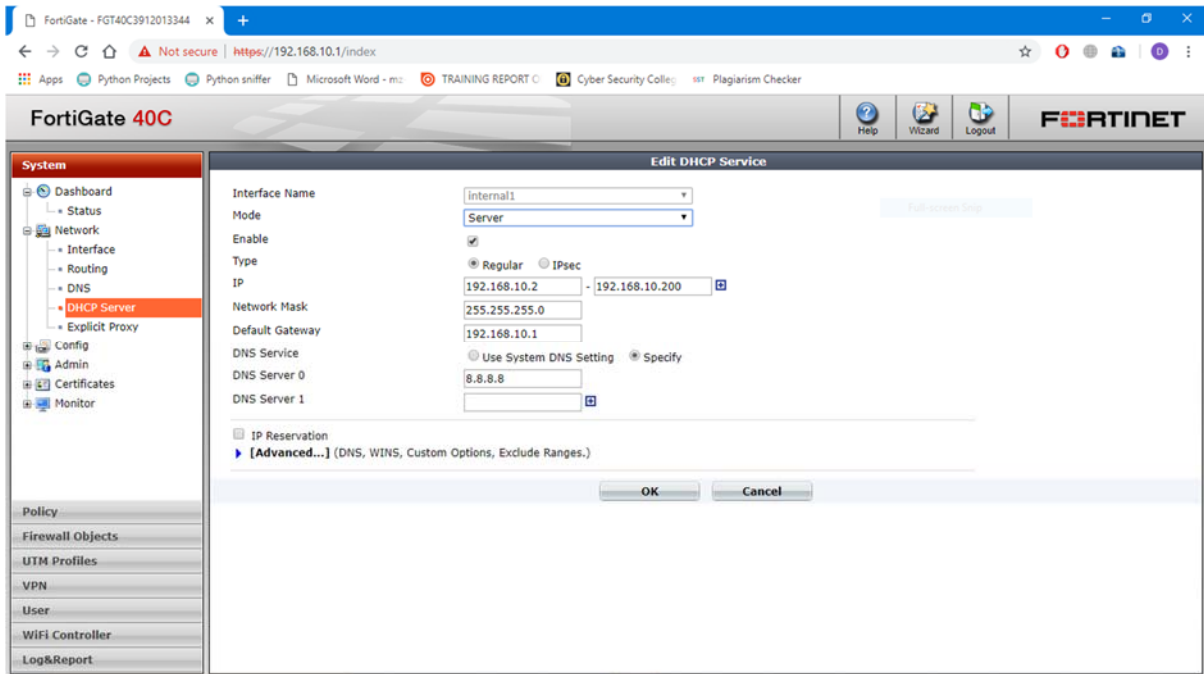


Figure 30: Setting DHCP in Fortinet

After working on the network tab, we then move to the policy tab. Policy is an important aspect in configuration of Firewall. Without policies, firewall becomes the dumb machine. To use internet in the firewall that I have used, we make the policy such that all addresses in LAN interface can access any services from all address in WAN interface. To put simply, we follow the following procedure:

1. Set source interface as internal1 or LAN
2. Set destination interface as WAN
3. Set source address as All
4. Set destination address as All
5. Set services as Any
6. Set schedule as Always
7. Enable NAT

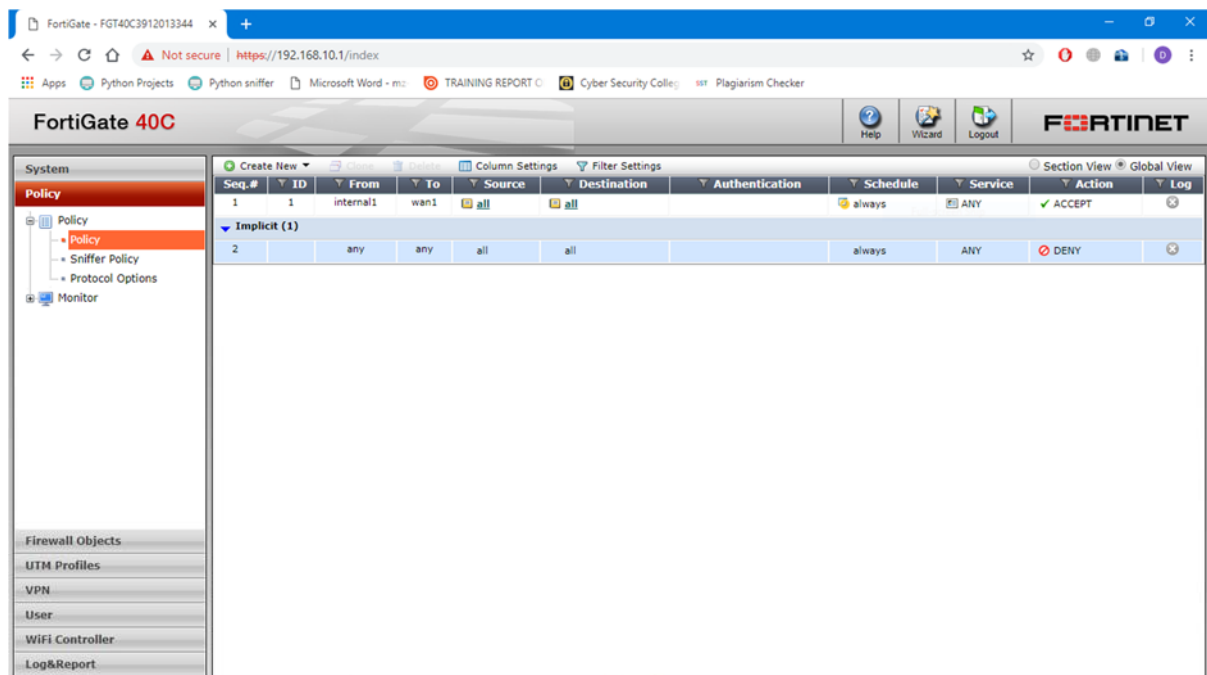


Figure 31: Policy window in Fortinet

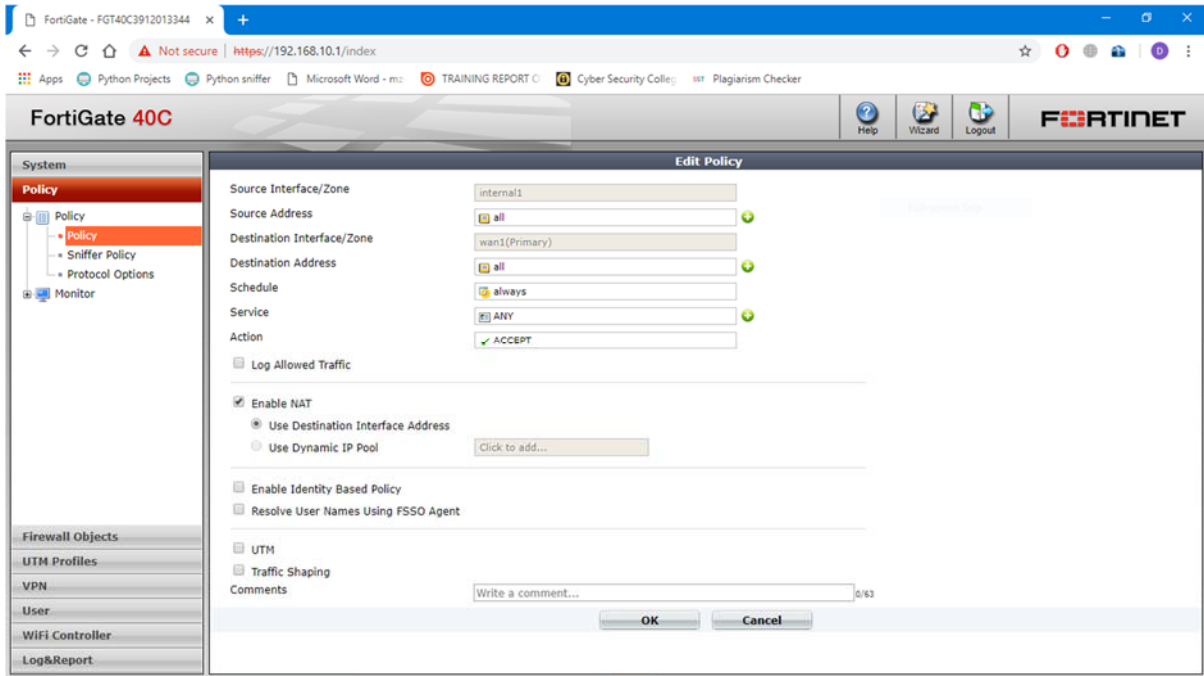


Figure 32: Setting Policy in Fortinet

After the above step we can use internet. This can be verified by performing ping operation or by checking the session monitor.

#	Protocol	Src Address	Src Port	Src NAT IP	Src NAT Port	Dst Address	Dst Port	Policy ID	Expiry (sec)	Duration (sec)	FortiASIC
1	udp	192.168.10.2	51073	192.168.100.27	62221	8.8.8.8	53	1	117	62	-
2	udp	192.168.10.2	53097	192.168.100.27	45029	8.8.8.8	53	1	52	127	-
3	tcp	192.168.10.2	54257	192.168.100.27	33661	52.230.7.59	443	1	3,466	676	NPLite
4	tcp	192.168.10.2	54458			internal1	443		3,500	0	-
5	tcp	192.168.10.2	54457			internal1	443		0	0	-
6	tcp	192.168.10.2	54283	192.168.100.27	33927	52.230.7.59	443	1	3,405	557	NPLite
7	udp	192.168.10.2	54873	192.168.100.27	5845	8.8.8.8	53	1	91	88	-
8	udp	192.168.100.182	68			255.255.255.255	67		69	110	-
9	tcp	192.168.10.2	54253	192.168.100.27	37729	46.4.103.187	80	1	3,596	677	NPLite
10	udp	192.168.100.200	68			255.255.255.255	67		99	243	-
11	tcp	192.168.10.2	54449	192.168.100.27	58429	52.114.88.20	443	1	3,546	53	NPLite
12	udp	wan1	3979			8.8.8.8	53		75	104	-
13	tcp	192.168.10.2	54436	192.168.100.27	42024	172.217.27.46	443	1	3,557	88	NPLite
14	tcp	192.168.10.2	54448	192.168.100.27	62524	74.125.24.95	443	1	3,537	62	NPLite

Figure 33: Session Monitor in Fortinet

Web Filter

Web filter helps to block certain sites along with their subdomain. All the above procedures for using internet was done in 40C. However, it does not support web filter as it has UTM . So, for this I have used 30D. We can create the web filter in security profiles. The URL is entered as a wildcard. The web filter policy is then enabled in policy tab.

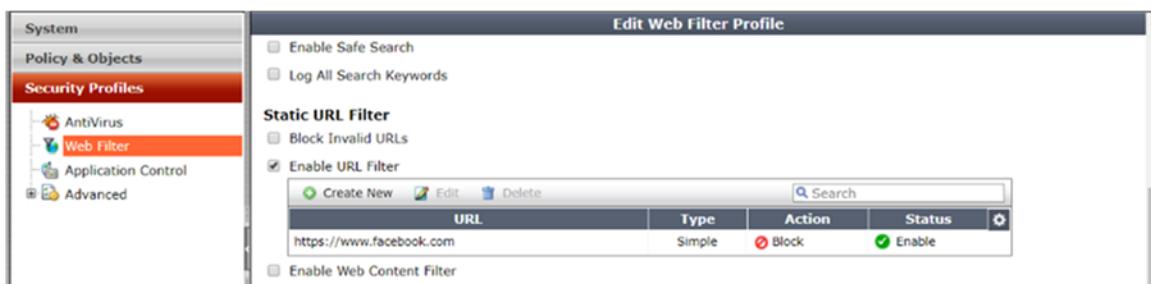


Figure 34: Web Filter Overview in Fortinet

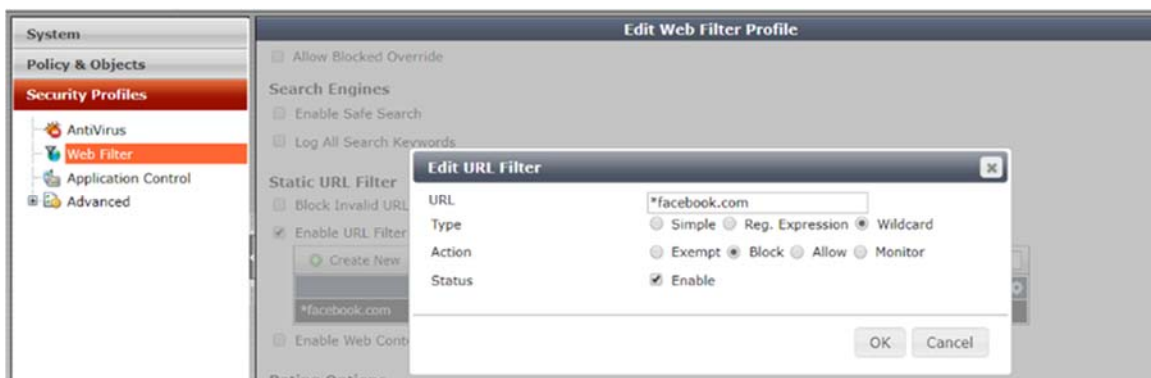


Figure 35: Adding Web Filter in Fortinet

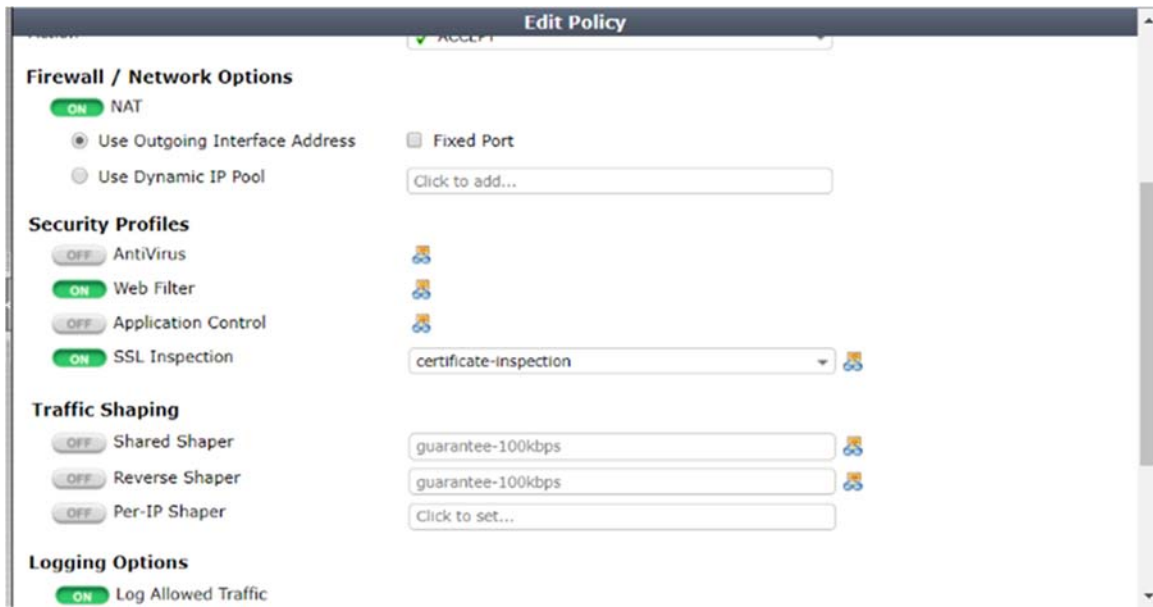


Figure 36: Enabling Web Filter

2.5 How good I have been in performing my task

During my internship program I work my tasks in enthusiasm, as well as my supervisor is such a sincere man when I ask a question he answered courteously. All in all, I did my task effectively and efficiently, and I was punctual when I performed my tasks.

2.6 Challenges I have faced

I can truly say that during my internship with main campus data center that I was challenged, and through all those challenges I grew as a person as well as a student. Not only was the work that I was doing beneficial to get knowledge, but it also made me have to work hard to get it right knowledge. I learned how to configured distribution layer and access layer switch is new for me, how to multi-task and manage my time.

3. OVERALL BENEFITS FROM INTERNSHIP

3.1 Practical Skills

This internship exposed me to the latest technologies in networking field. Opportunities to converse and interact with large pool of talented experienced department members had provided a deeper insight to the overall operation, as well as provided a valuable pool of resources to assist in completion of internship program. This internship program was exactly what I needed to nurture the lack of practical skills I had.

3.2 Theoretical knowledge

The internship also helped to understand various theoretical concepts. The use of subnetting, DNS, DHCP and proper use of IP was easily understood and the risk that might occur because of small negligence on them was known in real world. Also, the emerging protocols and technologies in networking that the theoretical learning fails to cover was known because of this internship.

3.3 Interpersonal Communication Skills

During my internship period the Interpersonal skills, which are the life skills I use every day to communicate and interact with other people, individually and in groups are good for me. Not only how I communicate with others, but also, I got confidence and my ability to listen and understand. Problem solving, decision making and personal stress management are also considered interpersonal skills. Through this internship, I found that I matured and I gained many new perspectives, such as problem-solving skill, diversity, effective communication, teamwork and service recovery, attention to detail, time management, personal empowerment, self-confidence, responsibility and cultural sensitivity.

My supervisor was so kind to answer with patience and teach me much that made this internship enjoyable. I had gotten a wonderful internship that spent such a happy moment with all of them. Though, still have so much to learn, I think this challenge was what should include in my career. This helped much on my future planning

3.4 Team Playing Skills

Either setting up a new network or providing support, working in the networking field requires a team play to conduct the work smoothly. The internship provided me a great opportunity to enhance this skill as we were always paired up with other member staffs of the company.

3.5 Leadership Skills

Leadership skills are the tool, behaviors, and capabilities that a person needs in order to be successful at motivating and directing others. Yet true leadership skills involve something more; the ability to help people grow in their own abilities. It can be said that the most successful leaders are those that drive others to achieve their own success. I gained leadership skills from my supervisor during the internship period which include managing time, motivating individuals, giving feedback and building teams.

3.6 Work ethics related issue

An internship is an opportunity to learn the skills and behaviors along with the work values that are required for success in the workplace. Workplace ethics are established codes of

conduct that reflect the values of the organization or company where you are employed. I have seen possess a willingness to work hard from my supervisor during my internship period. In addition to working hard it is also important to work smart. This means I acquired the most efficient way to complete tasks and finding ways to save time while completing daily assignments. It's also important to care about my job and complete all projects while maintaining a positive attitude.

3.7 Entrepreneurship Skills

“Entrepreneurship is the ability to create and build something from practically nothing. It is initiating, doing, achieving and building an enterprise or organization, rather than just watching, analyzing or describing one. It is the knack of sensing an opportunity where others see chaos, contradiction and confusion. It is the ability to build a founding team to complement your own skills and talents. It is the know-how to find, marshal and control resources and to make sure you don't run out of money when you need it most. Finally, it is the willingness to take calculated risks, both personal and financial, and then to do everything possible to get the odds in your favor.”^[1]

An entrepreneurship education program consists of wide-ranging subjects, and in every entrepreneurship education program, learning something at outside classroom like internship in a company plays an important role, as well as normal lectures in classroom. Of course, in this respect, the good relationship between educational institutions and business society is very important for the purpose of implementing an internship program as a part of curriculum. Interns gain firsthand understanding of entrepreneurship along with enhanced technical, professional, and communication skills.

In this internship I have gained self-confidence, information seeking, problem seeking and sees and acts on opportunities of business in networking. It helped me to clarify my vision and decided whether or not to forge ahead with the idea.

3.8 Placement

One of the major benefits that I got from this internship is the placement. After the successful completion of the internship program, I have been invited to join the team of Namaste InfoTech as a staff of the organization.

4. RECOMMENDATIONS AND CONCLUSION

4.1 Recommendations

Some of the recommendations to the organization are as follows:

- ❖ Being the intern, I didn't get the entire system access of the organization which limits the knowledge of the organization as well as technologies mechanism. Thus, should provide latest some access so that the intern can learn more deeply about the organization.
- ❖ Any organization, usually the service based should always give first priority to the customers. Organization must realize that the holding existing customer is more important and fruitful than planning for new customers.

4.2 Conclusion

After going through the whole period of internship as an intern I've observed so many professional activities and learnt as well. This internship was very fruitful to me because I had to cover many different fields. I also learnt new concepts and new ways of working.

During this internship period I acquired practical experience to complement the theoretical content of my study and detailed configuration of local area network (LAN), wireless local area network (WLAN), network security, VLANs and Trunk.

To conclude, I think that this internship was very beneficial to me as I learnt a lot, and it made me discover work's in a real world.

5. References

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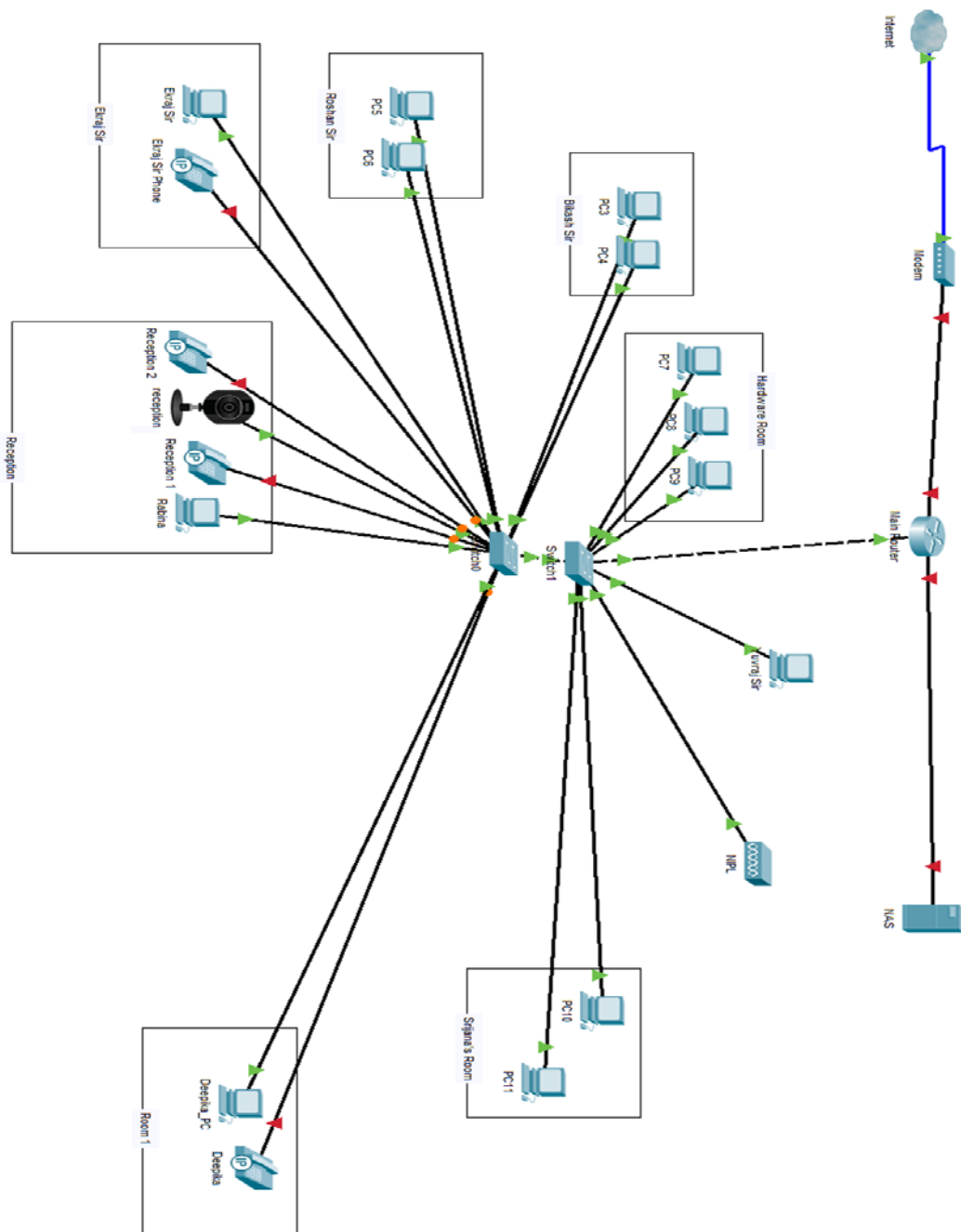
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6. APPENDIX

A. Network Diagram of NIPL



B. Partners of NIPL

OUR PARTNERS



C. Clients of NIPL

OUR ADORABLE CLIENTS		
<ul style="list-style-type: none"> Division Road Office Citizen Investment Trust Nepal Oil Corporation Nepal Telecom Limited Nepal Television Nepal Electricity Authority Inland Revenue Department Nepal Investigation Department Bagmati River Basin Improvement Project Kathmandu Metropolitan City Chamati Land- Pooling Project Naya Bazaar Land- Pooling Project Manohara Land-Pooling Project Lalitpur Metropolitan City Budhigandaki Hydropoelectric Project National Information & Technology Center Center Cooperative Training Center Ministry Of General Administration Nepal Academy Madhya Bhotekoshi Jalvidyut Company Ltd Sanjen Hydropower Company Ltd 	<ul style="list-style-type: none"> Hotel De L' Annapurna Ramalnn Boutique Hotel Hotel View Bhrikuti Hotel Shambala Dom Himalaya Tiger One Pvt. Ltd Hotel Tibet International Dhulikhel Hospital Bir Hospital Norvic Hospital Grande International Hospital Om Hospital Paropakar Maternity & Women Hospital Kathmandu Medical College Family Planning Association Of Nepal Marie Stopes 	<ul style="list-style-type: none"> Subisu Cable Net P. Limited Sonapur Cement P. Limited Arghakhanchi Cement P. Ltd Midas Technology Pvt. Ltd. Agni Group CG Impex Triveni Byapar Co. Pvt. Ltd Arghakhanchi Cement P. Ltd Goenka Group Vianet Communication Arrownet Pvt. Ltd Karnali Network Services Pvt. Ltd Nepal Satellite Telecom Synergy Overseas Pvt. Ltd. SHL Management Service Ezone International Pvt. Ltd Multisys Pvt. Ltd Pashupati Biscuits Pvt. Ltd Electrobyte Technology Pvt. Ltd Matrix Office System Pvt. Ltd
<ul style="list-style-type: none"> Seed Quality Control center Agriculture Development Bank Ltd Nepal Telecom Nepal Bank Limited Rastriya Banijya Bank Prime Commercial Bank Limited Janata Bank Araniko Development Bank General Finance Lalitpur Finance Ltd Capital Saving & Credit Cooperative Ltd Prabhu Insurance Limited Premier Insurance Company Ltd Siddharth Insurance ltd Neco Insurance 	<ul style="list-style-type: none"> Longtail e-media New Business Age/ Abhiyan Annapurna TV(AP1 HD) All Three Media Ghar Pvt. Ltd First link Pvt. Ltd 	<ul style="list-style-type: none"> First Link Pvt. Ltd Jawalakhel Group Of Industries Kathmandu University Pulchowk Campus Rato Bangla School Rajarshi Gurukul School Vishwa Niketan Higher Secondary School Universal Engineering & Science College John dewey School Khwoop Engineering College Mates Education P. Limited Cardno SRC-CAP Peace Brigade International International Center for Transitional Justice Save The Children

D. Fact Sheet about Namaste Infotech

FACT SHEET

Company : Namaste InfoTech Pvt. Ltd.
Anamnagar, Kathmandu, Nepal.

Registration : Department of Company Registration

VAT Registration No. : 304015308

Type of Establishment : Private Limited Company

Managing Director : Mr. Ekraj Sedai

Field of Specialization : ICT Consultancy, Network, Managed IT Service, Hardware

Service Medium : Hotspot, Web, Industrial Networking, CCTV

Clients : A Number of Corporate (Government, Non government, financial Organizations, Academics Institutes, Hotel, Hospitals, Business houses.)

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