# Small Business Network Design with Secure E-commerce server

A COURSE PROJECT REPORT

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# SRM INSTITUTE OF SCIENCE AND TECHNOLOGY

(Under Section 3 of UGC Act, 1956)

## BONAFIDE CERTIFICATE

Certified that this project report " Small Business Network Design with Secure E-commerce server " is the bonafide work of Swarnima Gupta (RA1911028010032), J.V. Rishi (RA1911028010033) and Omkareshwar Rai (RA1911028010034) who carried out the project work under my supervision.


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# CHAPTER – 1

## ABSTRACT


- To make a small business network design.
- The organization hosts e-commerce applications on a server.
- Accessible to users using https and public IP address.
- To design the network with necessary hardware and software components.

# CHAPTER – 2

## REQUIREMENT SPECIFICATION

### Hardware Requirements

1.End user devices - 8 Pc’s.

2.Cables

3.Server (DHCP, DNS, Web, FTP)

4.Switch - 6

### Software Requirements

Operating System : Windows 10

Cisco Packet Tracer

# CHAPTER – 3

## PROJECT SCOPE

A network has to be designed for a small business organization which has 100 users. The organization hosts an e-commerce application on a server which is accessible to internet users using https and with a public IP address.

# CHAPTER – 4

## INTRODUCTION

- The computer network infrastructure is the backbone of the business. All your devices, applications, software, and most of your work is supported by or built upon your computer network.
- To build a computer network for the company, you need to be quite careful as making a computer network run efficiently in a business environment is very different from setting up a home or domestic network.
- As we are dealing with 100 users, we will use LAN as our type.

# CHAPTER – 5

## REQUIREMENT ANALYSIS

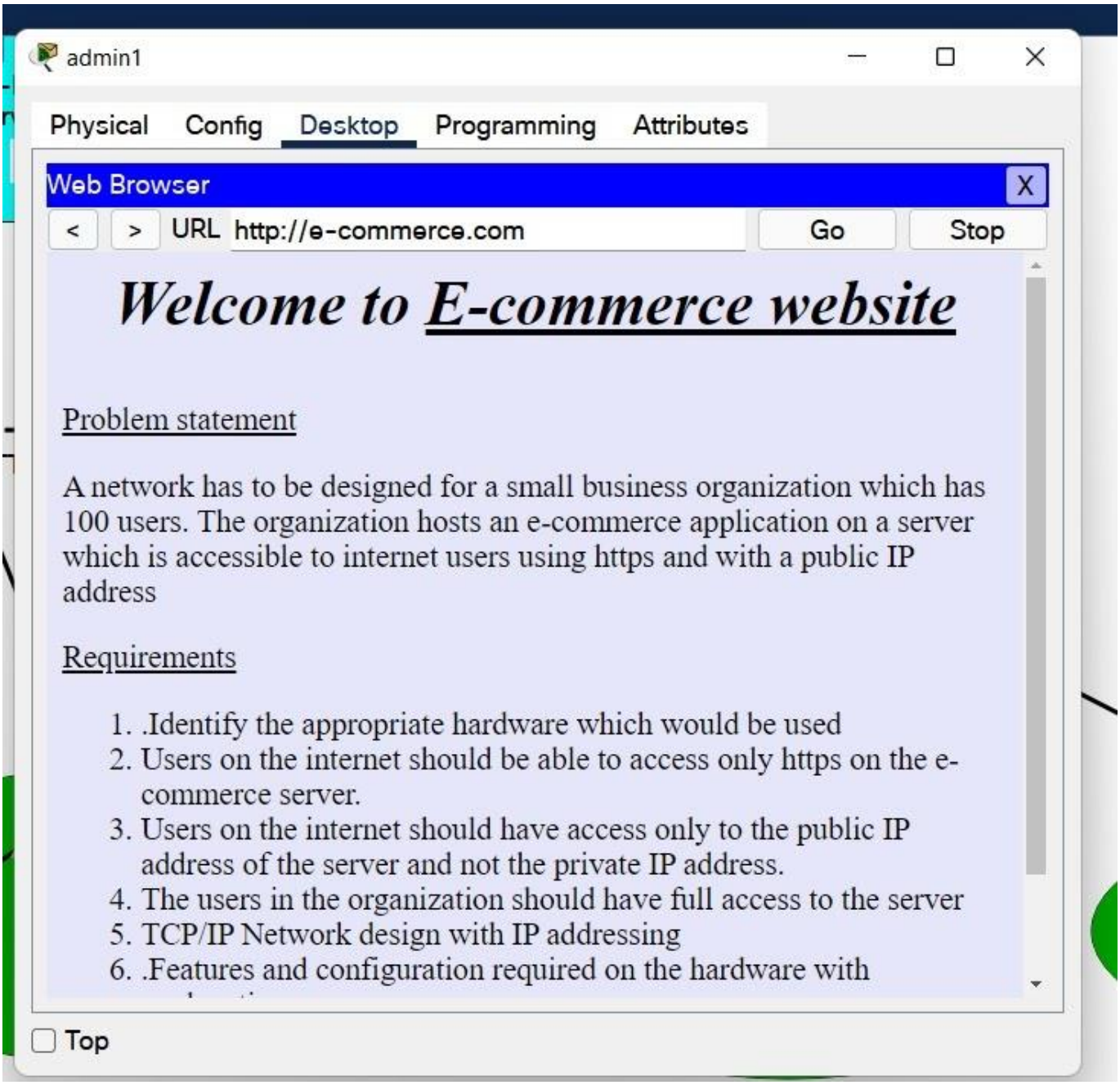
1. Server is a machine which provides services. DHCP server provides the IP addresses service. **DNS server** provides name service. **Web server** provides website hosting service. **FTP server** provides file-transfer (upload/download a file) service. **Gmail server** provides mailing service (2 protocols: SMTP and POP3).
    a. (Downloading occurs when a file is transferred from server to client whereas Uploading occurs when a file is transferred from client to the server.)
2. This is a LAN based network with a web server which acts as a file transfer server.
3. Since the network is hosting only 100 people, there was no need for using routers, modem and other stuff.
4. File upload authorization is given to admins, using username-password pair.

# CHAPTER – 6

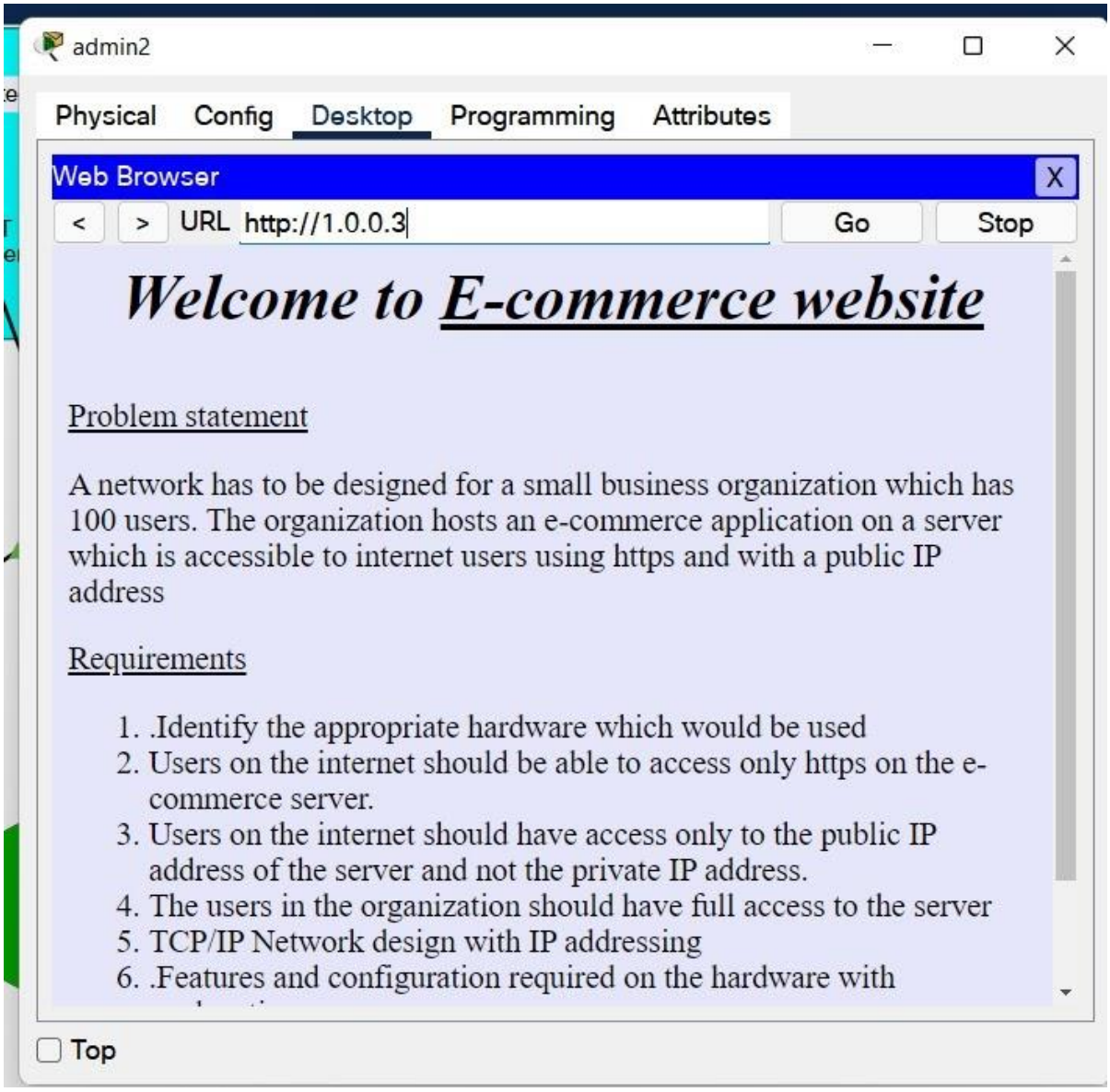
## IMPLEMETATION

1. Cisco Packet Tracer was opened. In that, a connection was made using 4 servers, 6 switches and 8 PCs.
2. IP addresses were assigned to all 4 servers namely: 1.0.0.1, 1.0.0.2, 1.0.0.3 and 1.0.0.4.
3. Started configuring DHCP server first, in static mode with IP address: 1.0.0.1, Subnet Mask: 255.0.0.0, DNS Server: 1.0.0.2. This is the only machine where we assigned IP addresses manually. And it assigned the addresses for other machines itself.
4. DHCP services were turned on, DNS server address was mentioned and then saved.
5. For configuring the 2nd server, select the desired server. In our case, it is a DNS server. Open it and select the DHCP option, and all values will be filled automatically.
6. Do the above 6th step for the rest of the 3 servers.
7. To assign IP addresses to the PCs, open them and select the DHCP option, values will be filled automatically. Now, the infrastructure is ready.

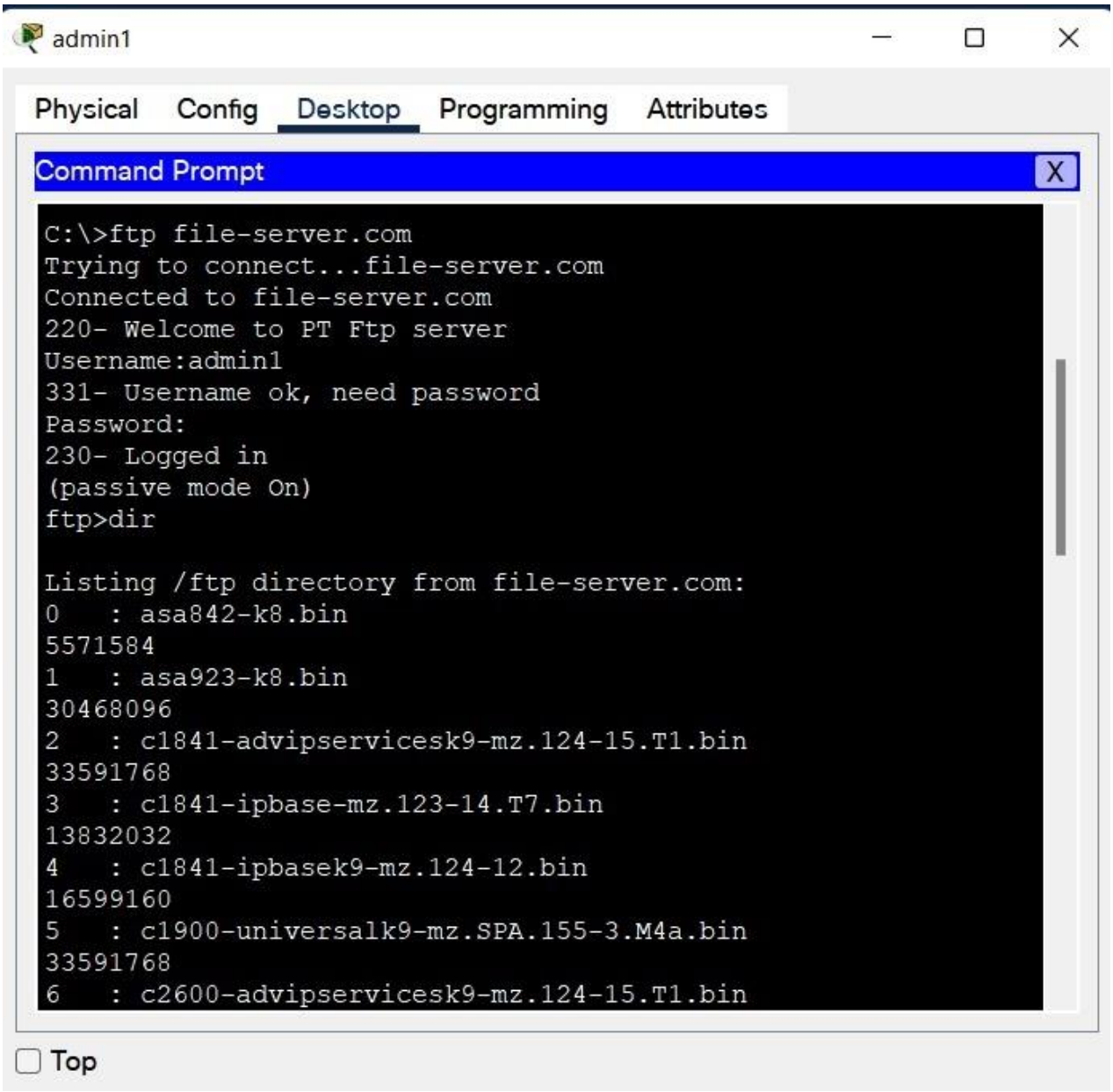
8. Then the Web server was named (e-commerce.com) and FTP server as file-server.com.
9. DNS server was opened. In services, DNS was selected. In that, the name: e-commerce.com with IP address 1.0.0.3 was added. file-server.com with IP address 1.0.0.4 was added. And then DNS service was turned on.
10. Web server was opened. In the services section, click on HTTP, the base file(index.html) was opened and then edited the text to what we want to show in the website.
11. FTP server was opened. In the services section, click on FTP, create a username and password and give all the permissions and save.
12. Now to configure the client, open PC0->Email->add all details. Do the same procedure for other PCs.
13. To see if the connection (web server) is working, go to admin1 PC->Web Browser->type URL “e-commerce.com” and the website will open.

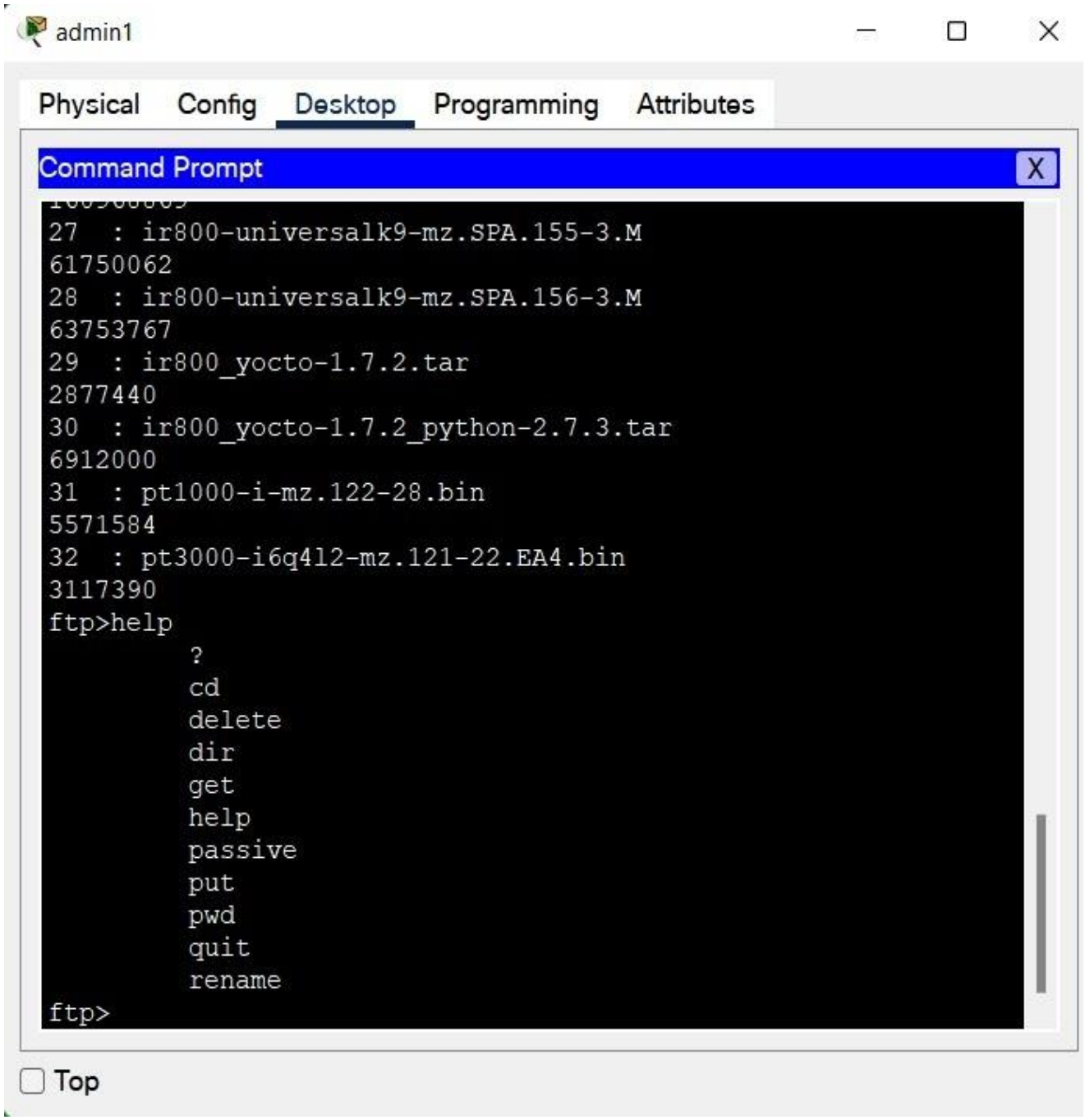

admin1
Physical
Config
Desktop
Programming
Attributes
Web Browser
X
<
>
URL
http://e-commerce.com
Go
Stop
Welcome to E-commerce website
Problem statement
A network has to be designed for a small business organization which has 100 users. The organization hosts an e-commerce application on a server which is accessible to internet users using https and with a public IP address
Requirements
1. .Identify the appropriate hardware which would be used
2. Users on the internet should be able to access only https on the e-commerce server.
3. Users on the internet should have access only to the public IP address of the server and not the private IP address.
4. The users in the organization should have full access to the server
5. TCP/IP Network design with IP addressing
6. .Features and configuration required on the hardware with
Top

Using a public ip address to access the website. Here, http://1.0.0.3 is used.

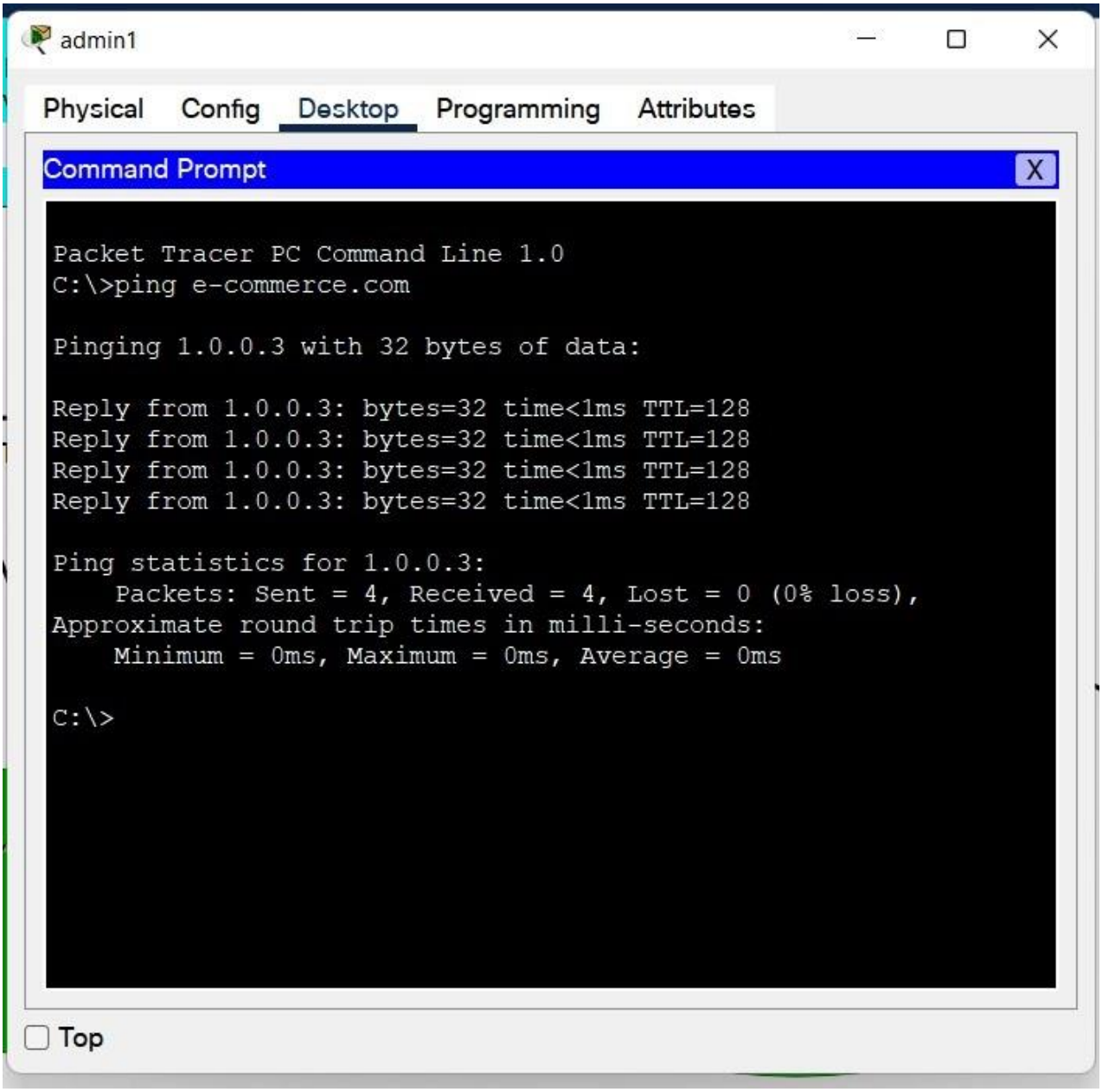


14. To check whether FTP server is working or not, open the command prompt of admin1 PC and type “ftp file-server.com”, give the username and password. When logged in type “dir” to show all the files present in the FTP server.



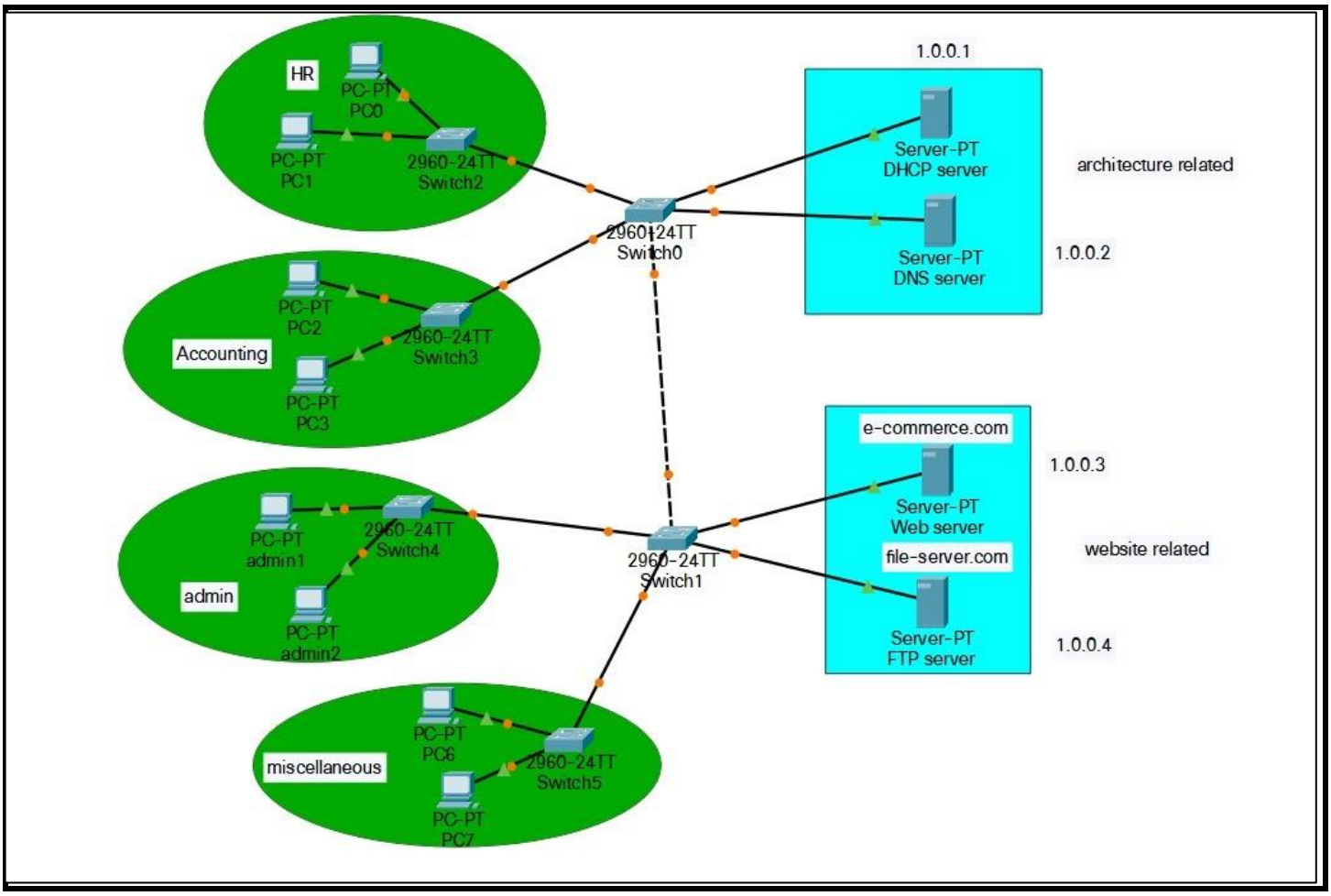

admin1
Physical
Config
Desktop
Programming
Attributes
Command Prompt
X
27 : ir800-universalk9-mz.SPA.155-3.M
61750062
28 : ir800-universalk9-mz.SPA.156-3.M
63753767
29 : ir800_yocto-1.7.2.tar
2877440
30 : ir800_yocto-1.7.2_python-2.7.3.tar
6912000
31 : pt1000-i-mz.122-28.bin
5571584
32 : pt3000-i6q4l2-mz.121-22.EA4.bin
3117390
ftp>help
?
cd
delete
dir
get
help
passive
put
pwd
quit
rename
ftp>
Top

15. To check the connectivity, use the ping command.



# CHAPTER – 7

## ARCHITECTURE/NETWORK DIAGRAM



# CHAPTER – 8

## SOLUTION EXPLAINATION

As the problem statement states that the network will host at most 100 users at a time, the most optimal thing to do here would be to design a LAN network using switches. As the number of devices are relatively low, there is no need for routers.

Allocation of IP addresses attached to the network can be done through a DHCP server. The main purpose of this server would be to give other devices IP addresses automatically. Hence, this would be the only device having static IP address and DNS address.

The next part we need to take care of is the DNS server. This server is used to give the domain name to the webserver and FTP server. To configure this, go to 'IP-Configuration' under 'Desktop' in the server and click on DNCP, doing this would give an IP address to the device. To set domain name to other servers, go to ‘DNS’ under ‘services’ in the server. Add Domain name and Address here and click on add. Before exiting, make sure that the DNS service is ‘ON’.

Now, for the website related servers. This would be divided into two different servers, the webserver hosting the static files and website details, and the FTP server containing the files. The FTP server is only accessible to organisation members with the authority to edit the files. This is done using 'username-password' pair. As the DNS server is giving the server a domain name, the webserver is accessible using both the domain name and the IP address.

To configure the webserver, go to 'IP-Configuration' under 'Desktop' in the server and click on DHCP. Now, go to ‘services’ in the server and click on HTTP. Here, all the html files are present. Edit 'index.html' as required, import html files using the 'import' function.

To configure the users for FTP server, go to 'IP-Configuration' under 'Desktop' in the server and click on DHCP. Now, go to ‘services’ in in the server and select FTP, here enable services, and input the username-password pair, and select the access level, finally click on 'Add' to do the user.

Now that the servers are configured, connect all the servers’ using switches and copper straight-through cables. Add 'end-user' devices as needed and connect it to switch using copper straight-through cables. If there is a need to connect switches to each other, user copper cross-over cables. Finally, to allot IP addresses to these

devices, go to IP-Configuration under Desktop in the corresponding devices and click on DHCP.

One thing to note here would be that the IP address allotted is according to the DHCP request sequence, i.e., the first one to make a request would get the IP address which sequels the DHCP servers IP address.

# CHAPTER – 9

## CONCLUSION AND FUTURE WORKS

So, this project was proposed to provide secure E-commerce website and the capacity of this was of 100 users. For this project there were few requirements like switches, servers and PCs/laptops have been used. For assigning the IP addresses we can use DHCP server which will automatically assign the IP addresses and gateways. Also, for accessing the files in the FTP server, a username-password pair is needed for authentication purpose. So, in the future scope there may be some modifications made such that login into the pcs may be easily done.

# CHAPTER – 10

## REFERENCES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***LE FINA***