



DNS AND FTP LINUX CONFIGURATION

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PROJECT INFORMATION

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CERTIFICATE OF ORIGINALITY

This is to certify that the project report titled "DNS and FTP Linux Configuration" is an original work completed by Abdur Rashid Firdaus, Ahmad Maulana Ibrahim, and Ayunda Pramita Kurnia Hapsari. This project has been submitted in partial fulfillment of their course requirement at the National Institute of Information Technology (NIIT).

The project report has been prepared under our research and experiment, and it is ensured that the work presented in this report is the result of the individual efforts of the aforementioned students. The contents of this report have not been submitted to any other institution or organization for the award of any degree, diploma, or other similar recognition.

Authors acknowledge that the ideas, designs, and implementations presented in this project report are the intellectual properties of the students mentioned above. Any use or reproduction of this work must give proper credit to the original authors.

Authors hereby endorse the authenticity and originality of the work presented in this project report and confirm that it meets the academic standards and requirements set forth by the National Institute of Information Technology (NIIT).

Coordinator:

Mr. Tri Agus Riyadi, S.Kom, M.T

ACKNOWLEDGEMENT

Author would like to acknowledge the completion of the insightful paper titled "DNS and FTP Linux Configuration." This paper comprehensively discusses how to configure DNS and FTP in the Linux software.

The contents of this paper provide a detailed overview of how to configure FTP for file sharing from one operating system to another and DNS to change the hostname from a set of IP to a domain name. The paper serves as a way of understanding Linux server as a subject for this second semester.

Depok, 8 Mei 2024

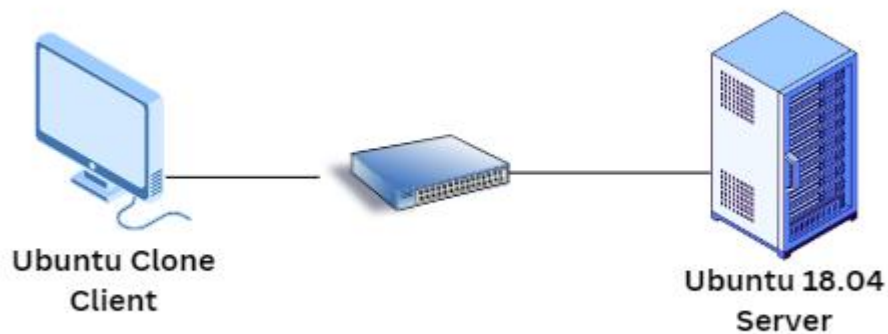
Authors

SYSTEM ANALYSIS

Linux is a powerful, flexible, and community-driven OS that manages both hardware and software resources, making it a go-to system for diverse computing needs. One thing about Linux is the ability to set up servers. This paper aims to explore the configuration of DNS and FTP in Linux Ubuntu 18.04 version. The Linux ubuntu served as the server and a clone of ubuntu as the client enabling two systems to communicate and transfer files to one another.



Virtual Box Environment



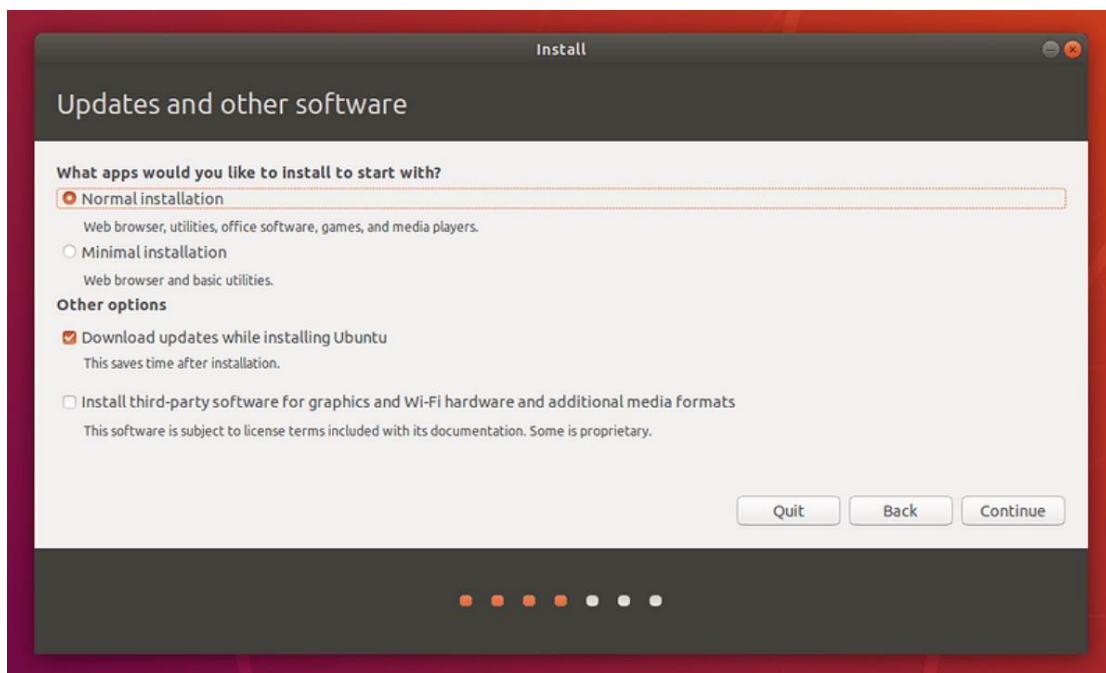
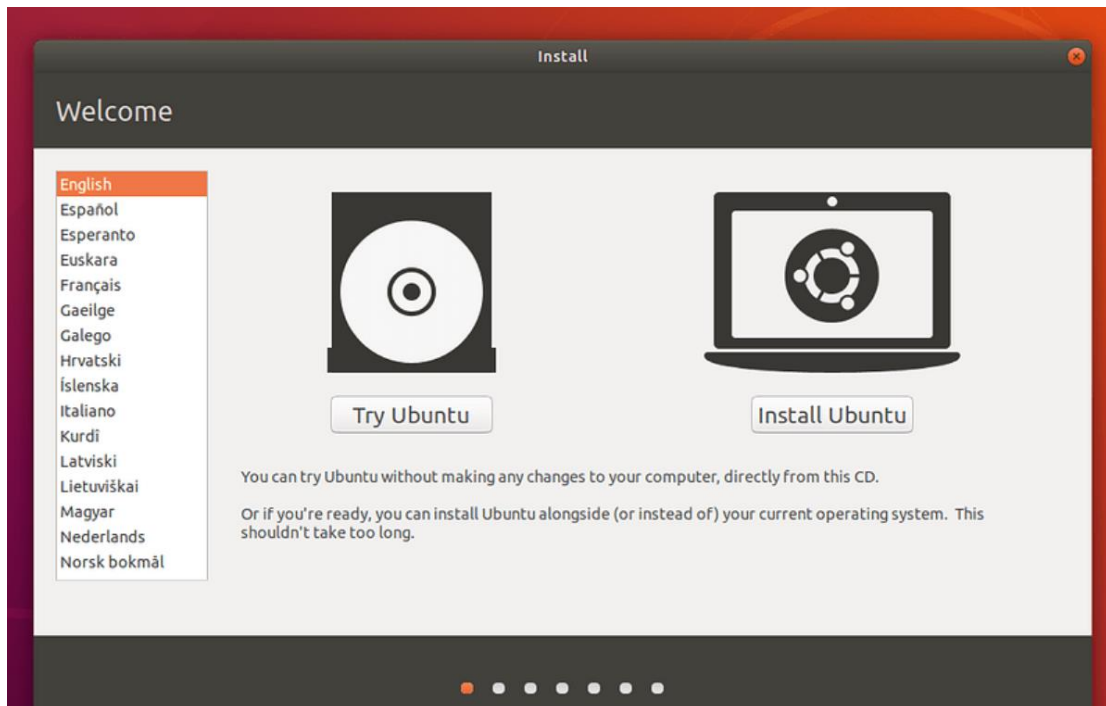
SYSTEM ANALYSIS

Here are the lists of things to note when conducting the project

1. Make sure the devices meet the requirements for the software used in the project
2. Make sure the two operating systems connected in one network by activating the internal network adapter in the VBOX.
3. IP server is 192.168.1.29 and for the client is 192.168.1.30
4. The testing for the FTP and DNS service will both be using Filezilla FTP service
5. If the configuration proved successful, the two systems will have access to each directories making it possible for file transferring. With the DNS set up two systems can connect with domain name rather than typing the IP to activate file transferring.

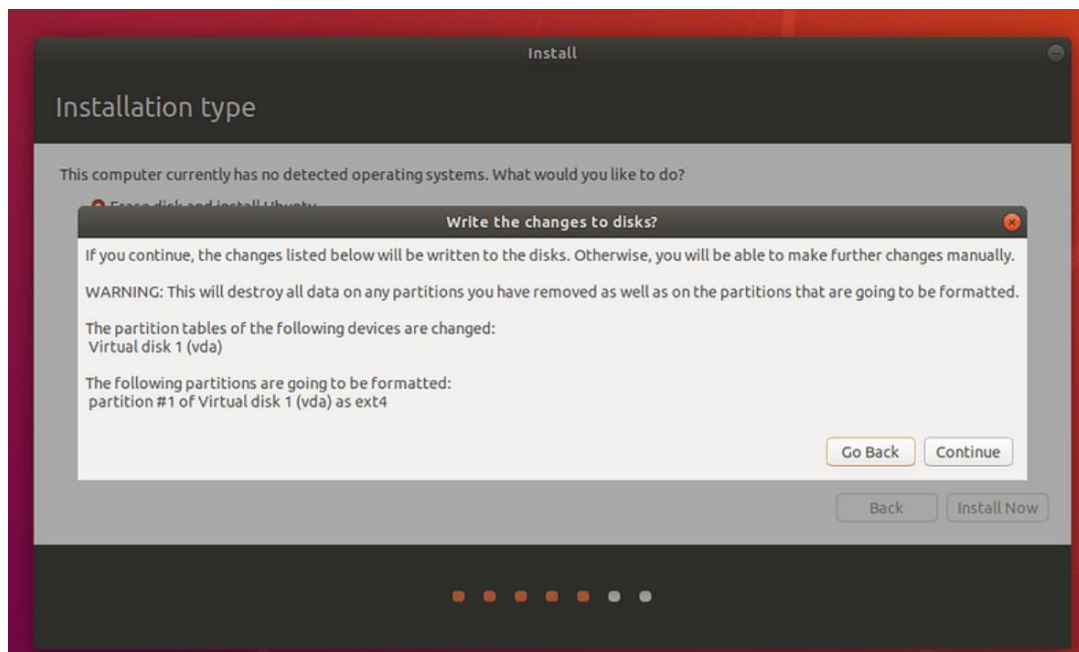
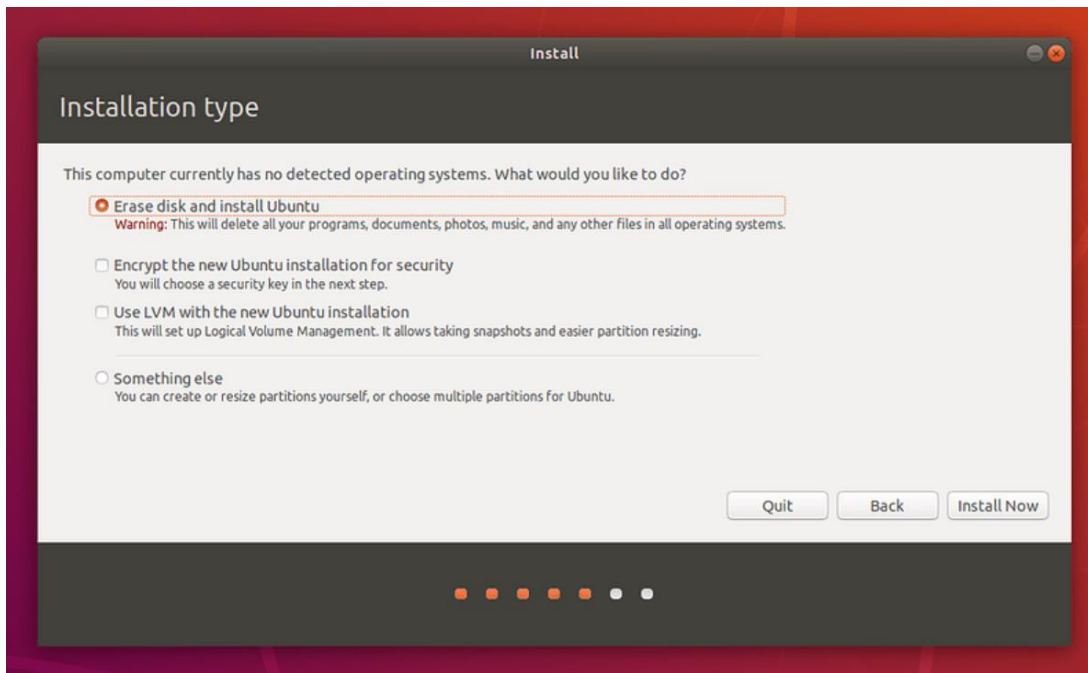
LINUX INSTALLATION

1. Install Ubuntu



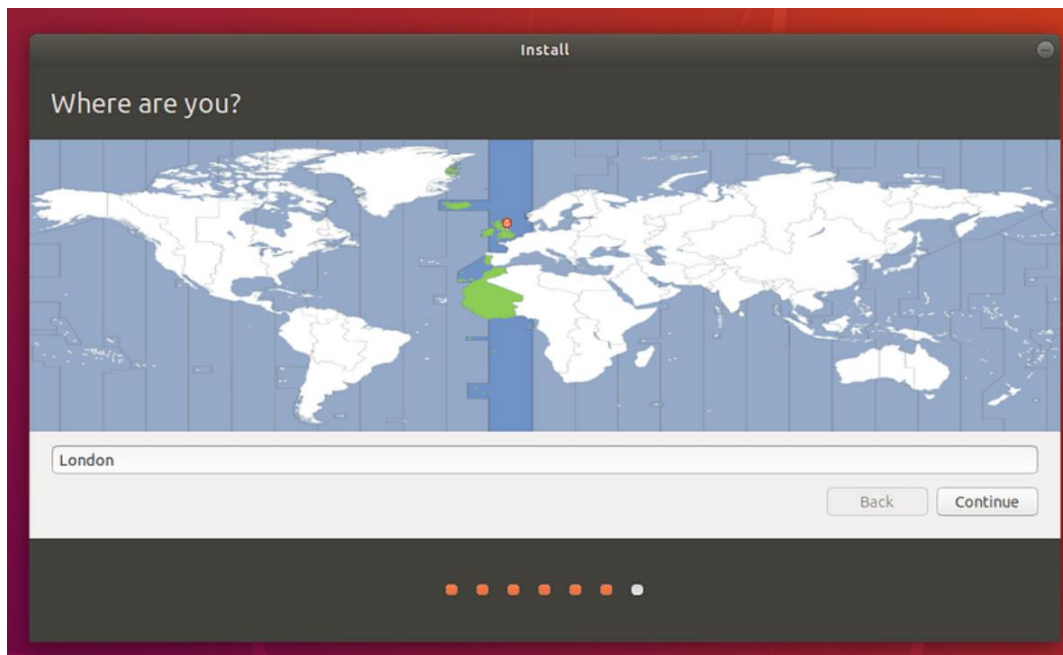
LINUX INSTALLATION

2. Begin Installation

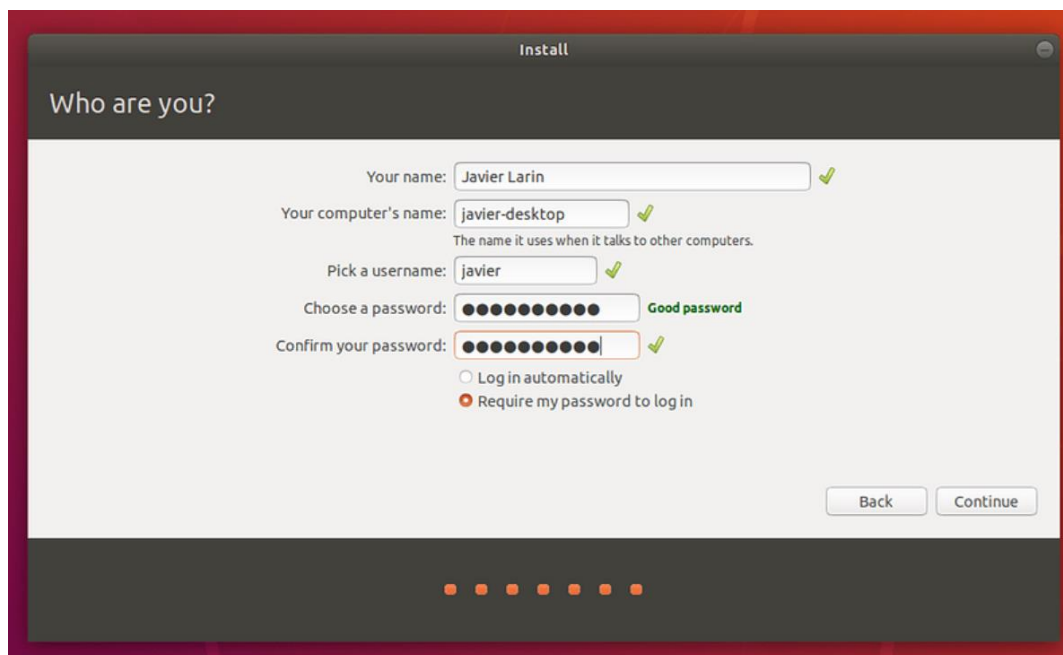


LINUX INSTALLATION

3. Pick your location

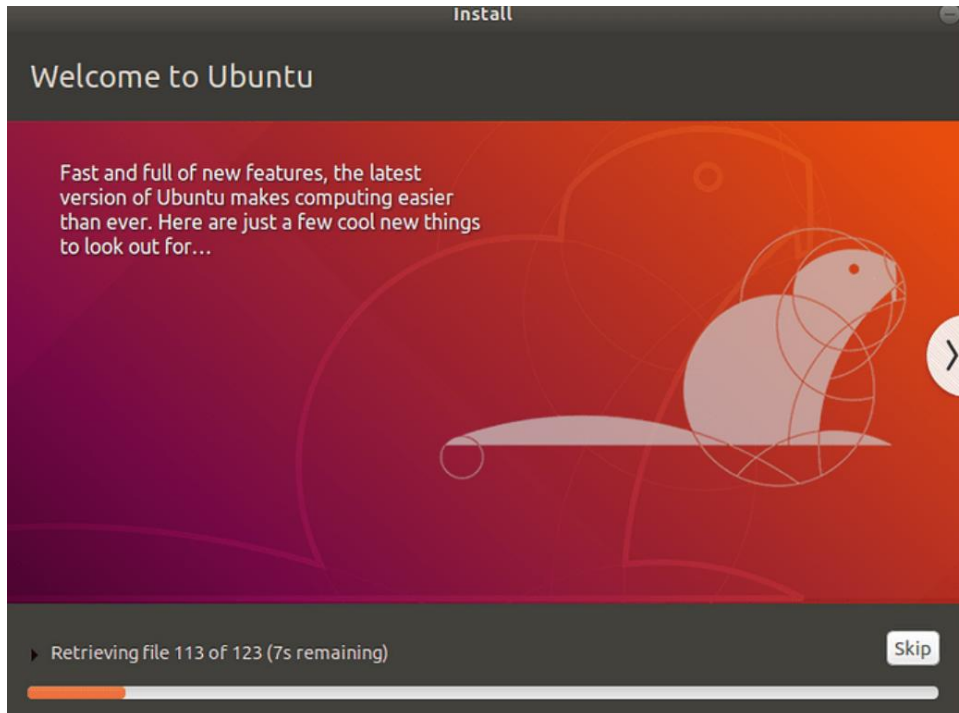


4. Login Preferences

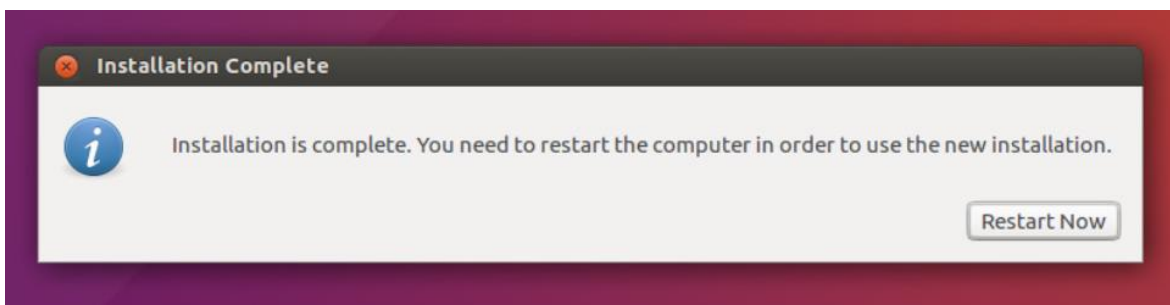


LINUX INSTALLATION

5. Installation Background



6. Installation Complete



DNS CONFIGURATION

1. Installing Bind9 Services

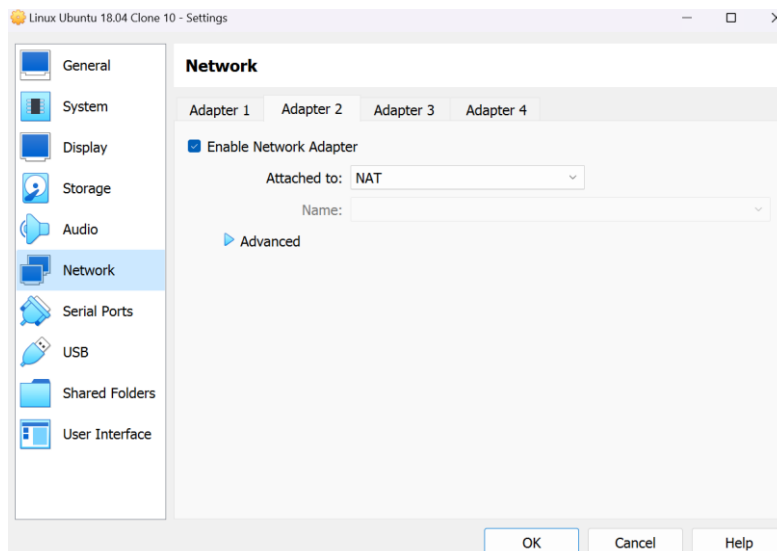
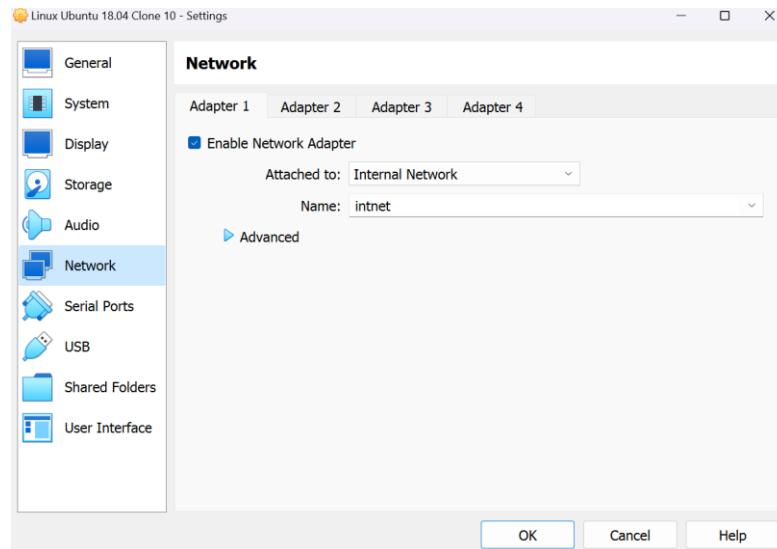
First, open the Linux that will be used in this case Ubuntu 18.04. Then, user can open the terminal to install the Bind9 service on the Linux. And type the command as below

```
root@LinuxUbuntu18:/home/luvs4myth# apt-get install bind9
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
  bind9-host bind9utils dnsutils libbind9-160 libdns1100 libirs160 libisc169
  libisccc160 libisccfg160 liblwres160 net-tools python3-ply
Suggested packages:
  bind9-doc resolvconf rblcheck python-ply-doc
The following NEW packages will be installed:
  bind9 bind9utils net-tools python3-ply
The following packages will be upgraded:
  bind9-host dnsutils libbind9-160 libdns1100 libirs160 libisc169 libisccc160
  libisccfg160 liblwres160
9 upgraded, 4 newly installed, 0 to remove and 314 not upgraded.
Need to get 2,397 kB of archives.
After this operation, 4,369 kB of additional disk space will be used.
Do you want to continue? [Y/n] y
Get:1 http://us.archive.ubuntu.com/ubuntu bionic-updates/main amd64 libirs160 a
md64 1:9.11.3+dfsg-1ubuntu1.18 [19.1 kB]
Get:2 http://us.archive.ubuntu.com/ubuntu bionic-updates/main amd64 bind9-host
amd64 1:9.11.3+dfsg-1ubuntu1.18 [53.5 kB]
2% [2 bind9-host 0 B/53.5 kB 0%]
```

DNS CONFIGURATION

2. Checking All Network Adapter

In order to connect to the internet network, set adapter 1 & 2 to Internal Network & NAT.



DNS CONFIGURATION

3. Configure DNS settings on Linux

To create a DNS server, user need to configure several things as below for setting an IP address and creating DNS name

```
root@LinuxUbuntu18:/home/luvs4myth# nano /etc/network/interfaces
GNU nano 2.9.3 /etc/network/interfaces

# interfaces(5) file used by ifup(8) and ifdown(8)
auto lo
iface lo inet loopback

auto enp0s3
iface enp0s3 inet static
address 192.168.1.29
netmask 255.255.255.0
Wrote 8 lines
^G Get Help  ^O Write Out  ^W Where Is  ^K Cut Text  ^J Justify
^X Exit      ^R Read File  ^_ Replace   ^U Uncut Text ^T To Spell
```

```
root@LinuxUbuntu18:/etc/bind# nano named.conf.default-zones
GNU nano 2.9.3 named.conf.default-zones Modified

// prime the server with knowledge of the root servers
zone "." {
    type hint;
    file "/etc/bind/db.root";
};

// be authoritative for the localhost forward and reverse zones, and for
// broadcast zones as per RFC 1912
zone "group2cs.id" {
    type master;
    file "/etc/bind/db.group2cs.id";
};

zone "29.168.192.in-addr.arpa" {
    type master;
    file "/etc/bind/db.29";
};

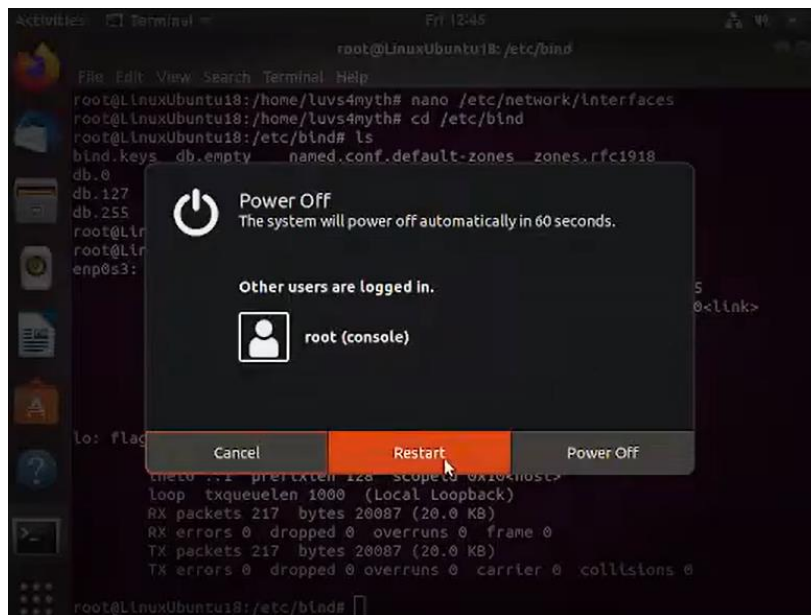
zone "0.in-addr.arpa" {
    type master;
    file "/etc/bind/db.0";
};

^G Get Help  ^O Write Out  ^W Where Is  ^K Cut Text  ^J Justify
^X Exit      ^R Read File  ^_ Replace   ^U Uncut Text ^T To Spell
```

DNS CONFIGURATION

- Restart the devices and check the IP with ipconfig

Once finished, restart Linux, then check whether the IP address has changed or not. If the configuration is successful, the IP address will change as below



```
luvs4myth@LinuxUbuntu18:~$ su
Password:
root@LinuxUbuntu18:/home/luvs4myth# ifconfig
enp0s3: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 192.168.1.25 netmask 255.255.255.0 broadcast 192.168.1.255
    inet6 fe80::a00:27ff:fe14:cf09 prefixlen 64 scopeid 0x20<link>
    ether 08:00:27:14:cf:09 txqueuelen 1000 (Ethernet)
    RX packets 0 bytes 0 (0.0 B)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 79 bytes 8532 (8.5 KB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536
    inet 127.0.0.1 netmask 255.0.0.0
    inet6 ::1 prefixlen 128 scopeid 0x10<host>
    loop txqueuelen 1000 (Local Loopback)
    RX packets 292 bytes 21578 (21.5 KB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 292 bytes 21578 (21.5 KB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

root@LinuxUbuntu18:/home/luvs4myth#
```

DNS CONFIGURATION

5. After restart the Devices, Continue Configure DNS settings on Linux

After finished changing the Linux IP Address, continue with several configurations as below to complete the creation of the DNS Server

```
root@LinuxUbuntu18:/etc/bind# nano db.group2cs.id
GNU nano 2.9.3 db.group2cs.id Modified
;
; BIND data file for local loopback interface
;
$TTL 604800
@      IN      SOA     group2cs.id. root.group2cs.id. (
                        2           ; Serial
                        604800      ; Refresh
                        86400       ; Retry
                        2419200     ; Expire
                        604800 )    ; Negative Cache TTL
;
;
@      IN      NS      group2cs.id.
@      IN      A       192.168.1.29
www    IN      CNAME   group2cs.id
```


```
root@LinuxUbuntu18:/etc/bind# nano db.29
GNU nano 2.9.3 db.29 Modified
;
; BIND reverse data file for local loopback interface
;
$TTL 604800
@      IN      SOA     group2cs.id. root.group2cs.id. (
                        1           ; Serial
                        604800      ; Refresh
                        86400       ; Retry
                        2419200     ; Expire
                        604800 )    ; Negative Cache TTL
;
;
@      IN      NS      group2cs.id.
1      IN      PTR     group2cs.id.
```

```
root@LinuxUbuntu18:/etc/bind# nano /etc/resolv.conf
```


DNS CONFIGURATION

```
GNU nano 2.9.3 /etc/resolv.conf Modified
# This file is managed by man:systemd-resolved(8). Do not edit.
#
# This is a dynamic resolv.conf file for connecting local clients to the
# internal DNS stub resolver of systemd-resolved. This file lists all
# configured search domains.
#
# Run "systemd-resolve --status" to see details about the uplink DNS servers
# currently in use.
#
# Third party programs must not access this file directly, but only through the
# symlink at /etc/resolv.conf. To manage man:resolv.conf(5) in a different way,
# replace this symlink by a static file or a different symlink.
#
# See man:systemd-resolved.service(8) for details about the supported modes of
# operation for /etc/resolv.conf.

nameserver 127.0.0.53
options edns0
nameerver 192.168.1.29
```



DNS SIMULATION

6. Restart your Bind9 and Ping Your DNS Server

After completing the configuration, restart the Bind9 service, and after that user can check whether the DNS server has been successfully changed or not. If successful, the display will look like below

```
root@LinuxUbuntu18:/etc/bind# service bind9 restart
```

```
root@LinuxUbuntu18:/etc/bind# nslookup group2cs.id
Server:      192.168.1.29
Address:     192.168.1.29#53

Name:   group2cs.id
Address: 192.168.1.29
```

7. Ping from client

To check whether the DNS server is running or not, user need to check the ping on the Linux client. If the DNS server is successful, then the Linux client will receive a ping as below.

```
root@LinuxUbuntu18:/home/luvs4myth# ping group2cs.id
PING group2cs.id (192.168.1.29) 56(84) bytes of data.
64 bytes from _gateway (192.168.1.29): icmp_seq=1 ttl=64 time=0.385 ms
64 bytes from _gateway (192.168.1.29): icmp_seq=2 ttl=64 time=0.910 ms
64 bytes from _gateway (192.168.1.29): icmp_seq=3 ttl=64 time=0.631 ms
64 bytes from _gateway (192.168.1.29): icmp_seq=4 ttl=64 time=0.715 ms
64 bytes from _gateway (192.168.1.29): icmp_seq=5 ttl=64 time=0.447 ms
64 bytes from _gateway (192.168.1.29): icmp_seq=6 ttl=64 time=0.852 ms
64 bytes from _gateway (192.168.1.29): icmp_seq=7 ttl=64 time=0.295 ms
64 bytes from _gateway (192.168.1.29): icmp_seq=8 ttl=64 time=0.383 ms
64 bytes from _gateway (192.168.1.29): icmp_seq=9 ttl=64 time=0.278 ms
64 bytes from _gateway (192.168.1.29): icmp_seq=10 ttl=64 time=0.295 ms
64 bytes from _gateway (192.168.1.29): icmp_seq=11 ttl=64 time=0.260 ms
```

FTP CONFIGURATION

1. Installing vsftpd Services

Next, user will create an FTP Server. To start configuring the FTP Server, user needs to open a terminal on Linux and install vsftpd as below

```
root@LinuxUbuntu18:~# apt-get install vsftpd
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following NEW packages will be installed:
  vsftpd
0 upgraded, 1 newly installed, 0 to remove and 314 not upgraded.
Need to get 115 kB of archives.
After this operation, 334 kB of additional disk space will be used.
Get:1 http://us.archive.ubuntu.com/ubuntu bionic/main amd64 vsftpd amd64 3.0.3-9build1 [115 kB]
Fetched 115 kB in 3s (43.1 kB/s)
Preconfiguring packages ...
Selecting previously unselected package vsftpd.
(Reading database ... 132623 files and directories currently installed.)
Preparing to unpack .../vsftpd_3.0.3-9build1_amd64.deb ...
Unpacking vsftpd (3.0.3-9build1) ...
Setting up vsftpd (3.0.3-9build1) ...
Created symlink /etc/systemd/system/multi-user.target.wants/vsftpd.service -> /lib/systemd/system/vsftpd.service.
```

2. Edit file configuration vsftpd.conf

After that, user can edit the vsftpd.conf configuration file. This time, the default configuration will be used.

```
root@LinuxUbuntu18:/etc# cp vsftpd.conf vsftpd.conf.asli
root@LinuxUbuntu18:/etc# nano vsftpd.conf

GNU nano 2.9.3 vsftpd.conf

# Example config file /etc/vsftpd.conf
#
# The default compiled in settings are fairly paranoid. This sample file
# loosens things up a bit, to make the ftp daemon more usable.
# Please see vsftpd.conf.5 for all compiled in defaults.
#
# READ THIS: This example file is NOT an exhaustive list of vsftpd options.
# Please read the vsftpd.conf.5 manual page to get a full idea of vsftpd's
# capabilities.
#
# Run standalone? vsftpd can run either from an inetd or as a standalone
# daemon started from an initscript.
listen=NO
#
# This directive enables listening on IPv6 sockets. By default, listening
# on the IPv6 "any" address (:::) will accept connections from both IPv6
# and IPv4 clients. It is not necessary to listen on *both* IPv4 and IPv6
# sockets. If you want that (perhaps because you want to listen on specific
# addresses) then you must run two copies of vsftpd with two configuration
# files.
listen_ipv6=YES
#
[ Read 155 lines ]
^G Get Help  ^O Write Out  ^W Where Is  ^K Cut Text   ^J Justify
^X Exit      ^R Read File  ^\ Replace   ^U Uncut Text ^T To Spell
```

FTP CONFIGURATION

3. Create an FTP User

Next, an FTP user can be created as below

```
root@LinuxUbuntu18:/etc# adduser group2cs
Adding user `group2cs' ...
Adding new group `group2cs' (1001) ...
Adding new user `group2cs' (1001) with group `group2cs' ...
Creating home directory `/home/group2cs' ...
Copying files from `/etc/skel' ...
Enter new UNIX password:
Retype new UNIX password:
passwd: password updated successfully
Changing the user information for group2cs
Enter the new value, or press ENTER for the default
    Full Name []: Group 2 CS
    Room Number []: 12345
    Work Phone []: 12345
    Home Phone []: 12345
    Other []: 12345
Is the information correct? [Y/n] y
root@LinuxUbuntu18:/etc#
```

4. Set FTP User access permissions

After creating an FTP user, FTP files can be added or edited. But first, user must change the FTP user access permissions as below

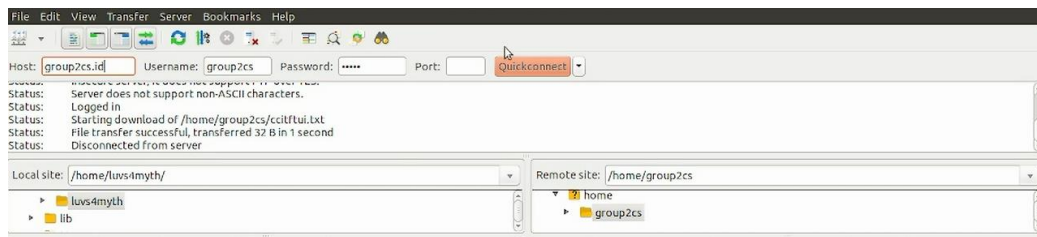
```
root@LinuxUbuntu18:/etc# mkdir /home/group2cs/ftp

root@LinuxUbuntu18:/etc# chown nobody:nogroup /home/group2cs/ftp
root@LinuxUbuntu18:/etc# chmod a-w /home/group2cs/ftp
root@LinuxUbuntu18:/etc# ls -la /home/group2cs/ftp
total 8
dr-xr-xr-x 2 nobody  nogroup  4096 W.  1 17:38 .
drwxr-xr-x 3 group2cs group2cs 4096 W.  1 17:38 ..
root@LinuxUbuntu18:/etc#
```

FTP SIMULATION

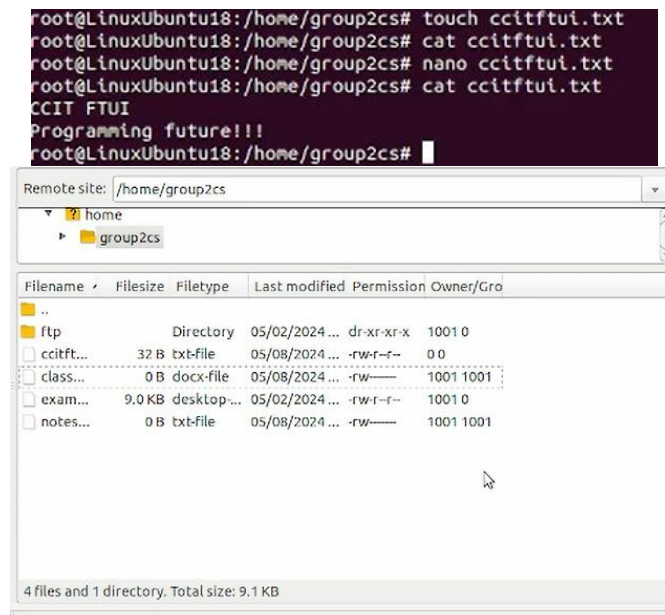
1. Perform an FTP user login in the Filezilla application

After setting up the FTP user, user can log in to your FTP user in the Filezilla application on the Linux client. Because previously a DNS Server has been created, simply fill in the host address with DNS server address.



2. Try uploading and editing files via terminal

Next, try to upload a file to the FTP via the terminal. Then, check the transfer success status in Filezilla as the example below



REQUIREMENTS		
Hardware :		
1. LENOVO Laptop		
Operating System :		
1. Windows 11 64-bit		
2. Linux Ubuntu 18.04		
3. Linux Ubuntu 18.04 (Clone)		
Software :		
1. Oracle Virtual Box		
2. Ms. Word		
3. Google Drive		
PROJECT FILE DETAILS		
No	Filename	Remarks
1	Grup 2 Project 2 FINAL.pdf	Paper File
2	Project 2 Presentation.pkt	Presentation File