

**A PROJECT REPORT
ON
SERVER CONFIGURATION**

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**REPORT SUBMITTED IN FULFILMENT OF THE DEGREE
OF
BACHELOR OF COMPUTER SCIENCE AND ENGINEERING**

**FACULTY OF COMPUTER SCIENCE AND ENGINEERING
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July, 2018

DECLARATION OF ORIGINAL WORK

I declare that the work presented in this project titled “**SERVER CONFIGURATION**”, submitted to the faculty of Computer Science and Engineering, Patuakhali Science and Technology University, for the fulfillment of the requirements for the degree of Bachelor of Science in Computer Science and Engineering, is my original work. I have not plagiarized or submitted the same work for the award of any other degree. In-case this undertaking is found incorrect, I accept that my degree may be unconditionally withdrawn.

July, 2018

Place : Dumki, Patuakhali

(Md. Saidur Rahman)

LETTER OF APPROVAL

Certified that the work contained in the project titled “Server Configuration”, by Md. Saidur Rahman, ID # 1402067, REG NO. # 05416, CSE, 12th batch, has been carried out under my supervision and that this work has not been submitted elsewhere for a degree.

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SOFTWARE FEATURE

Server Configuration

INTRODUCTION

The title of the project is “Server Configuration”. This project will help to manage the both windows and linux server. Both windows server 2012 and linux server (Cent OS) brings a lot of new capabilities. There are new features and enhancements in System and Network Administration, Storage, Networking, Directory Services and Security, Web services, FTP Services and Database Management etc. Through mail server, we can communicate with the people who are working in the same institution or company.

PROJECT CATEGORY:

This project as title “Server Configuration” is a server and client networking based project. This is developed with the help of Windows Server 2012 R2, Linux Server (CentOS 7), Red Hat Enterprise Linux 7.4 or Ubuntu 16.04.3.

MODULES OF APPLICATION

This project includes the following modules. These are given below:

- ❖ Basic server configuration (Windows & Linux)
- ❖ Active directory configuration (Windows)
- ❖ Add DNS features (Windows)
- ❖ Create DHCP server (Windows & Linux)
- ❖ Manage web server (Linux)
- ❖ Configure mail server (Windows & Linux)
- ❖ Manage FTP server (Windows & Linux)

TOOLS / PLATFORM :

This project is developed using the tools, which are most suited for development of the Application Package. These tools are as follows: -

1. Windows Server 2012 R2 iso file (For installing server).
2. Windows 8.1 Pro (For client support).
3. CentOS 7 iso file (For installing Server).
4. Red Hat Enterprise Linux 7 - 64 bit iso file (For Developing Server) or
5. Ubuntu 16.04.3 (For client support)

HARDWARE & SOFTWARE REQUIREMENT :

HARDWARE :

Any kind of desktop, laptop or notebook, and ethernet cables.

SOFTWARE :

Kerio connect, Apache, Glasswire.

ACKNOWLEDGEMENT

In the name of Almighty Allah (tala), the Merciful, the creator of universe. All praises are due to him who enabled us to complete this study.

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ABSTRACT

This project is about “SERVER CONFIGURATION”. A server is a computer that provides data to other computers. It may serve data to systems on a local area network (LAN) or a wide area network (WAN) over the Internet. Many types of servers exist, including web servers, mail servers and file servers. Each type runs software specific to the purpose of the server. The basic function of a server is to listen in on a port for incoming network requests and provide services to the clients. A web server may run Apache HTTP Server or Microsoft IIS, which both provide access to websites over the Internet. Besides, server have many facilities and these are system-wide backups and administration, print and mail serving, online cloud storage, hosting websites and databases, central file repository and sharing documents, provide high speed internet access across a network. This project will helps to manage and configure both Windows Server 2012 R2 and Linux Server (CentOS 7) including FTP Server, Mail Server, Web Server features.

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CHAPTER 1

INTRODUCTION

1.1 Windows Server

A series of server operating systems developed by Microsoft Corporation. Windows servers are more powerful versions of their desktop operating system counterparts and are designed to more efficiently handle corporate networking, Internet/intranet hosting, databases, enterprise-scale messaging and similar functions.

The Windows Server name made its debut with the release of Windows Server 2003 and continues with the current release, Windows Server 2008 R2, which shares its codebase with Windows 7. Windows Server 2008 R2 debuted in October 2009 and currently has its first service pack (SP1) in development.

Windows Server 2012, codenamed “Windows Server 8” is the sixth release of Windows Server family of operating systems developed concurrently with Windows 8. It was not released until April 17, 2012 that the company announced that the final product name would be “Windows Server 2012”.

Unlike its predecessor, Windows Server 2012 can switch between “Server Core” and “Server with a GUI” installation options without a full reinstallation. Server Core – an option with a command-line interface only – is now the recommended configuration. There is also a third installation option that allows some GUI elements such as MMC and Server Manager to run, but without the normal desktop, shell or default programs like File Explorer.

Server Manager has been redesigned with an emphasis on easing management of multiple servers. The operating system, like Windows 8, uses the Metro-based user interface unless installed in Server Core mode. Windows Store is available in this version of Windows but is not installed by default. Windows PowerShell in this version has over 2300 command lets, compared to around 200 in Windows Server 2008 R2.

Windows Server 2012 has an IP address management role for discovering, monitoring, auditing, and managing the IP address space used on a corporate network. The IPAM is used for the management and monitoring of Domain Name System (DNS) and Dynamic Host Configuration Protocol (DHCP) servers. Both Ipv4 and Ipv6 are fully supported.

Windows Server 2012 has a number of changes to Active Directory from the version shipped with Windows Server 2008 R2. The Active Directory Domain Services installation wizard has been replaced by a new section in Server Manager, and a GUI has been added to the Active Directory Recycle Bin. Multiple password policies can be set in the same domain. Active Directory in Windows Server 2012 is now aware of any changes resulting from virtualization, and virtualized domain controllers can be safely cloned. Upgrades of the domain functional level to Windows Server 2012 are simplified; it can be performed entirely in Server Manager. Active Directory Federation Services is no longer required to be downloaded when installed as a role, and claims which can be used by the Active Directory Federation Services have been introduced into the Kerberos token. Windows Powershell commands used by Active Directory Administrative Center can be viewed in a “Powershell History Viewer”.

1.2 Linux Server (CentOS)

The CentOS (short for Community Enterprise Operating System) Linux distribution is an enterprise-grade, freely available, open source operating system that is derived from the source code of Red Hat Enterprise Linux (RHEL) and developed and maintained by the CentOS project. The CentOS project is about more than just a Linux distribution. The project’s members are working to provide support, training materials, and in the future, even certification. Although at its core the project is the CentOS distribution, the CentOS project encompasses a whole ecosystem of software, developers, and projects. CentOS is used around the world by people who need a robust and reliable platform to deploy their applications and services. Although support options are available, CentOS is best suited to those who do not need or want commercial support. When you have commercial support, it usually means that you can pick up the phone and speak to someone or submit a request via a web site. Because you’ve paid for the service, you can expect your problem to be resolved in a reasonable amount of time. If you already have your own in-

house expertise or know people who can help you if you get stuck, you probably don't want to have to pay for support, often at significant expense. But if you prefer to have commercial support available, there are companies that do provide it. A list of companies approved by the CentOS Project is currently being worked on and when complete will be viewable on the CentOS web site. Before you can really appreciate what CentOS can do for you, you need to explore enterprise Linux (EL) in a bit more depth. It is common for newcomers to Linux to set up servers using "consumer-grade" Linux distributions such as Fedora and Ubuntu Desktop.

CentOS is rebuilt from another enterprise Linux platform, Red Hat Enterprise Linux. RHEL is free—"free" as in speech but not as in beer. In other words, when Red Hat provides the software to a subscriber, it must also include the source code. The subscriber can alter that source code and use it in any way she sees fit. So although the subscriber has the freedom to use and modify the software, it doesn't necessarily follow that she won't have to pay for it. If she were to improve on the software and wanted to sell her new version, she could do so, but she would also have to include the source code, if requested, and in most cases under the same license. Because of this, free software helps ensure that when software is improved, those benefits are passed on and not held by a single company or person.

Because Red Hat Enterprise Linux is based entirely on open source software, Red Hat is obliged to release all of the source code to anyone who has a subscription. Red Hat takes this another step further and makes its source code available to anyone. Although the source code is freely available, Red Hat uses trademark protection laws to prevent people from building their own versions of RHEL and then distributing them. CentOS complies fully with Red Hat's policy on distribution, and the CentOS Project spends considerable time and effort removing all Red Hat logos and trademarks. Once done, the software is rebranded as CentOS and then compiled.

1.3 Motivation

A survey by Robert Half International Consulting reported that computer networking is the most "in-demand" specialty in the information technology area. They surveyed 1,400 chief information officers and 32% named networking as the highest area of job growth within their departments.

According to the Bureau of Labor Statistics, job prospects for workers in this field will be excellent through at least 2018. Networking jobs are available in a variety of job settings including large corporations, small businesses, professional offices and government organizations. Computer networking offers an excellent career path since it involves a series of different jobs, each with different requirements and responsibilities. Such as :

Network Administrator: The person with this job title is responsible for designing, installing and managing local area networks and wide area networks, Internet and intranet systems on a day-to-day basis. The median salary for this position is \$69,160 per annual.

Network Systems Engineer: This person focuses on system upgrades, security testing and evaluating vendor products. The salary range for this position ranges from \$40,000-\$90,900 per year.

Network Service Technician: This technical position is responsible for the set up, troubleshooting and repair of hardware and software issues. Median salaries range from \$27,000-\$58,000.

Network Programmer/Analyst: This person writes software scripts or utility programs to help with network diagnosis or monitoring. Part of their responsibility may also include evaluating and integrating new software technologies into a new or existing network. Median salaries range from \$49,500-\$90,000.

Network/Information Systems Manager: This person supervises the work of administrators, engineers, technicians, programmers and analysts. It provides long-range planning and strategies. The average salary for this position is \$61,600 and the high end of salary range is \$120,800 .

1.4 Objectives

- i. To acquire the knowledge of computer networking and network topologies.
- ii. To understand that how the ISP company provide services to clients.
- iii. To configure windows server with different services such as active directory, DHCP, DNS, FTP server etc.

- iv. To configure Linux Server with different services such as DNS Server, Web Server, FTP Server etc.
- v. To understand the networking management with practical experience through General pharmaceuticals datacenter visit.

1.5 Project Schedules

Table 1.1: Project Tasks Time wise Breakdown

S/N	Activities	Date		Total Days	Status
		From	To		
1	Project Initiated On	07.03.2018		1	Done
2	Understanding Requirements	07.03.2018		9	Done
		29.04.2018	05.05.2018		
		03.07.2018			
3	Configuring AD DS and DNS	26.03.2018		15	Done
		21.04.2018	03.05.2018		
		11.06.2018			
4	Configure DHCP Server	17.04.2018	06.05.2018	19	Done
5	Configuring FTP Server	04.05.2018		2	Done
		20.06.2018			
6	Configure Web Server	26.06.2018	05.07.2018	10	Done
7	Configure SMTP Server	11.04.2018		16	Done
		23.06.2018	07.07.2018		
8	Project Report Submission	11.07.2018		1	Done
9	Project Ends	12.07.2018		1	Done
10	Testing	12.07.2018	14.07.2018	3	Done

Table 1.2: Project Schedule in Gantt Chart

S/N	Activities	March				April				May				June				July			
		W1	W2	W3	W4	W1	W2	W3	W4	W1	W2	W3	W4	W1	W2	W3	W4	W1	W2	W3	W4
1	Project Initiated On																				
2	Understanding Requirements																				
3	Configuring AD DS and DNS																				
4	Configure DHCP Server																				
5	Configuring FTP Server																				
6	Configure Web Server																				
7	Configure SMTP Server																				
8	Project Report Submission																				
9	Project Ends																				

CHAPTER 2

WINDOWS SERVER CONFIGURATION

2.1 Windows Server Installation

Windows Server 2012 R2 brings a lot of new capabilities to the infrastructure in many different areas. There are new features and enhancements in File Services, Storage, Networking, Clustering, Hyper-V, PowerShell, Windows Deployment Services, Directory Services and Security etc. Here I installed and configured different types of services of windows server 2012 r2. They are shown in below :

- i. Windows server installation
- ii. Windows server basic configuration
- iii. Installation and configure active directory
- iv. Installation and configure DNS server
- v. Installation and configure DHCP server
- vi. Joint client to server
- vii. Mail server configuration
- viii. FTP server configuration

2.2 Basic Server Configuration

After installing windows server 2012, need basic server configuration. Firstly, change the computer name to server, then turn off windows firewall, disabled remote management, disabled windows update, set time zone, set ethernet0 IPv4 to 192.168.88.1, subnet mask 255.255.255.0 and DNS server address to same as server ip address 192.168.88.1 and restart server machine.

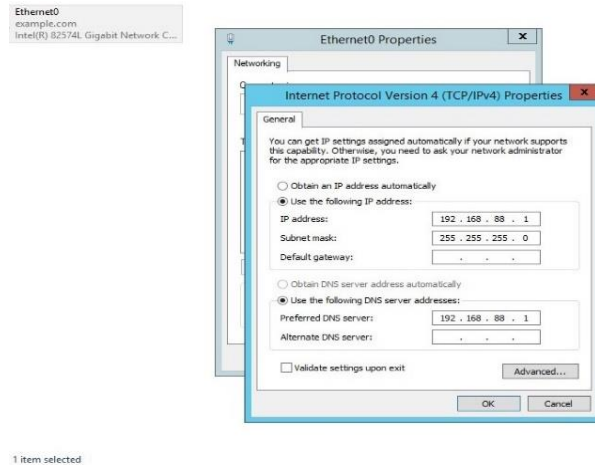


Fig 2.1 : Basic Server Configuration (IPv4)

2.3 Active Directory Domain Services Configuration (AD DS)

After successfully configuration the server, then first step is to create active directory domain services. For this click Manage > Add Roles and Features > feature based installation > select a server from server pool (it took an ip address that we configure in the basic server configuration) > select active directory domain services and then finally click install.

After installation add promote this server to a domain controller > add a new forest (root domain name – example.com) > set administrator password. Then NetBIOS domain name was appeared for a few second (EXAMPLE). Also checked all prerequisite and installed AD DS successfully.

Computer name	server	Last installed updates	Never
Domain	example.com	Windows Update	Never check for updates
		Last checked for updates	Never
Windows Firewall	Domain: On	Windows Error Reporting	Off
Remote management	Disabled	Customer Experience Improvement Program	Not participating
Remote Desktop	Disabled	IE Enhanced Security Configuration	Off
NIC Teaming	Disabled	Time zone	(UTC+06:00) Ekaterinburg
Ethernet0	192.168.88.1	Product ID	Not activated
Operating system version	Microsoft Windows Server 2012 R2 Standard	Processors	Intel(R) Core(TM) i5-4210U CPU @ 1.70GHz
Hardware information	VMware, Inc. VMware Virtual Platform	Installed memory (RAM)	2 GB
		Total disk space	50 GB

Fig 2.2 : Server Basic Information

2.4 Domain Name System Configuration

Then we need both forward and reverse lookup zones. Go to Tools > DNS > example.com and right click reverse lookup zones add new zone as primary zone and IPv4 reverse lookup zone. Add network id 192.168.88 and 88.168.192.in-addr.arpa is the new zone.

Right click on example.com and add new host with host name client, FQDN client.example.com. and ip address 192.168.88.150. Before finished also checked create associated pointer record.

Again Right click 88.168.192.in-addr.arpa and add new pointer (PTR) for client with host ip address 192.168.88.150, FQDN 150.88.168.192.in-addr.arpa, host name client.example.com.

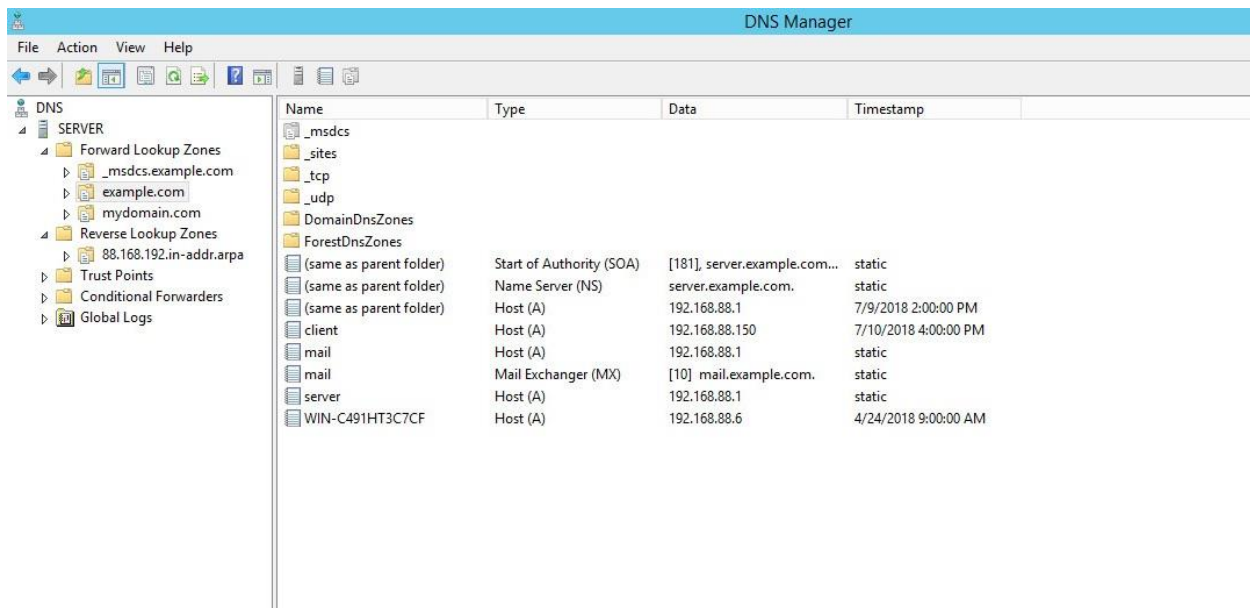


Fig 2.3 : DNS Configuration

Then we need to restart DNS server. For this go to Tools > DNS > SERVER and right click on it and All tasks > restart.

2.5 DHCP Configuration

Now we need to configure DHCP server for assigning ip address automatically for clients. So go to Manage > Add Roles and Features > DHCP server > Complete DHCP configuration.

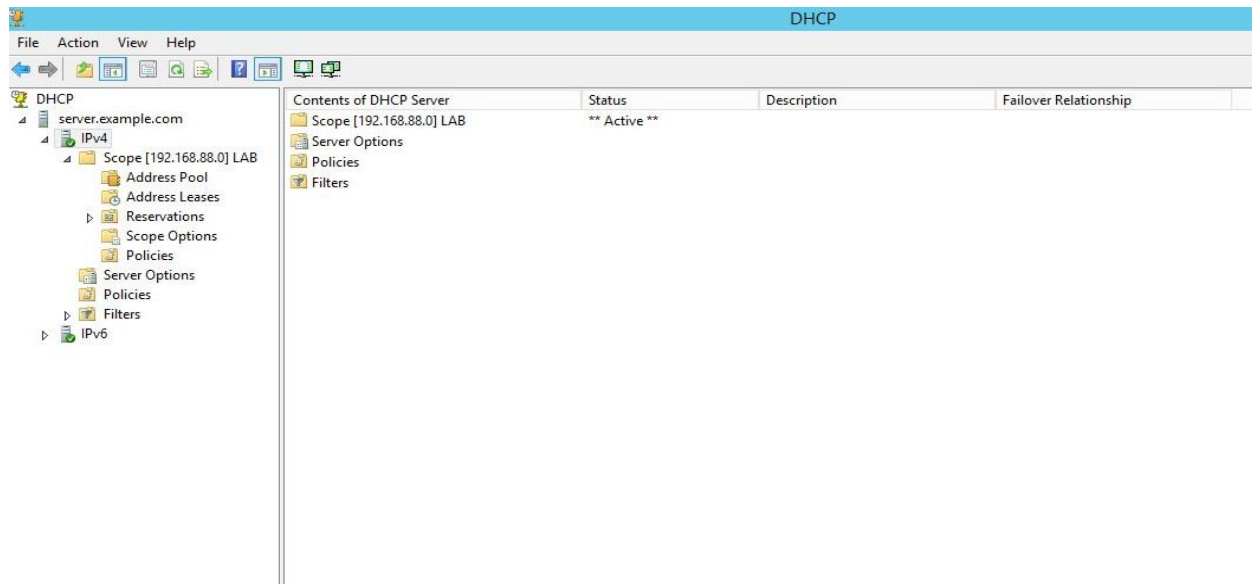


Fig 2.4 : DHCP Configuration

Set DHCP authorize to EXAMPLE\Administrator. If creating security group and authorizing DHCP server is done, then it is ready for configuration.

Then Tools > DHCP > IPv4 and add new scope as LAB, start ip address 192.168.88.150, end ip address 192.168.88.200, default gateway 192.168.88.1, parent domain already set as example.com, server name server.example.com, server ip address 192.168.88.1 and active scope now.

After configuration, we need to restart DHCP server. For this, right click on server.example.com > All Tasks > Restart and server will restart.

2.6 Joint Client To The Server

Now add client to the server (example.com). Install another OS (windows 8.1 for client) and login as administrator. Then go to the network and sharing center > change adapter settings > Ethernet > properties > IPv4 and set an ip address as 192.168.88.150, subnet mask 255.255.255.0, preferred DNS server to server ip address 192.168.88.1.

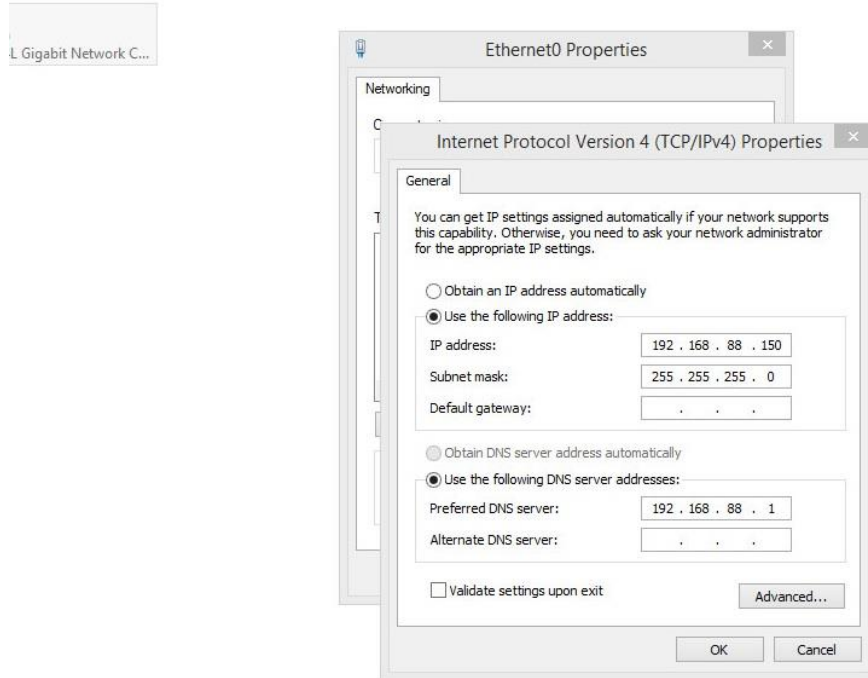


Fig 2.5 : Client Configuration (IPv4)

On system properties click change its domain or workgroup, set domain name example.com and hit enter. After appearing new window set username as administrator and password as server administrator password (from example.com) and restart machine.

Then we need to create user for local user. So that we go to server machine and tools > active directory users and computers > users. Add new user as login name test@example.com, set password and set password never expires.

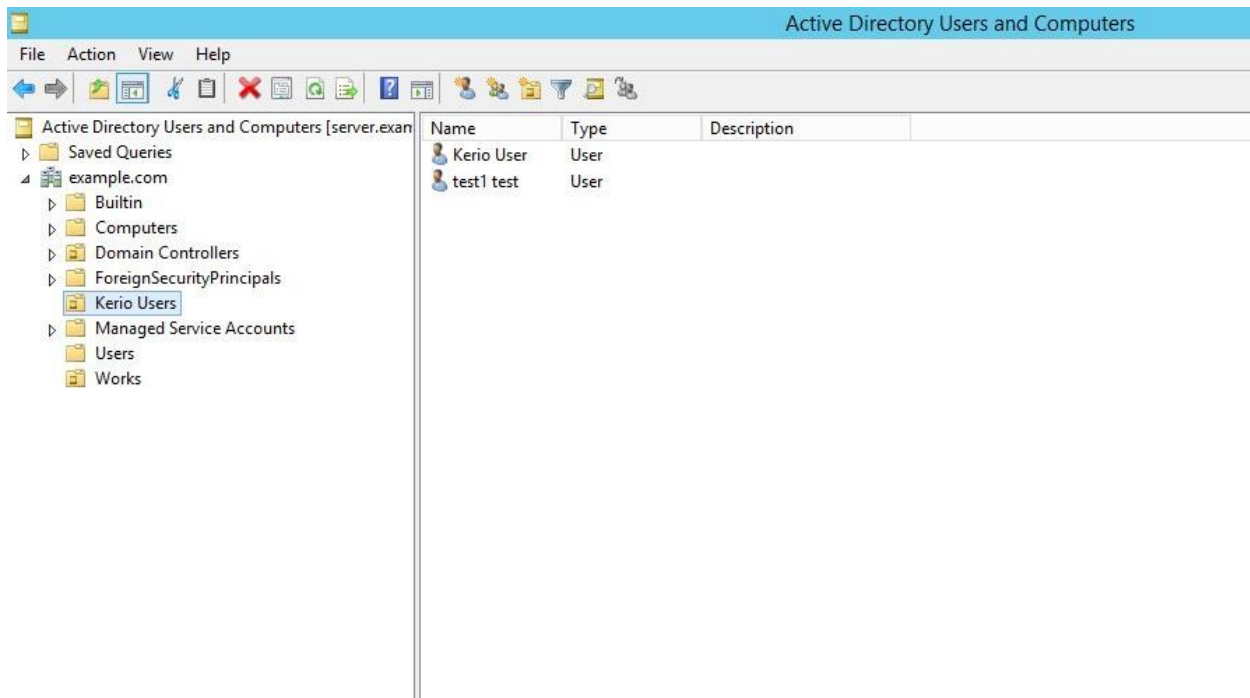


Fig 2.6 : Create Groups and Users

Return to client pc and choice login with other user. Set username example\test, password and sign in to machine. After all client successfully join to the server.

2.7 Mail Server Configuration

For providing services as ISP, server need own domain mail address for clients. For configuring simple mail transfer protocol (SMTP), I used kerio SMTP connect software. I installed this software on server and configure this.

Before configure smtp, first need a server mail address. Go to server machine > tools > DNS > example.com > new host and add name as mail, FQDN mail.example.com, ip address 192.168.88.1, checked PTR.

Again add new mail exchanger where host is mail, FQDN is mail.example.com., FQDN of mail server mail.example.com.

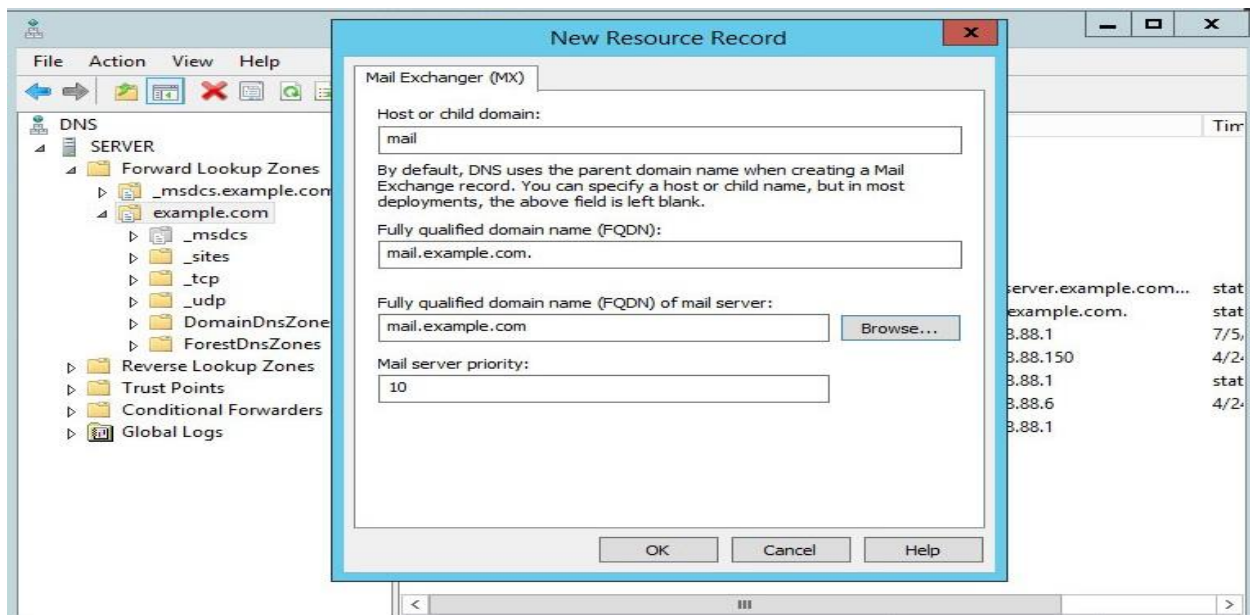


Fig 2.7 : FQDN Mail Server

Then configure to kerio installation. Set internet hostname server.example.com, email domain example.com, kerio username admin and admin password.

Add alternative user principal name (UPN) suffixes as mydomain.com from tools > active directory domains and trusts. Also create a user as test1@mydomain.com from active directory users and computers.

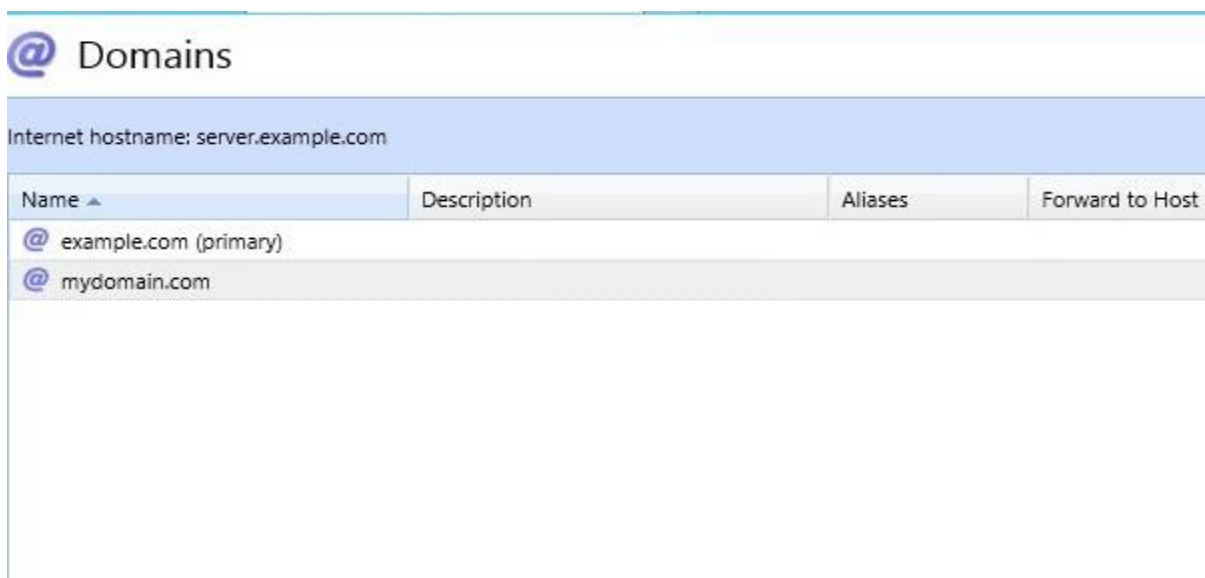


Fig 2.8 : Manage Domain In Kerio

Login kerio connect admin panel from url that is <http://localhost:4040/admin/login> and go to users and import users from directory services where domain name is example.com, server is server.example.com, user administrator and password.

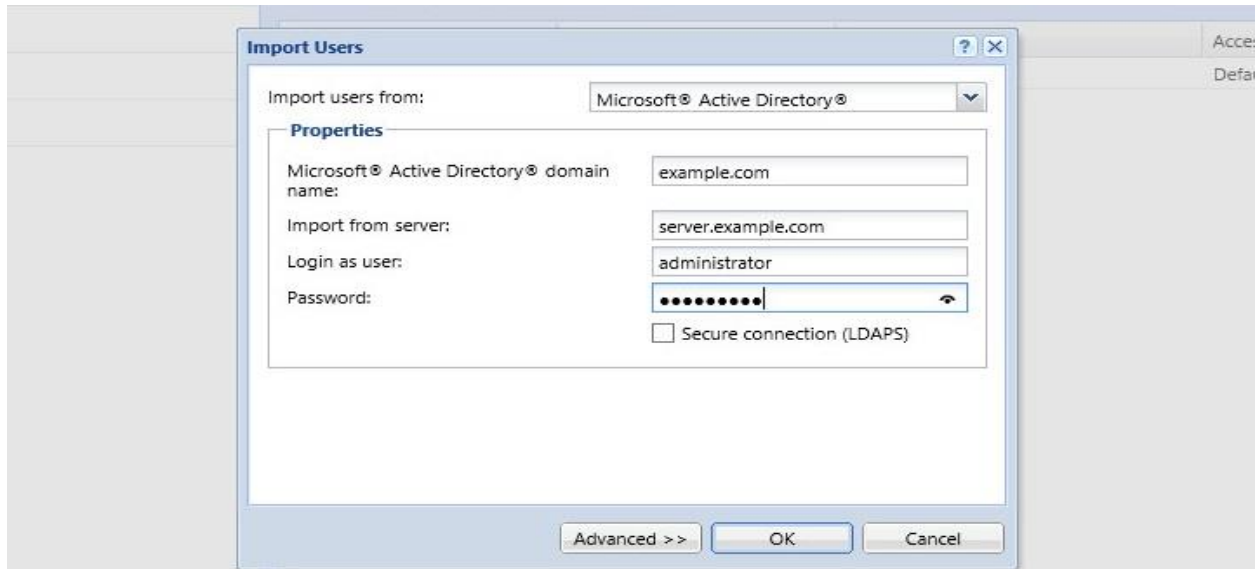


Fig 2.9 : Kerio SMTP Configuration

Login test1@mydomain.com user from <http://localhost/webmail> and send email to anyone from anydomain.com users. Besides, administrator or users can chat each other when any user is online.

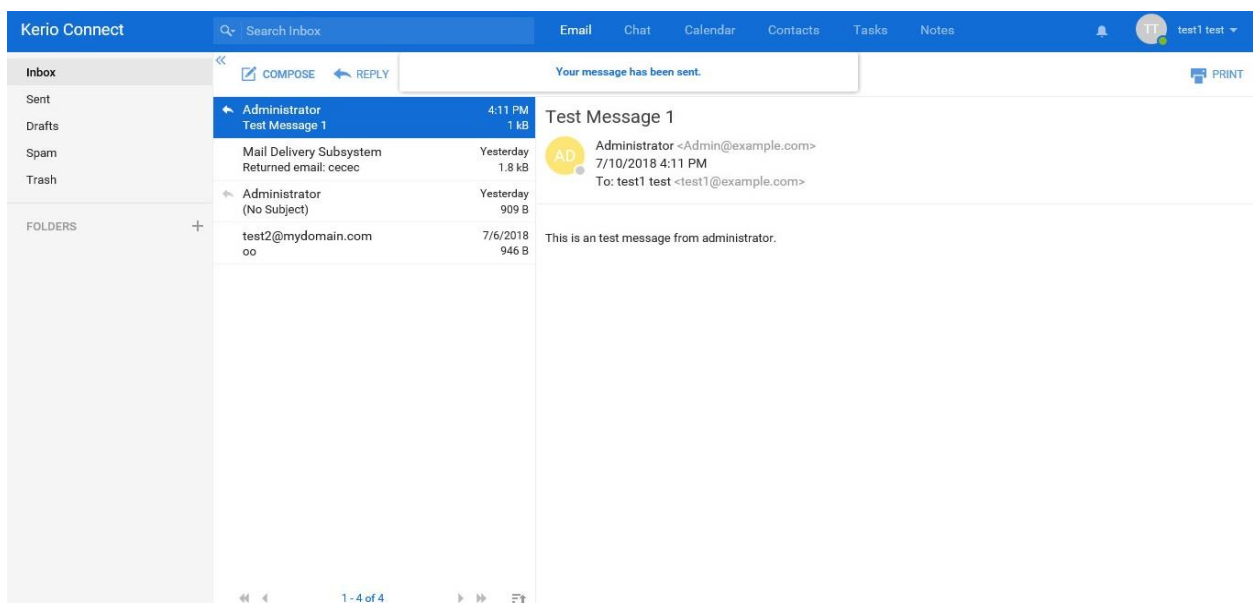


Fig 2.10 : User Mail Box

2.8 FTP Server Manage

First add web server (IIS) roles and features, then add ftp server features (ftp services and ftp extensibility) on server machine. Now go to tools > internet information service (IIS) manager and click on SERVER (EXAMPLE\Administrator) and add ftp site name and ftp physical path. Set authentication to anonymous, allow access to anonymous users, set also read and write permission and click finish. Then set user from ftp authentication > anonymous authentication.

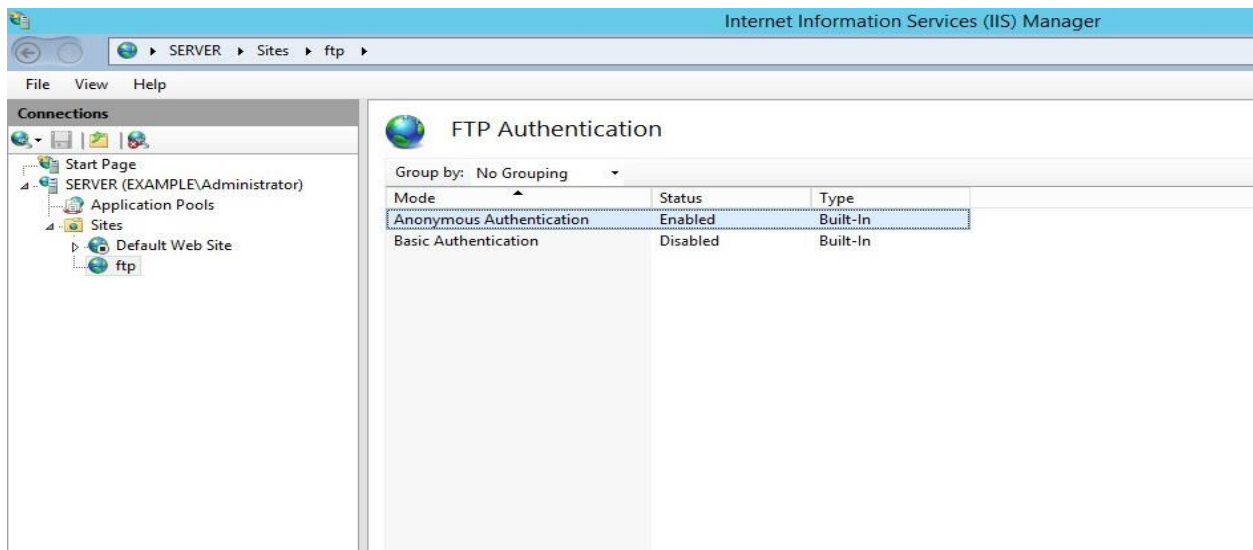


Fig 2.11 : FTP Authentication

Go to ftp path and apply ftp permission for those user. Now ftp server is ready for using. Open any browser or windows explorer and enter server ip address to url box as ftp://192.168.88.1 and browse ftp features.

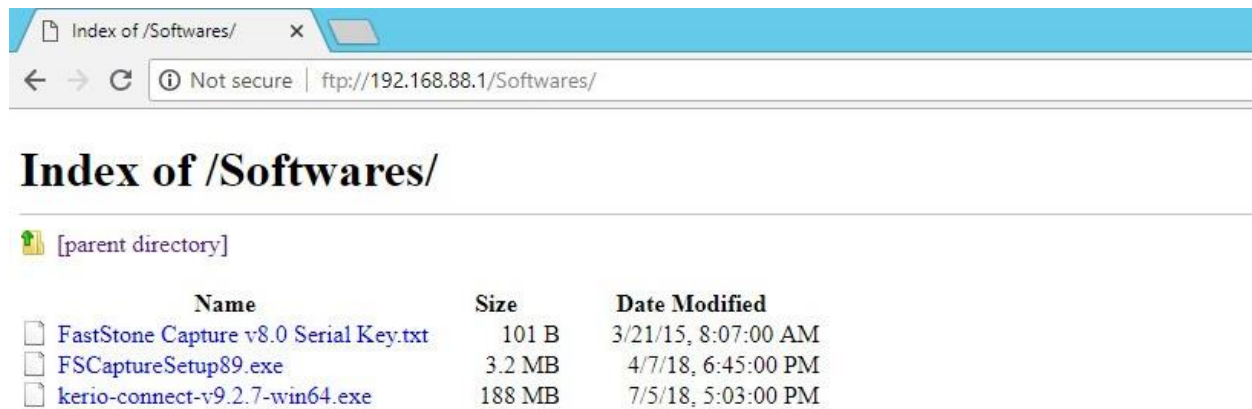


Fig 2.12 : Browse FTP Server

2.9 Challenges

In the time of configuring DNS server, I faced different types of challenges. Adding reverse zone was so difficult for me. Besides, when I enter command for nslookup then server could not response. Sometimes the kerio connect SMTP server was stopped for listen port of http 80. Another problem was to add a client to the main server. Client server could not find primary server DNS. Sometime FTP server could not accessed to user request.

CHAPTER 3

LINUX SERVER CONFIGURATION

3.1 Linux Server Installation

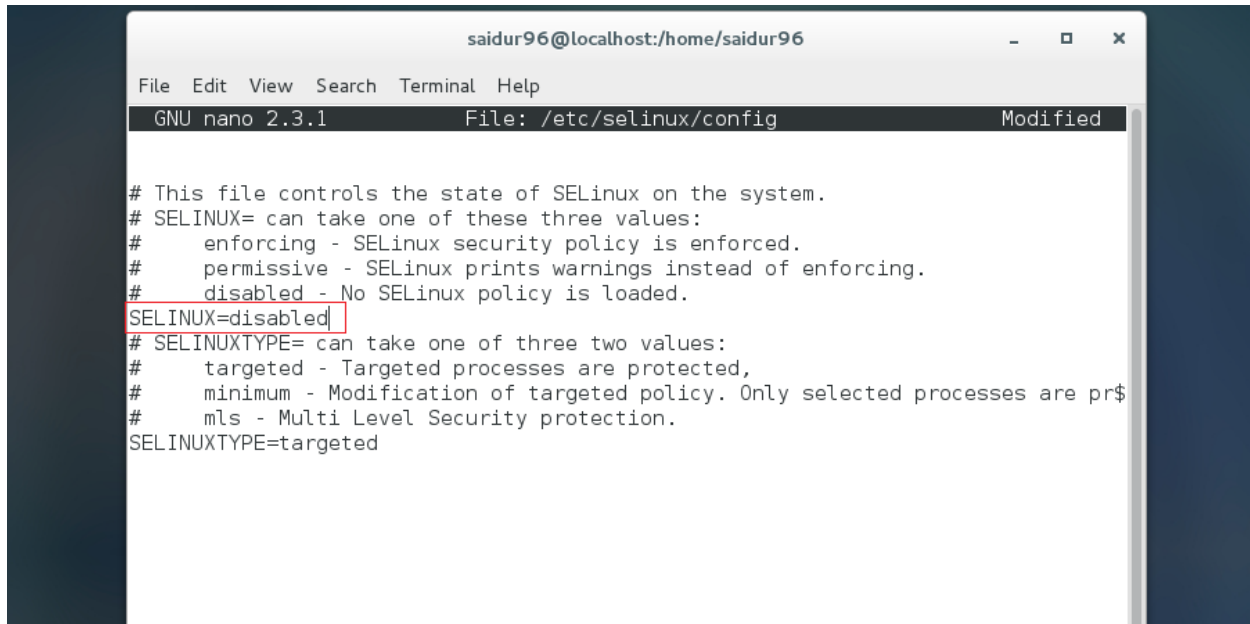
Linux is a family of free, open source software operating systems built around the Linux kernel. A Linux server is an efficient, powerful variant of the Linux open source operating system (OS).

Linux servers are built to address the ever-increasing requirements of business applications like system and network administration, Web services, FTP services and database management etc. Here I installed and configured different types of services of linux server using RedHat Linux v7 and CentOS 7. They are shown in below :

- i. Linux server installation
- ii. Linux server basic configuration
- iii. Installation and configure DNS server
- iv. Installation and configure DHCP server
- v. Web server configuration
- vi. FTP server configuration

3.2 Basic Server Configuration

After installing linux server distribution, we need to configure basic server distribution settings. Firstly, disabled the SELinux so that no SELinux policy can't be loaded. Open terminal, set root permission, write nano /etc/selinux/config/ and hit enter. Then replace policy enforcing to disabled.

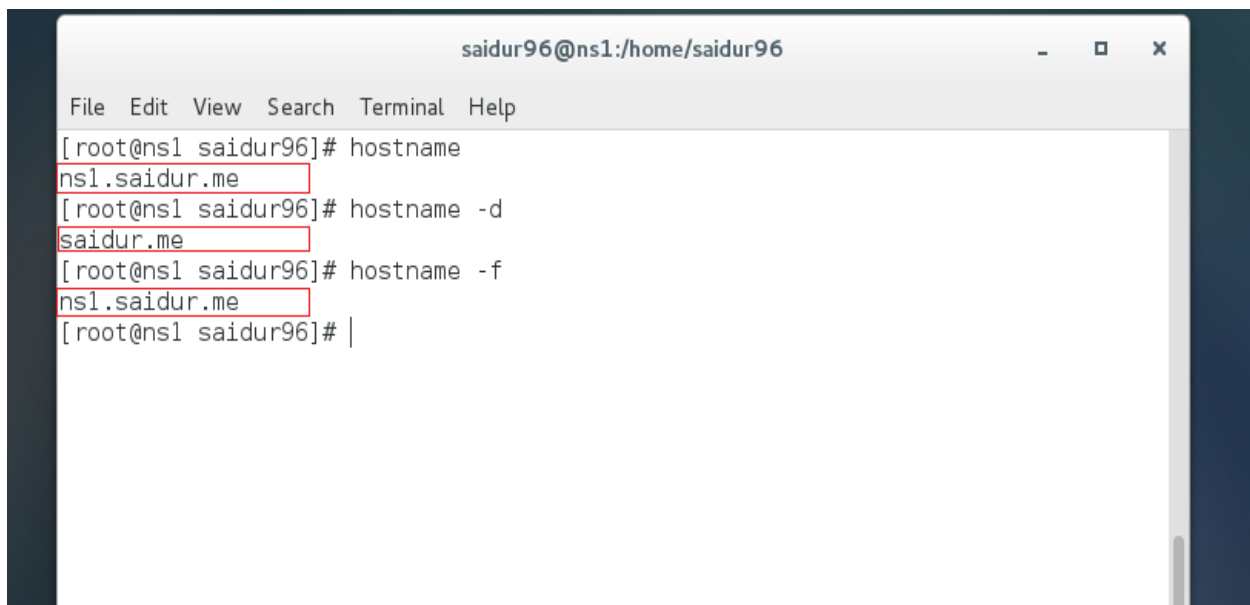


```
saidur96@localhost:/home/saidur96
File Edit View Search Terminal Help
GNU nano 2.3.1 File: /etc/selinux/config Modified

# This file controls the state of SELinux on the system.
# SELINUX= can take one of these three values:
#   enforcing - SELinux security policy is enforced.
#   permissive - SELinux prints warnings instead of enforcing.
#   disabled - No SELinux policy is loaded.
SELINUX=disabled
# SELINUXTYPE= can take one of three two values:
#   targeted - Targeted processes are protected,
#   minimum - Modification of targeted policy. Only selected processes are pr$
#   mls - Multi Level Security protection.
SELINUXTYPE=targeted
```

Fig 3.1 : Disabled SELinux

Again need to modify host name. So write in terminal nano /etc/hosts/ and set hostname as ns1.saidur.me and reboot server machine. Then check the hostname using hostname, hostname -d and hostname -f commands.

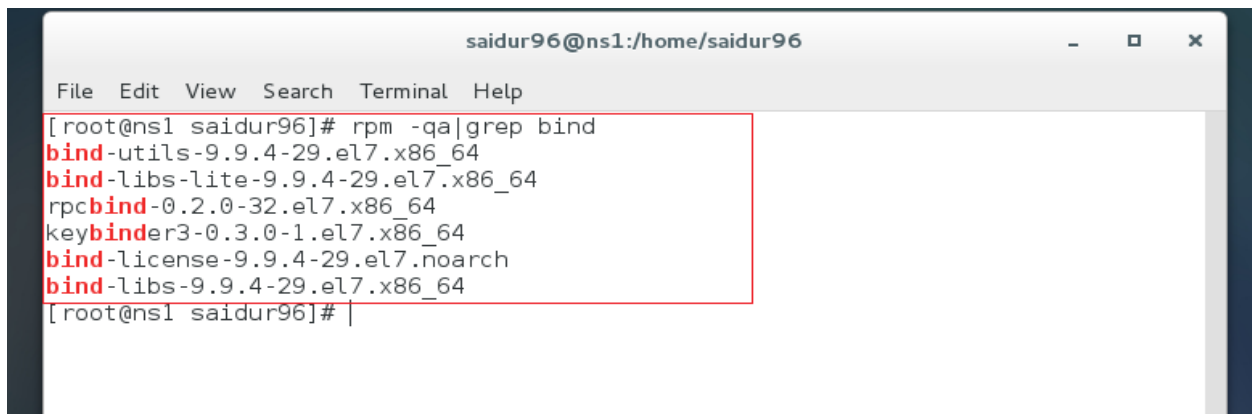


```
saidur96@ns1:/home/saidur96
File Edit View Search Terminal Help
[root@ns1 saidur96]# hostname
ns1.saidur.me
[root@ns1 saidur96]# hostname -d
saidur.me
[root@ns1 saidur96]# hostname -f
ns1.saidur.me
[root@ns1 saidur96]# |
```

Fig 3.2 : Check Host Name Status

3.3 DNS Configuration

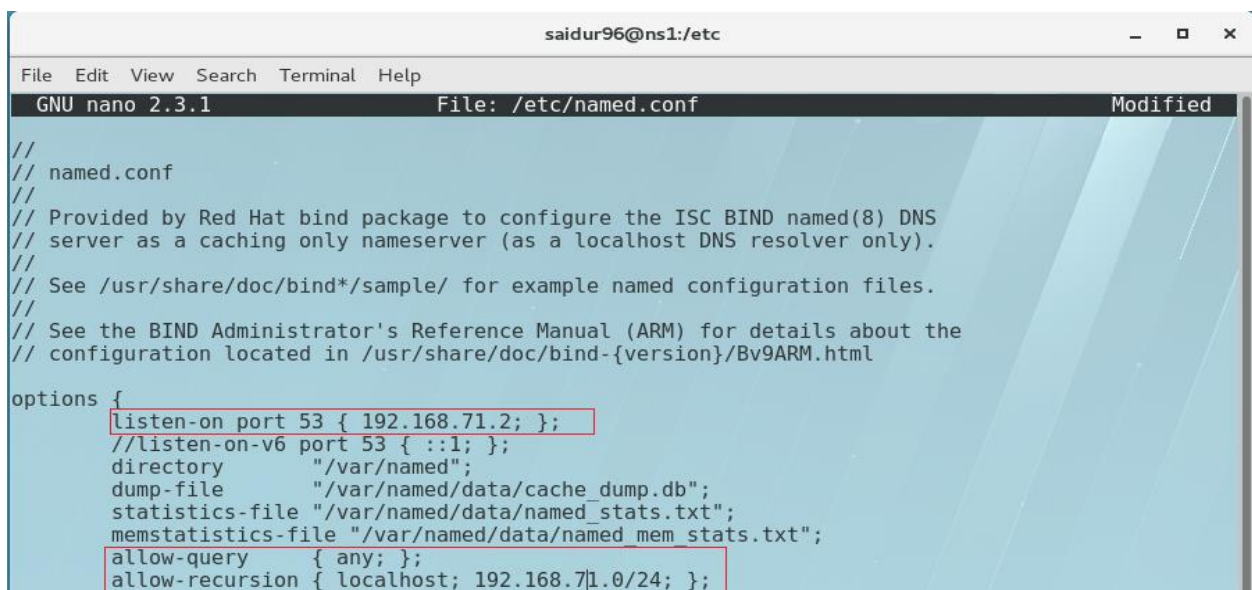
Before configuring dns server, we need to check whether bind software is installed or not using `rpm -qa|grep bind` command. The software was installed by default.



```
saidur96@ns1:/home/saidur96
File Edit View Search Terminal Help
[root@ns1 saidur96]# rpm -qa|grep bind
bind-utils-9.9.4-29.el7.x86_64
bind-libs-lite-9.9.4-29.el7.x86_64
rpcbind-0.2.0-32.el7.x86_64
keybind-0.3.0-1.el7.x86_64
bind-license-9.9.4-29.el7.noarch
bind-libs-9.9.4-29.el7.x86_64
[root@ns1 saidur96]#
```

Fig 3.3 : Check Bind Software

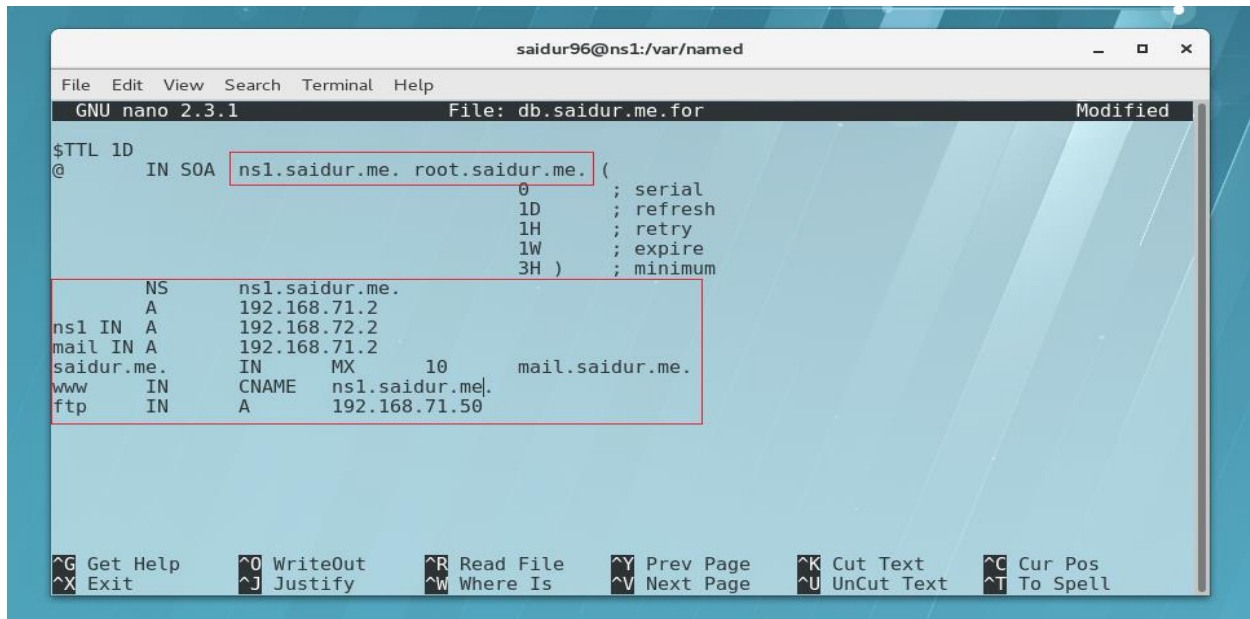
Before configuring we must backup our configuration file (`/etc/named.conf`) using this `cp named.conf named.conf.ori` command, so that we can roll back our file if any problem occur. Then write `nano /etc/named.conf` in terminal and modify the file comments like `listen-on port 53 { 192.168.71.2 };`. My server ip is 192.168.71.2 and now add the forward and reverse zone.



```
saidur96@ns1:/etc
File Edit View Search Terminal Help
GNU nano 2.3.1 File: /etc/named.conf Modified
//
// named.conf
//
// Provided by Red Hat bind package to configure the ISC BIND named(8) DNS
// server as a caching only nameserver (as a localhost DNS resolver only).
//
// See /usr/share/doc/bind*/sample/ for example named configuration files.
//
// See the BIND Administrator's Reference Manual (ARM) for details about the
// configuration located in /usr/share/doc/bind-{version}/Bv9ARM.html
options {
  listen-on port 53 { 192.168.71.2; };
  //listen-on-v6 port 53 { ::1; };
  directory "/var/named";
  dump-file "/var/named/data/cache_dump.db";
  statistics-file "/var/named/data/named_stats.txt";
  memstatistics-file "/var/named/data/named_mem_stats.txt";
  allow-query { any; };
  allow-recursion { localhost; 192.168.71.0/24; };
}
```

Fig 3.4 : Configure Listen On Port IP Address

Now copy named.localhost and named.loopback files for entry server data in database and change the ownership group to named. At last check files for finding errors and restart named service. As resolv.conf configuration file contains information that determines the operational parameters of the DNS resolver, so modify resolv.conf file using nano /etc/resolv.conf and server ip address.



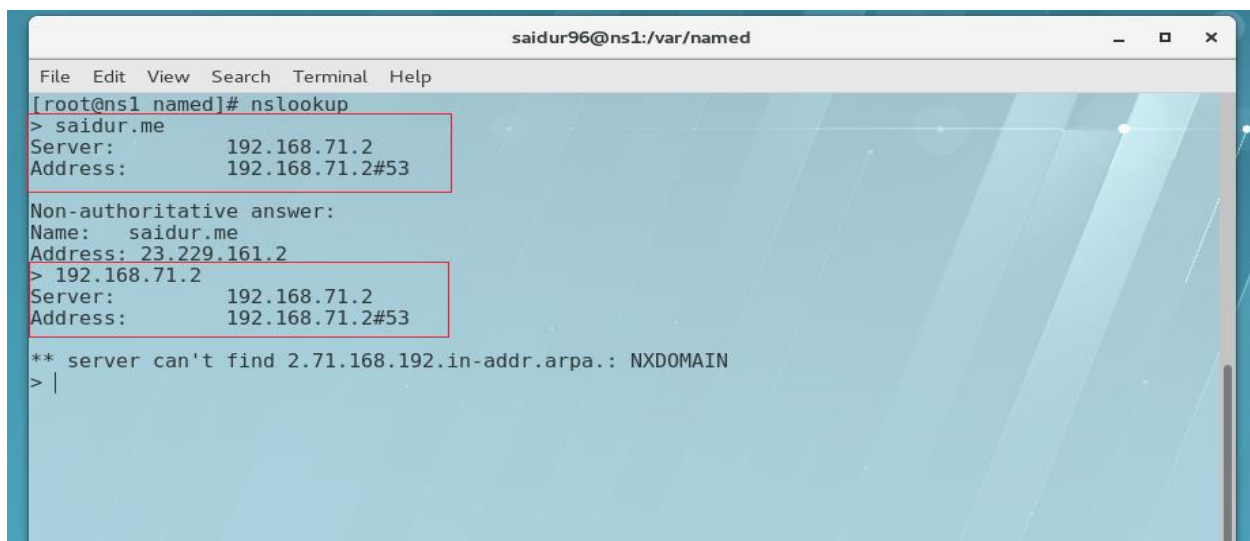
```
saidur96@ns1:/var/named
File Edit View Search Terminal Help
GNU nano 2.3.1 File: db.saidur.me.for Modified
$TTL 1D
@ IN SOA ns1.saidur.me. root.saidur.me. (
                                0      ; serial
                                1D     ; refresh
                                1H     ; retry
                                1W     ; expire
                                3H )   ; minimum

    NS      ns1.saidur.me.
    A       192.168.71.2
ns1 IN A    192.168.72.2
mail IN A   192.168.71.2
saidur.me. IN MX 10 mail.saidur.me.
www  IN     CNAME ns1.saidur.me.
ftp  IN     A      192.168.71.50

^G Get Help  ^O WriteOut  ^R Read File  ^Y Prev Page  ^K Cut Text   ^C Cur Pos
^X Exit      ^J Justify   ^W Where Is   ^V Next Page  ^U UnCut Text ^T To Spell
```

Fig 3.5 : Edit Forward Zone

Now check the server status using nslookup command which is common for both linux and windows.



```
saidur96@ns1:/var/named
File Edit View Search Terminal Help
[root@ns1 named]# nslookup
> saidur.me
Server:          192.168.71.2
Address:         192.168.71.2#53

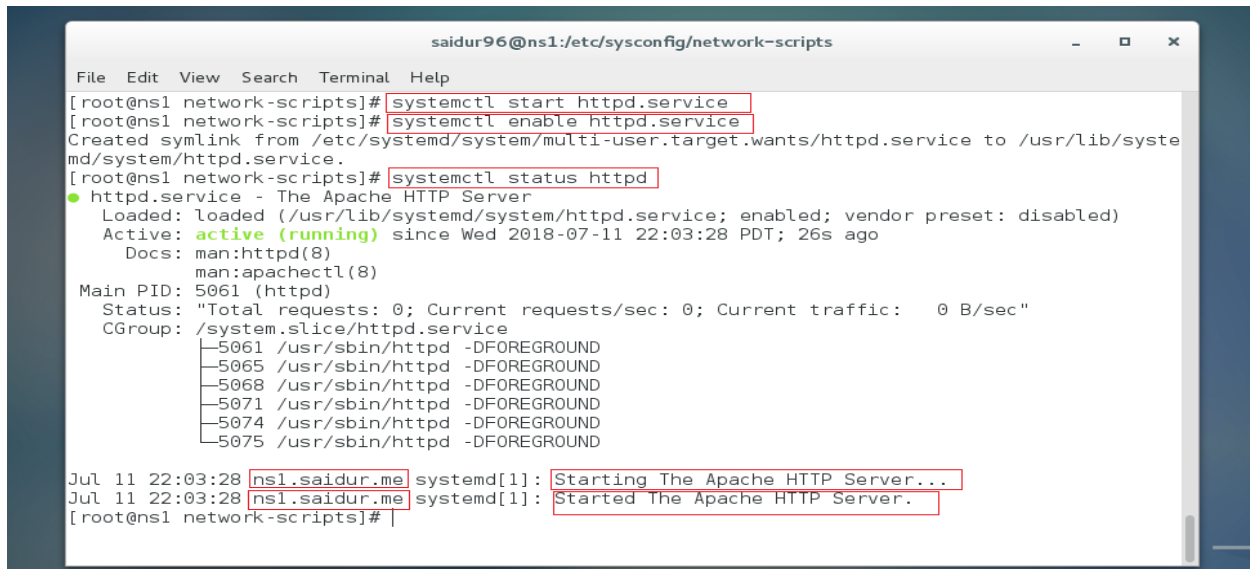
Non-authoritative answer:
Name:   saidur.me
Address: 23.229.161.2
> 192.168.71.2
Server:          192.168.71.2
Address:         192.168.71.2#53

** server can't find 2.71.168.192.in-addr.arpa.: NXDOMAIN
> |
```

Fig 3.6 : Check DNS Server

3.4 Web Server Configuration

I used apache web server for configuring linux web server. First install this using yum install httpd -y command in terminal. Then start and enable httpd service. Before adding it to firewall, we need to check apache server status.

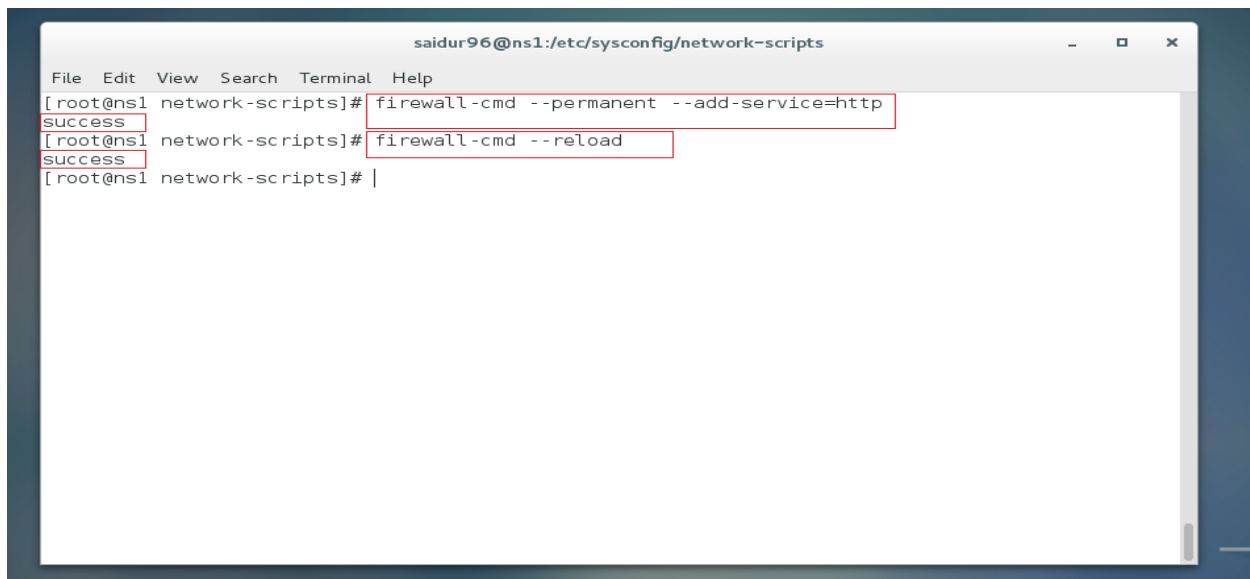


```
saidur96@ns1:/etc/sysconfig/network-scripts
File Edit View Search Terminal Help
[root@ns1 network-scripts]# systemctl start httpd.service
[root@ns1 network-scripts]# systemctl enable httpd.service
Created symlink from /etc/systemd/system/multi-user.target.wants/httpd.service to /usr/lib/systemd/system/httpd.service.
[root@ns1 network-scripts]# systemctl status httpd
● httpd.service - The Apache HTTP Server
   Loaded: loaded (/usr/lib/systemd/system/httpd.service; enabled; vendor preset: disabled)
   Active: active (running) since Wed 2018-07-11 22:03:28 PDT; 26s ago
     Docs: man:httpd(8)
           man:apachectl(8)
  Main PID: 5061 (httpd)
    Status: "Total requests: 0; Current requests/sec: 0; Current traffic:  0 B/sec"
    CGroup: /system.slice/httpd.service
            └─5061 /usr/sbin/httpd -DFOREGROUND
              └─5065 /usr/sbin/httpd -DFOREGROUND
                └─5068 /usr/sbin/httpd -DFOREGROUND
                  └─5071 /usr/sbin/httpd -DFOREGROUND
                    └─5074 /usr/sbin/httpd -DFOREGROUND
                      └─5075 /usr/sbin/httpd -DFOREGROUND

Jul 11 22:03:28 ns1.saidur.me systemd[1]: Starting The Apache HTTP Server...
Jul 11 22:03:28 ns1.saidur.me systemd[1]: Started The Apache HTTP Server.
[root@ns1 network-scripts]#
```

Fig 3.7 : Enable Apache Server

Then add it to firewall and reload firewall using firewall-cmd --permanent --add-service=http and firewall-cmd --reload commands.



```
saidur96@ns1:/etc/sysconfig/network-scripts
File Edit View Search Terminal Help
[root@ns1 network-scripts]# firewall-cmd --permanent --add-service=http
success
[root@ns1 network-scripts]# firewall-cmd --reload
success
[root@ns1 network-scripts]#
```

Fig 3.8 : Add Apache To Firewall

If everything is ok, then edit or paste any website to /var/www/html/ directory. I created a basic index.html page with basic html format.

Then go to browser and type localhost or server ip in the url bar and hit enter.

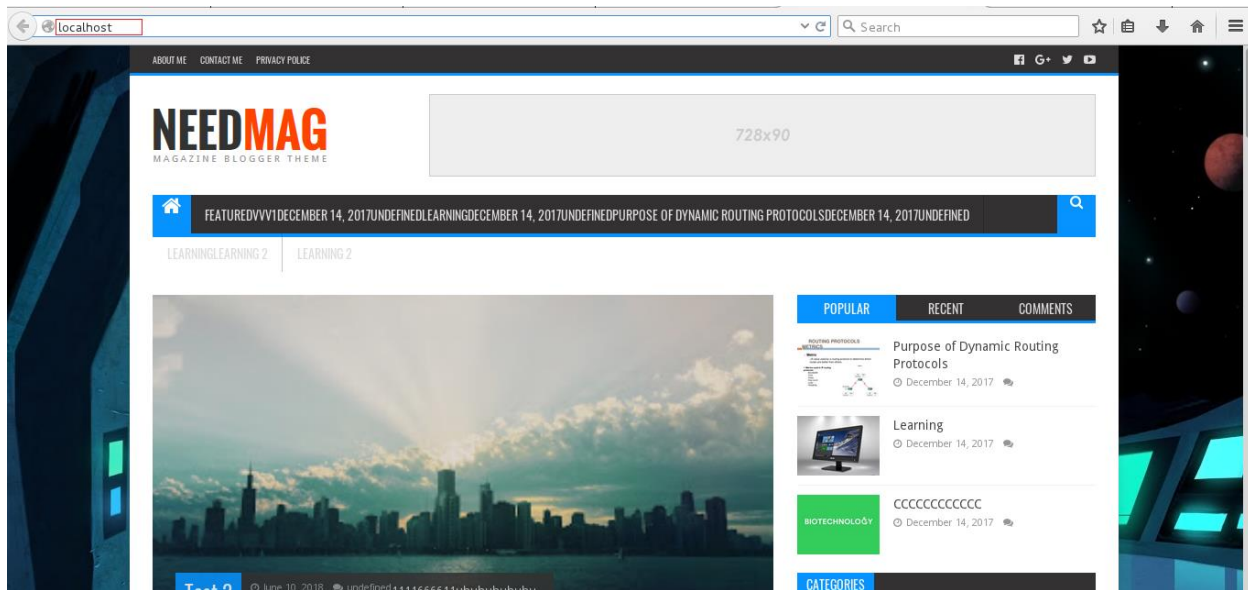
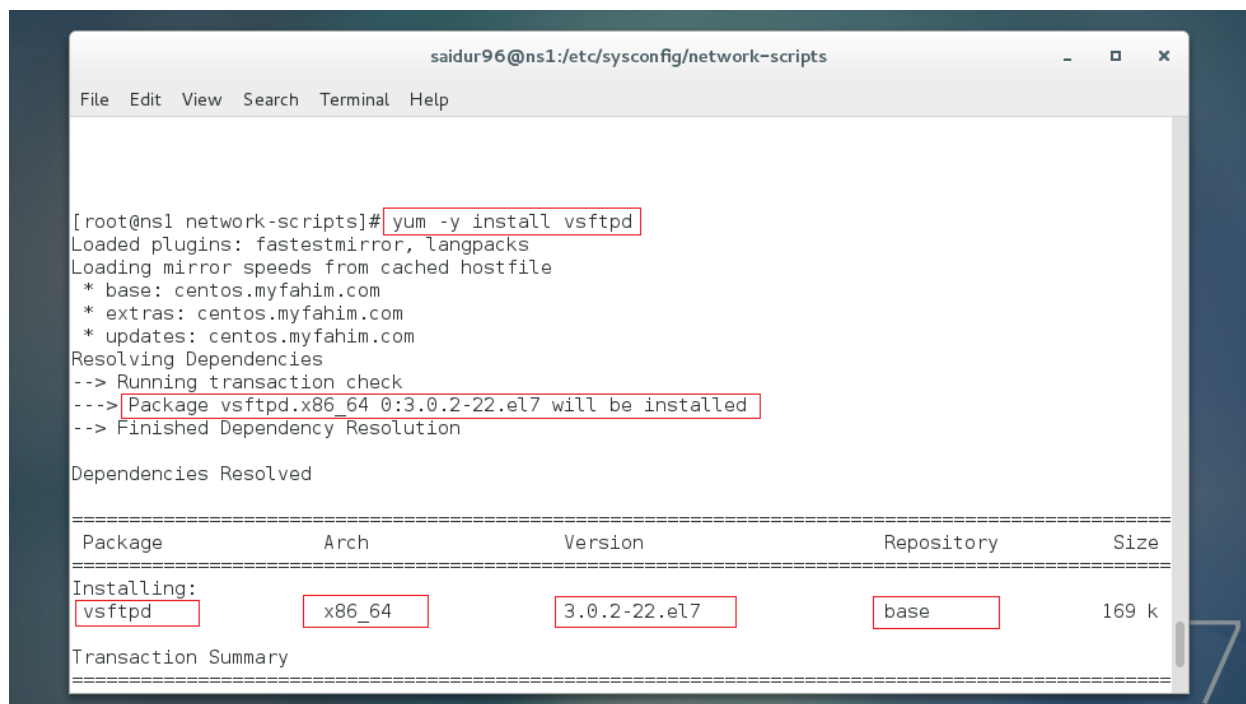


Fig 3.9 : Browse Web Server

As a result simple html page shown in the browser.

3.5 FTP Server Configuration

Using ftp server, we can share our files to other users over network. So now install vsftpd for configure the ftp server. Open terminal and enter `yum -y install vsftpd` and `yum -y install ftp`.



```
saidur96@ns1:/etc/sysconfig/network-scripts

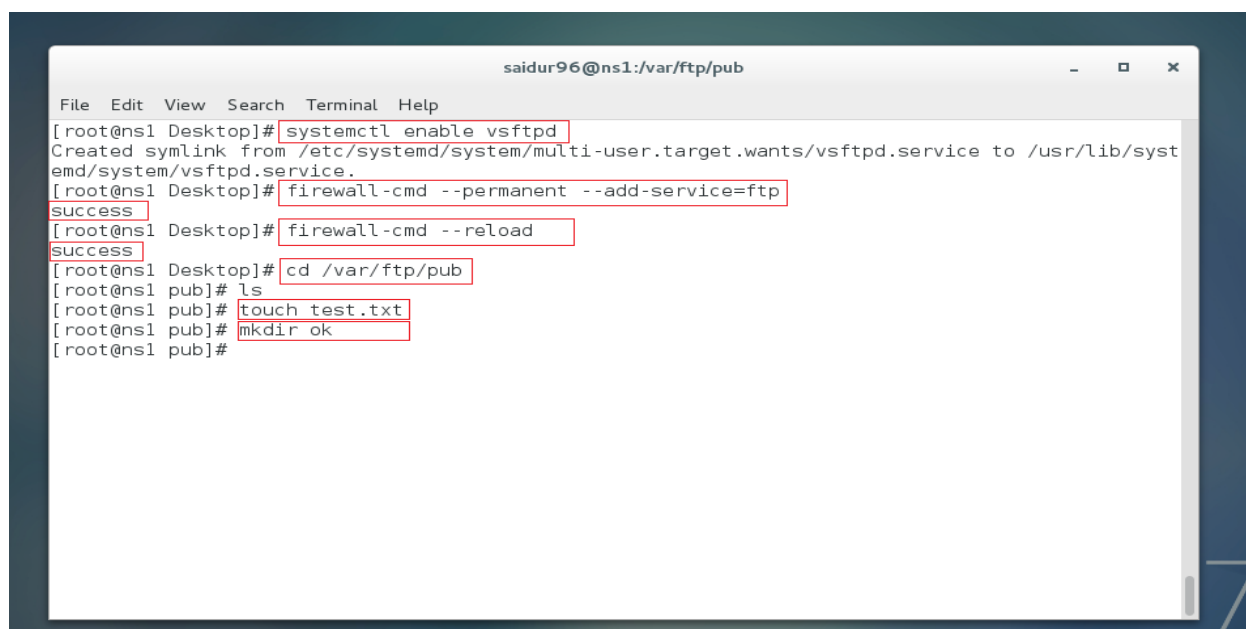
[root@ns1 network-scripts]# yum -y install vsftpd
Loaded plugins: fastestmirror, langpacks
Loading mirror speeds from cached hostfile
* base: centos.myfahim.com
* extras: centos.myfahim.com
* updates: centos.myfahim.com
Resolving Dependencies
--> Running transaction check
--> [Package vsftpd.x86_64 0:3.0.2-22.el7 will be installed]
--> Finished Dependency Resolution

Dependencies Resolved

=====
Package                Arch             Version           Repository        Size
=====
Installing:
vsftpd                 x86_64           3.0.2-22.el7      base              169 k
=====
Transaction Summary
=====
```

Fig 3.10 : Install FTP Dependency

Then vsftpd need to restart and enable service. Again before, add it to the firewall and reload firewall using `firewall-cmd --permanent --add-service=ftp` and `firewall-cmd --reload` commands. Now ftp server is ready.



```
saidur96@ns1:/var/ftp/pub

[root@ns1 Desktop]# systemctl enable vsftpd
Created symlink from /etc/systemd/system/multi-user.target.wants/vsftpd.service to /usr/lib/systemd/system/vsftpd.service.
[root@ns1 Desktop]# firewall-cmd --permanent --add-service=ftp
Success
[root@ns1 Desktop]# firewall-cmd --reload
Success
[root@ns1 Desktop]# cd /var/ftp/pub
[root@ns1 pub]# ls
[root@ns1 pub]# touch test.txt
[root@ns1 pub]# mkdir ok
[root@ns1 pub]#
```

Fig 3.11 : Enable FTP and Reload Firewall

Create some files or folder to /var/ftp/pub/ directory for access. Enter ifconfig in terminal and get ip address. After go to the browser and enter url as ftp://ip_address/ and hit enter. Now clients can share their files to each others.

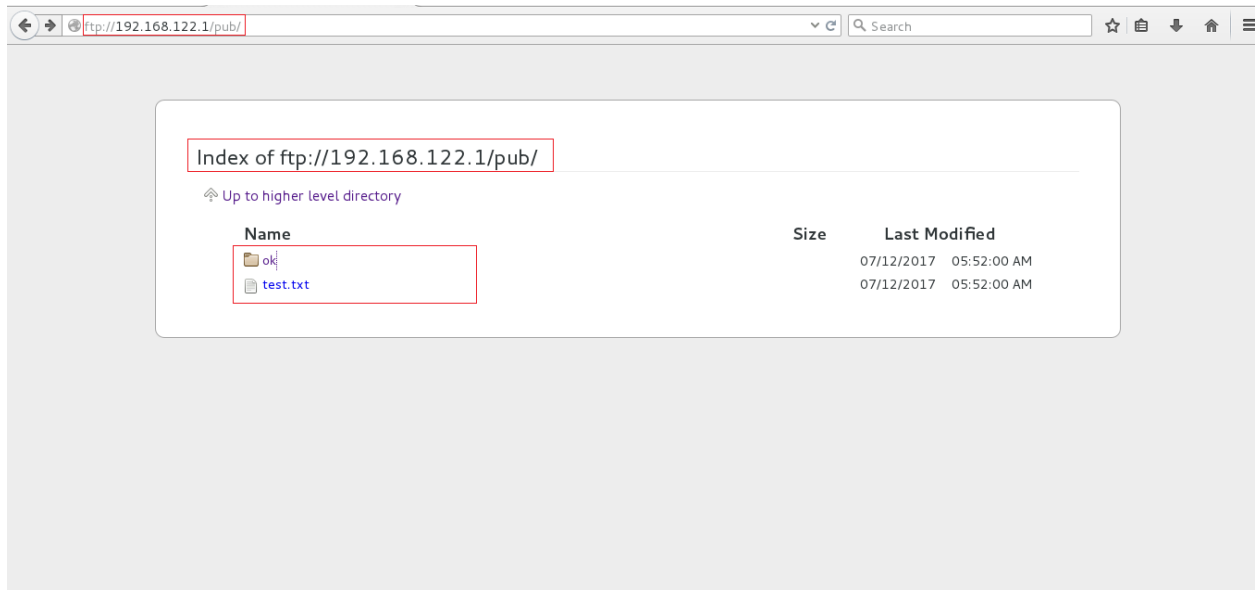


Fig 3.12 : Browse FTP Server

3.6 Challenges

In the time of configuring DNS server of CentOS, I faced different types of challenges. Adding forward and reverse zone was so difficult for me. When I checked named configuration file, it showed some error. Besides, when I enter command for nslookup > server name (saidur.me) then server could not response. Sometimes FTP dependencies show error when installed.

CHAPTER 4

CONCLUSION

4.1 Conclusion

Linux is the best-known and most-used open source operating system. Linux is packaged in a form known as a Linux distribution (or distro for short) for both desktop and server use. Both windows server & linux server needs a network. Because servers exist to provide file, print, directory, web, ftp, security, and other services to clients across a network. Windows server & linux server without a network is like using a telephone that's not plugged into the wall. I introduce to the various services that make up a Windows Server & Linux Server based network and briefly discuss how each one works.

REFERENCES

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2. <https://www.zimbra.com/email-server-software/>
3. <https://www.centos.org/>
4. <https://gist.github.com/fernandoaleman/2172388>
5. <https://superuser.com/>
6. <https://stackoverflow.com/>
7. <https://www.redhat.com/en/technologies/linux-platforms/enterprise-linux/>
8. <https://www.wikipedia.org/>
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10. <https://blogs.technet.microsoft.com>
11. <https://mahedi.me/dns-server-in-centos7/>
12. <http://www.tsoftit.com/tutorial/windows-server-bangla-03/>
13. <https://www.veeam.com/blog/new-features-in-windows-server-2012-r2.html>

APPENDIX

- `ping localhost`
- `ipconfig`
- `ping example.com`
- `nano /etc/selinux/config/`
- `nano /etc/hosts/`
- `rpm -qa|grep bind`
- `nano /etc/named.conf`
- `nano /etc/resolv.conf`
- `yum install httpd -y`
- `firewall-cmd --permanent --add-service=http`
- `firewall-cmd --reload`
- `yum -y install vsftpd`
- `yum -y install ftp`
- `firewall-cmd --permanent --add-service=ftp`
- `firewall-cmd --reload`
- `ping google.com`
- `./install.sh`
- `chkconfig postfix off`
- `service postfix stop`
- `chkconfig sendmail off`
- `service sendmail stop`
- `nano /etc/sysconfig/network-scripts/ifcfg-eth0`
- `nano /etc/sysconfig/network`