I have an assignment in my Data Networking subject. I need to configure a network in linux and implement DNS, DHCP, WebServer, Firewall and backup. I know these concepts theoretically and implemented them in Cisco Packet Tracer as a part of another project. But I don’t know how to implement them in linux. In this project, I need to create a six to seven instances of linux(I am using RedHat in VMware Fusion). I need to configure one DNS server, one DHCP server and one WebServer with firewall. I will give you the assignment details. Please provide me step by step guidelines with proper theory to understand why I am doing that particular step.

DNS

Your project task is to build a DNS implementation for a start-up company in the city of Boston.

00:0c:29:a0:8c:5d

As a Telecommunications Engineer, you’re expected to build a DNS Server for this

company.

Following is what is expected:

Naming Get a domain name of your choice for the start up

Addressing IPv4 and IPv6 address for your organization

DNS Servers Configure name servers to handle queries for your domain

Documentation Document the details for future users

Guidelines-

• Use Bind9 DNS Server

• Create DNS records

• Use IPv4 and IPv6 addresses in your implementation of records

• Create reverse domains in---addr.arpa and ipv6.arpa for the addresses you have

been allocated

• Configure a Master DNS server as well as a Slave DNS server, the Slave DNS should

automatically update with Master DNS server

• Test plan and implementation with examples

DHCP

Your project task is to build a DHCP implementation in your company. As a Telecommunications

Engineer you’re expected to build a DHCP Server. Following is what is expected:

Scope A full range of IP addresses that can be leased from a DHCP server

Address Pool The IP addresses in a scope that are available for lease

Exclusion Range Address in the scope that are excluded from leasing. Excluded addresses are

normally used to give hardware devices, such as routers, a static IP address.

Reservation

A means for assigning a permanent IP address to a client, server, or

hardware device. Reservations are typically made for servers or hardware

devices that need a static IP address

Lease The amount of time that a client may use an IP address before the client

must release the IP address or request another one

Guidelines:

• Use IPv4 and IPv6 addresses in your implementation of DHCP

• Dynamic allocation of network addresses

• Test plan and implementation with examples

Web Server & Firewall

Suppose you must configure a web server in your company, how can this be practically

implemented in your Linux machine? What do you think is the simplest way to secure your network from external networks attacks? Considering that you don't have much funding to buy more security devices, how do you think you can secure your server?

00:0c:29:68:4d:e0

There are different ways by which we can secure a server for the above scenario. For example,

it can be IP filtering, protocol filtering, etc. Make your network as secure as possible.

Guidelines-

• Use only command line tools and packages

• Provide all the commands that you have used and give a brief description in one line

• Use the default web-page of the web server

• Provide the changes you have made to the files/folders for configuring the webserver as

well as the firewall

• Make this page accessible to the clients in your network using a web browser

• Make your server the most secured one in all possible ways

• When you work/design your project, remember that you must give a demo. Plan

Accordingly

Backup

Isn’t it always better to design a robust system? When there is a group of people working on a

server, there is a possibility that the server might crash because of increase in usage or because

of the heavy-duty processes running on the servers. The best way is to systematically create a

backup of every day’s work from the current server to a different server.

Guidelines-

• Automate the process of backing up the data

• The backup file should be zipped and sent to a different server

• Describe briefly about how you backup automatically and how file transfer is made

• Also provide the commands and configurations for sending the zipped file to a

different location

• Mention which protocol(s) you are using to complete this task

• When you work/design your project remember that you must give a demo. Plan

accordingly

Note: You have the liberty to improvise and implement in different ways and with different tools but make sure it meets all the requirements.