



Green University of Bangladesh

*Department of Computer Science and Engineering (CSE)
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Banking Networking Application using Cisco Packet Tracer

*Course Title: Computer Networking Lab
Course Code: CSE 312
Section: 203D1*

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<u>Lab Project Status</u>	
Marks:	Signature:
Comments:	Date:

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Chapter 1

Introduction

1.1 Overview

An ideal Bank Networking system will be fully network base and easy with friendly user interface. The idea of making a Banking system for make reliable system for service provider and also for customers. In this networking system are used by all banking users can use by shared their data very easily. So that every user use to take about Network Structure Security of Banking System instantly this way anywhere.

1.2 Motivation

I decided to choose this project:

- I am interested in the field of computer networking and security
- I have experience with Cisco devices and networking technologies.
- I believe that this project will be a valuable learning experience for me.
- I am confident that I can successfully complete this project.

I am excited to be a part of this project and I look forward to the challenges and opportunities that it will present. I am confident that I can make a significant contribution to the project and that I will learn a great deal from the experience.

In addition to the reasons mentioned above, I also chose this project because I believe that it is important to help protect people's financial information. Banking systems are a prime target for cyber attacks, and I want to do my part to help make them more secure. I believe that this project will make a real difference in the lives of people who use banking services.

1.3 Problem Definition

1.3.1 Problem Statement

The existing banking networking systems often face challenges in terms of efficiency and security. Some individuals and communities still face barriers to accessing banking services due to geographical constraints, and lack of physical infrastructure. And advanced banking networking system that improves the efficiency, and scalability of a banking system.

1.3.2 Complex Engineering Problem

The following Table 1.1 must be completed according to your above discussion in detail. The column on the right side should be filled only on the attributes you have chosen to be touched by your own project.

Table 1.1: Summary of the attributes touched by the mentioned projects

Name of the P Attributes	Explain how to address
P1: Depth of knowledge required	In-depth knowledge regarding existing languages, software tools, applications, and coding is required.
P2: Range of conflicting requirements	No
P3: Depth of analysis required	Analysis of Screen Controlling systems of Literature and in context to the applications, along with other interactions.
P4: Familiarity of issues	No
P5: Extent of applicable codes	No
P6: Extent of stakeholder involvement and conflicting requirements	Extensive thinking of the system to the users, as well as to the developers are required.
P7: Interdependence	No

1.4 Design Goals/Objectives

- To design a network infrastructure for the banking system, including routers, switches, servers, and client devices.
- To implement strong security measures to protect sensitive banking data and ensure secure communication between different network segments.
- To implement network monitoring and management tools to monitor network performance
- To implement appropriate controls and security measures to meet regulatory requirements.

1.5 Application

- Computer
- Cisco Packet Tracer.

Chapter 2

Design/Development/Implementation of the Project

2.1 Introduction

The Cisco project aims to implement an advanced banking networking system that addresses the challenges faced by traditional banking systems in terms of efficiency, security, scalability, accessibility, and compliance. The project begins with upgrading the network infrastructure of the banking institution.

2.2 Project Details

The banking network system project aims to design and simulate a secure and efficient network infrastructure using Cisco Packet Tracer for a banking network.

Project Features:

1. Reliable System for user
2. Secure Connectivity
3. Centralized Data Management
4. Strong Security
5. Secure Wireless Connectivity
6. Network Monitoring

2.3 Configurations

The screenshot shows a window titled 'p1' with tabs for Physical, Config, Desktop, Programming, and Attributes. The 'Config' tab is active, displaying the 'IP Configuration' settings for the 'FastEthernet0' interface. The 'IP Configuration' section has two radio buttons: 'DHCP' (unselected) and 'Static' (selected). Below these are four text fields: 'IPv4 Address' (192.168.2.3), 'Subnet Mask' (255.255.255.0), 'Default Gateway' (192.168.2.1), and 'DNS Server' (1.0.0.2). The 'IPv6 Configuration' section has two radio buttons: 'Automatic' (unselected) and 'Static' (selected). Below these are four text fields: 'IPv6 Address' (empty), 'Link Local Address' (FE80::230:F2FF:FEB8:53B0), 'Default Gateway' (empty), and 'DNS Server' (empty). The '802.1X' section has a checkbox 'Use 802.1X Security' (unchecked), a dropdown menu 'Authentication' (MD5), and two text fields for 'Username' and 'Password' (both empty). A 'Top' button is at the bottom left.

Section	Option	Value
IP Configuration	DHCP	<input type="radio"/>
	Static	<input checked="" type="radio"/>
	IPv4 Address	192.168.2.3
	Subnet Mask	255.255.255.0
IPv6 Configuration	Automatic	<input type="radio"/>
	Static	<input checked="" type="radio"/>
	IPv6 Address	
	Link Local Address	FE80::230:F2FF:FEB8:53B0
802.1X	Use 802.1X Security	<input type="checkbox"/>
	Authentication	MD5
	Username	
	Password	

Figure 2.1: PC IP configuration

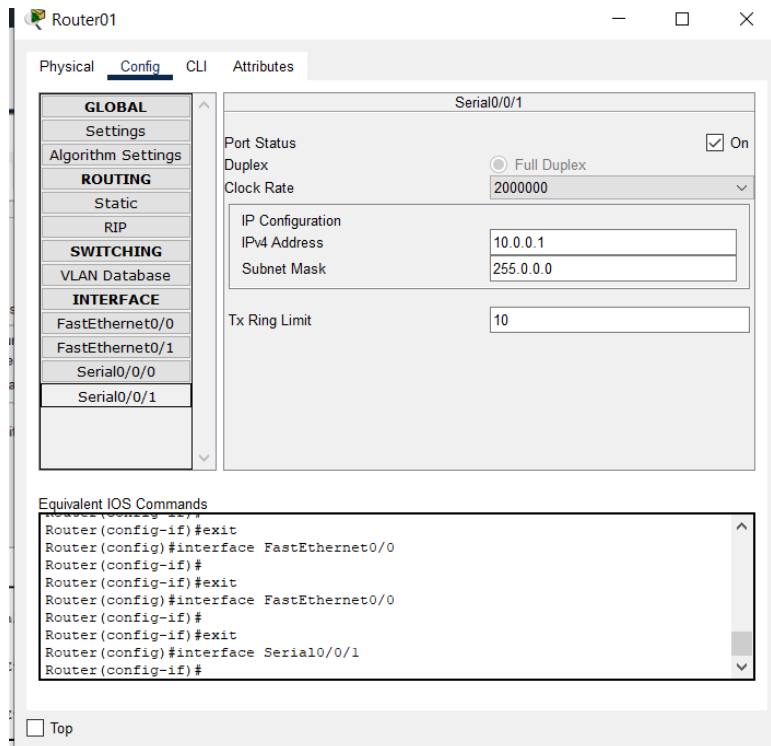


Figure 2.2: Router Serial Port configuration

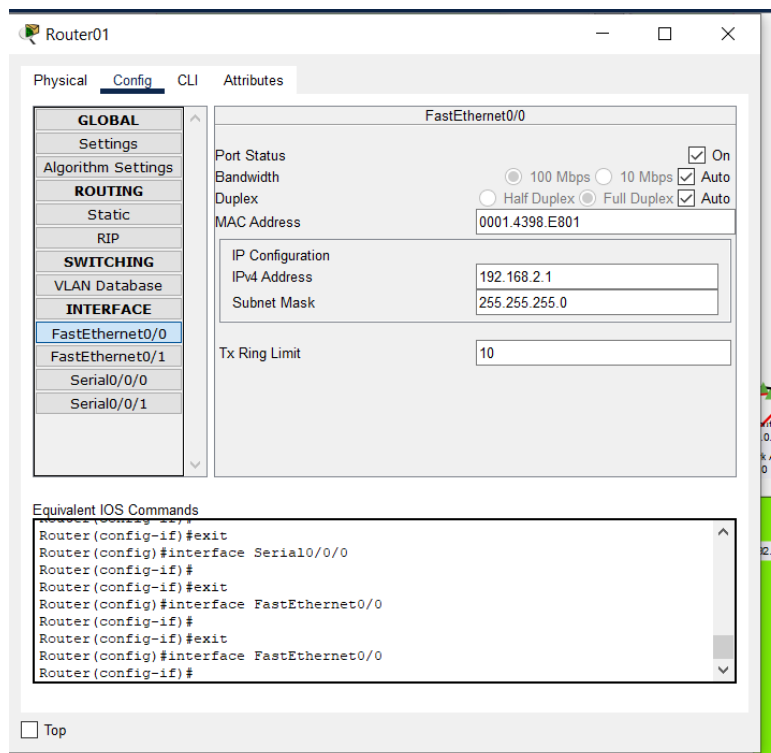


Figure 2.3: Router FastEthernet configuration

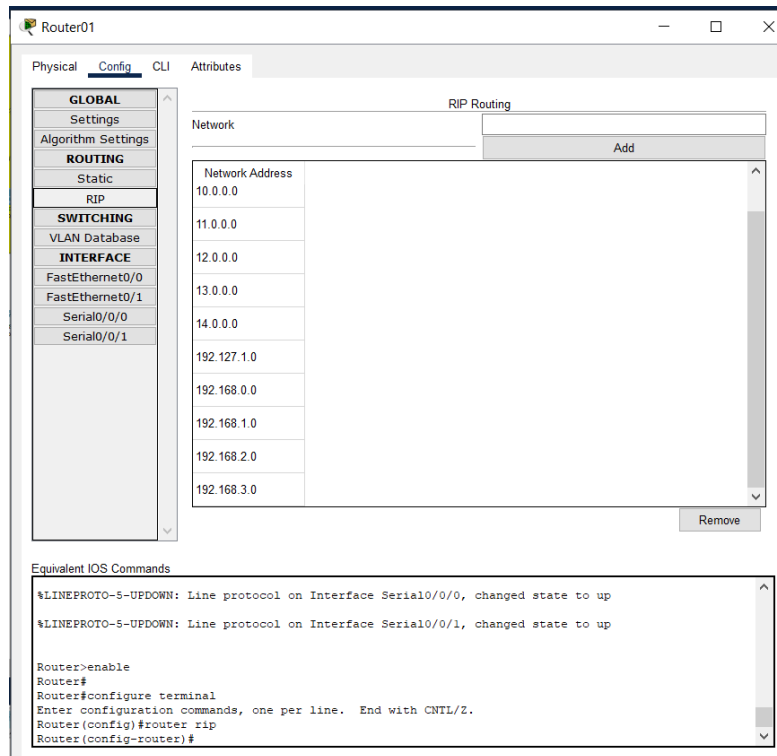


Figure 2.4: Dynamic Routes Configuration by RIP Protocol

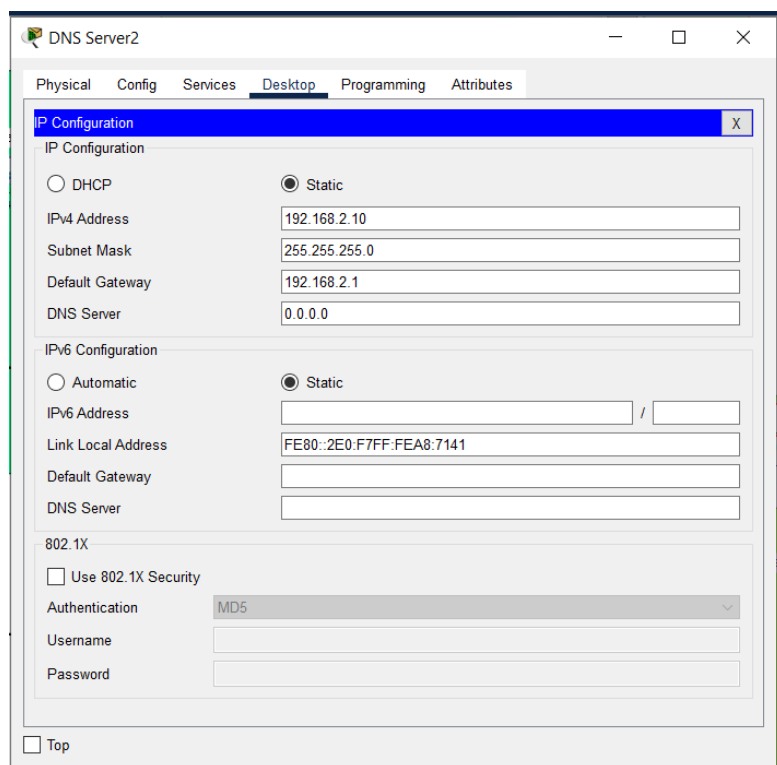
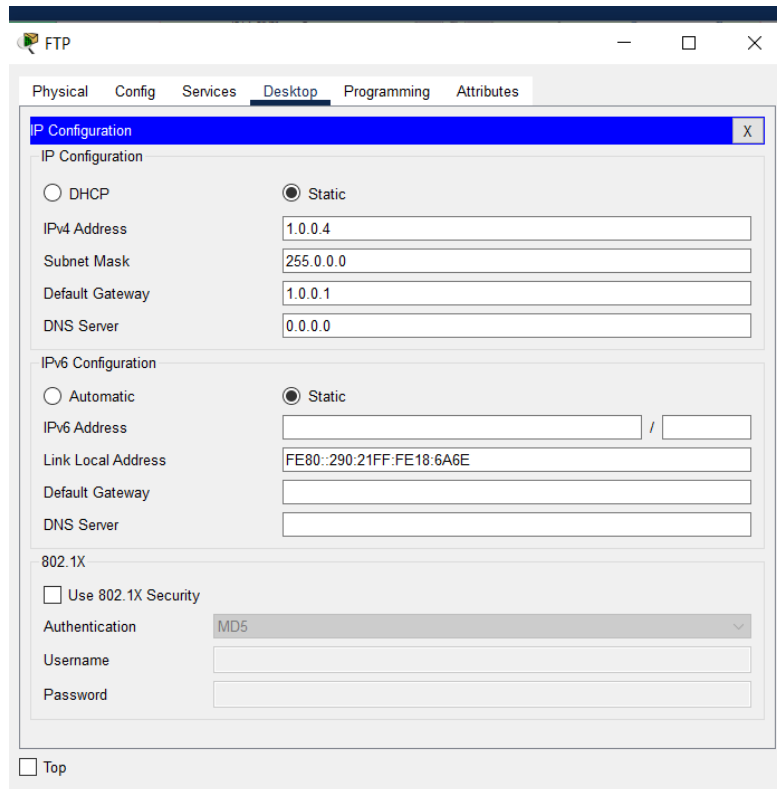


Figure 2.5: DNS IP configuration



The image shows a window titled "FTP" with a menu bar containing "Physical", "Config", "Services", "Desktop", "Programming", and "Attributes". The "Desktop" tab is selected, and a sub-tab "IP Configuration" is active. The window contains three main sections: IP Configuration, IPv6 Configuration, and 802.1X.

IP Configuration:

- ☐ DHCP
- ☒ Static
- IPv4 Address: 1.0.0.4
- Subnet Mask: 255.0.0.0
- Default Gateway: 1.0.0.1
- DNS Server: 0.0.0.0

IPv6 Configuration:

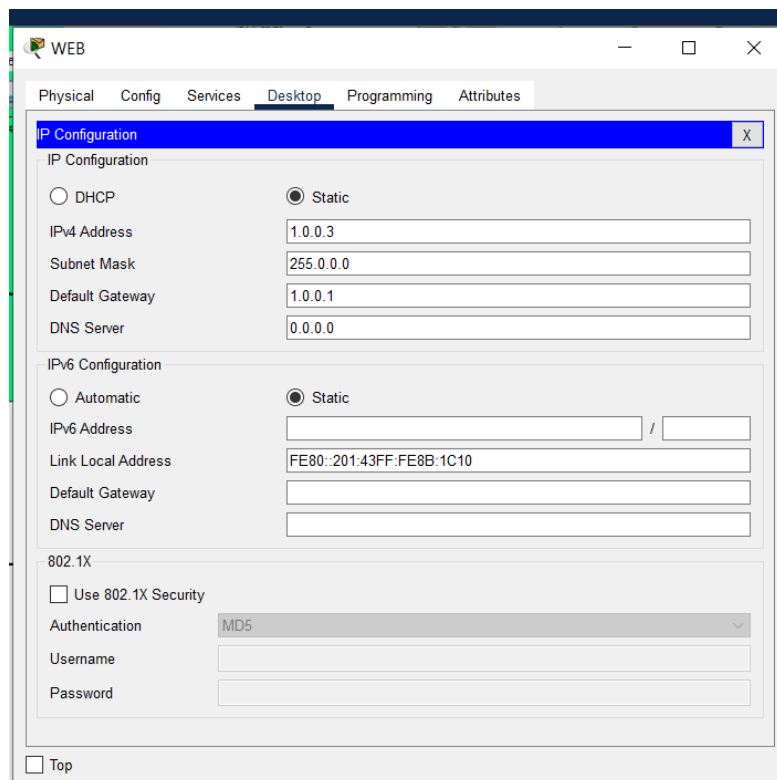
- ☐ Automatic
- ☒ Static
- IPv6 Address: [empty] / [empty]
- Link Local Address: FE80::290:21FF:FE18:6A6E
- Default Gateway: [empty]
- DNS Server: [empty]

802.1X:

- ☐ Use 802.1X Security
- Authentication: MD5
- Username: [empty]
- Password: [empty]

At the bottom left, there is a "Top" button.

Figure 2.6: FTP IP configuration



The image shows a window titled "WEB" with a menu bar containing "Physical", "Config", "Services", "Desktop", "Programming", and "Attributes". The "Desktop" tab is selected, and a sub-tab "IP Configuration" is active. The window contains three main sections: IP Configuration, IPv6 Configuration, and 802.1X.

IP Configuration:

- ☐ DHCP
- ☒ Static
- IPv4 Address: 1.0.0.3
- Subnet Mask: 255.0.0.0
- Default Gateway: 1.0.0.1
- DNS Server: 0.0.0.0

IPv6 Configuration:

- ☐ Automatic
- ☒ Static
- IPv6 Address: [empty] / [empty]
- Link Local Address: FE80::201:43FF:FE8B:1C10
- Default Gateway: [empty]
- DNS Server: [empty]

802.1X:

- ☐ Use 802.1X Security
- Authentication: MD5
- Username: [empty]
- Password: [empty]

At the bottom left, there is a "Top" button.

Figure 2.7: Web IP configuration

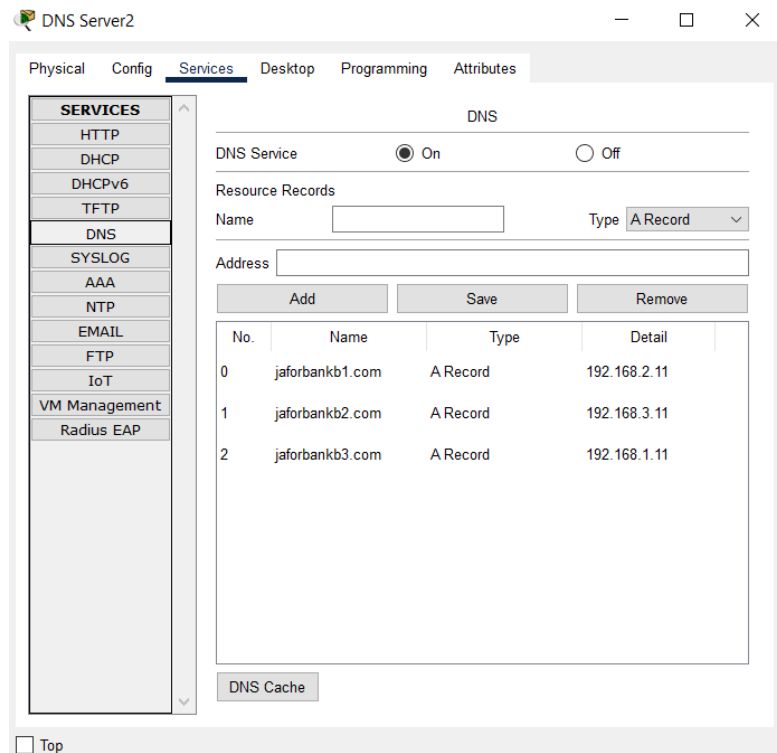


Figure 2.8: DNS Server configuration

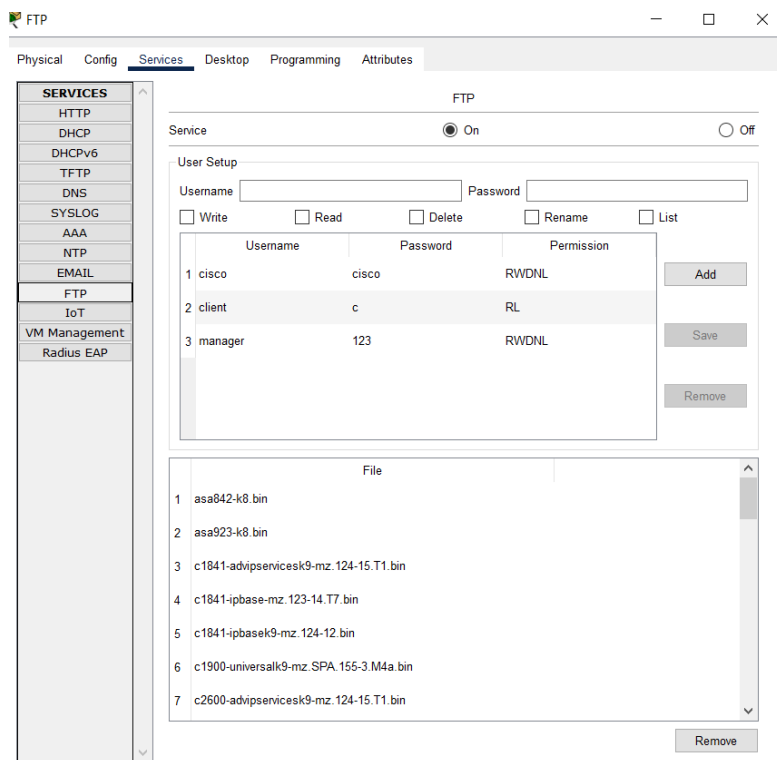


Figure 2.9: FTP Server configuration

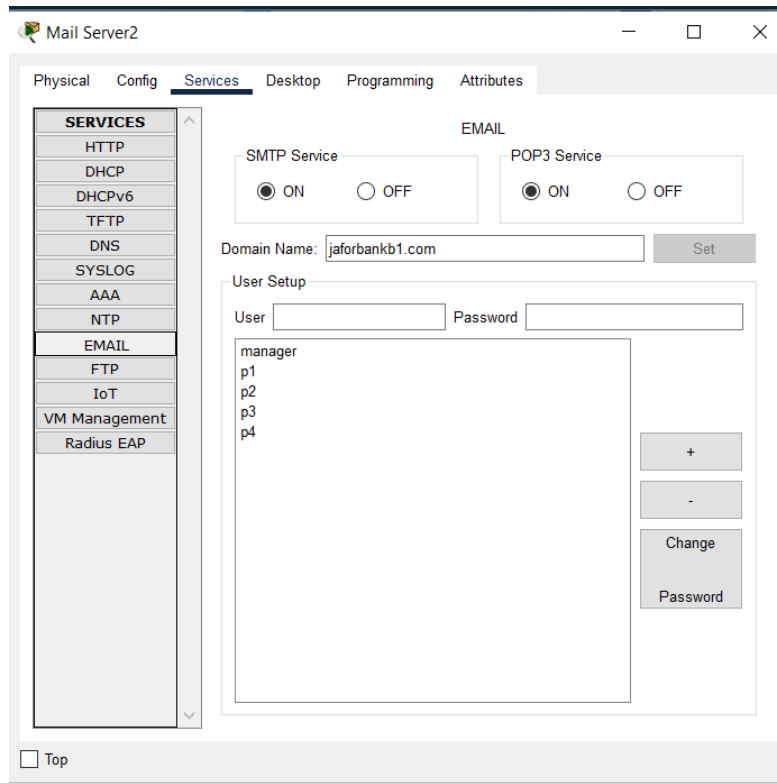


Figure 2.10: Mail Server configuration

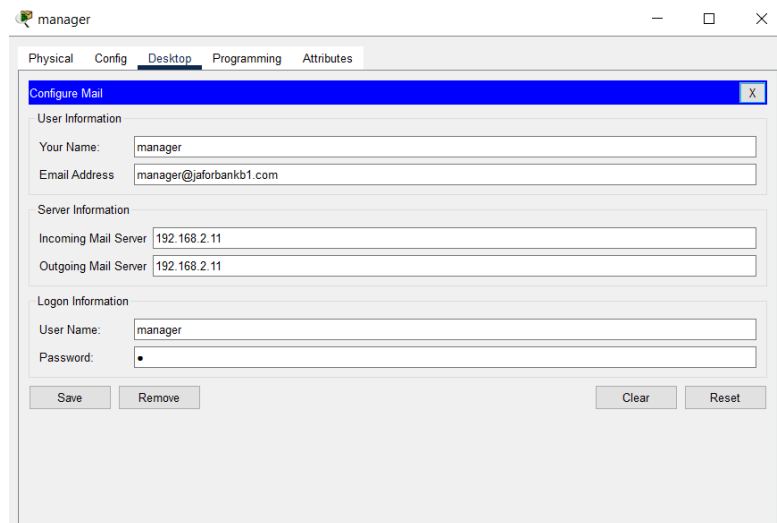


Figure 2.11: Mail configuration

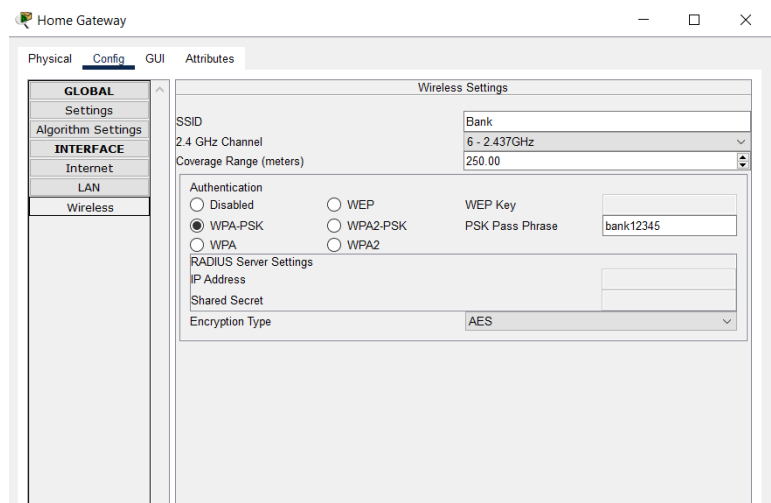


Figure 2.12: Wireless Router configuration

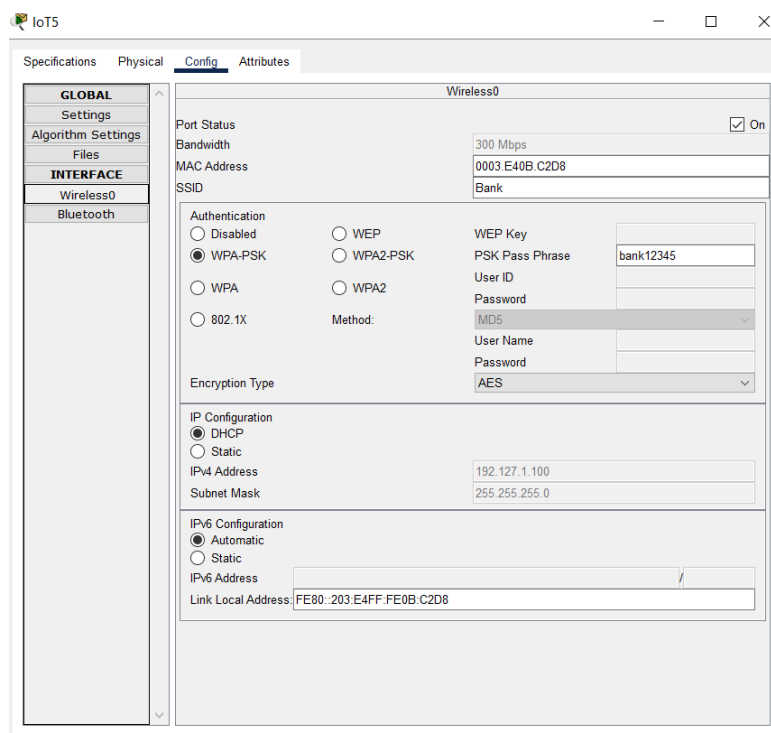


Figure 2.13: Wireless device configuration

IoT5

Specifications
Physical
Config
Attributes

GLOBAL

Settings
Algorithm Settings
Files

INTERFACE
Wireless0
Bluetooth

Global Settings

Display Name
IoT5

Serial Number
PTT0810U62N-

Interfaces
Wireless0

Gateway/DNS IPv4

☒ DHCP
☐ Static

Default Gateway
192.127.1.2

DNS Server
0.0.0.0

Gateway/DNS IPv6

☒ Automatic
☐ Static

Default Gateway

DNS Server

IoT Server

☐ None
☒ Home Gateway
☐ Remote Server

Server Address

User Name

Password

Refresh

Figure 2.14: Global Settings

Chapter 3

Performance Evaluation

3.1 Simulation Environment

Here I use Cisco packet Tracer for complete this project. As we know Cisco packet tracer one of the popular simulation based platform among the other network simulation platform. Start by adding the necessary Cisco devices to your simulation environment. This typically involves dragging and dropping the device icons onto the workspace of the simulation tool. Then, configure the devices.

3.2 Results Analysis/Testing

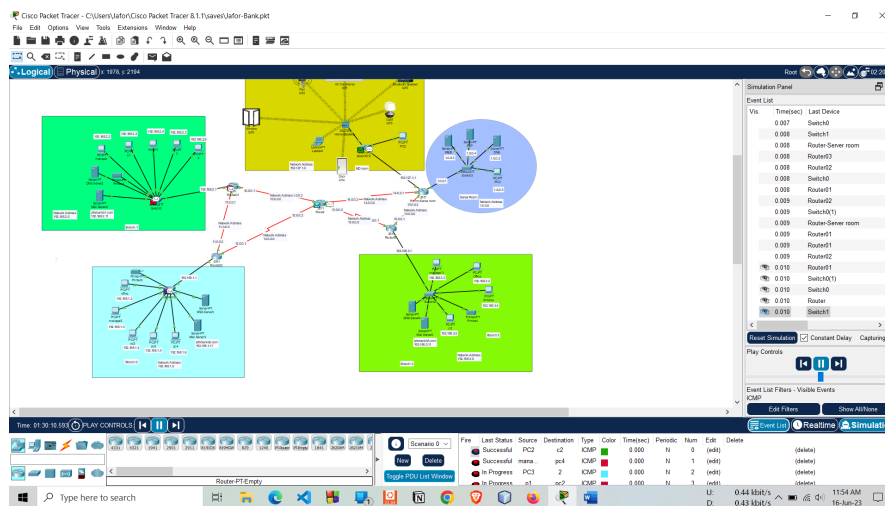


Figure 3.1: Output of Dynamic Routing

PDU List Window										
Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	Delete
	In Progress	PC2	c2	ICMP		0.000	N	0	(edit)	
	In Progress	manager	pc4	ICMP		0.000	N	1	(edit)	
	In Progress	PC3	2	ICMP		0.000	N	2	(edit)	
	In Progress	p1	pc2	ICMP		0.000	N	3	(edit)	
	In Progress	PC2	PC3	ICMP		0.000	N	4	(edit)	
	In Progress	office	p1	ICMP		0.000	N	5	(edit)	

Figure 3.2: Output of Dynamic Routing

Physical
Config
Desktop
Programming
Attributes

MAIL BROWSER
X

Mails

Compose
Reply
Receive
Delete
Configure Mail

	From	Subject	Received
1	enqirey@jaforbankb3.com	greetings	Thu Mar 16 2023 20:38:56
2	ac@jaforbankb2.com	hhhhhhhh	Thu Mar 16 202320:41:38

greetings
enqirey@jaforbankb3.com
Sent : Thu Mar 16 2023 20:38:56

good noon,sir

Sending mail to enqirey@jaforbankb3.com , with subject : RE: greetings ... Mail Server: 192.168.2.11
Send Success.

Cancel
Send/Receive

Figure 3.3: Output of Mail Send & received

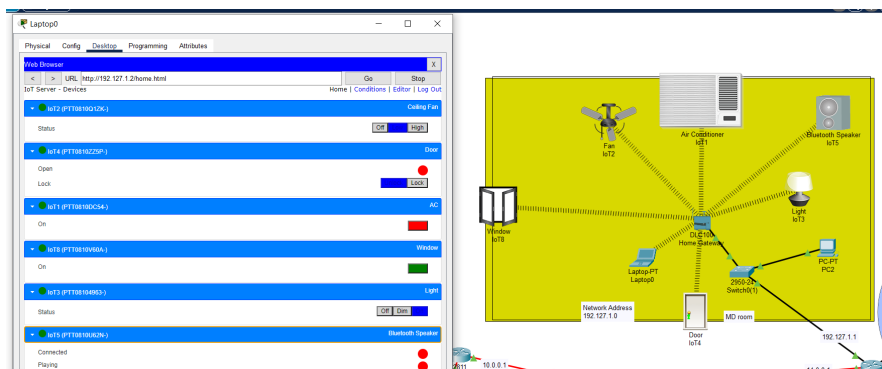


Figure 3.4: Output of IoT

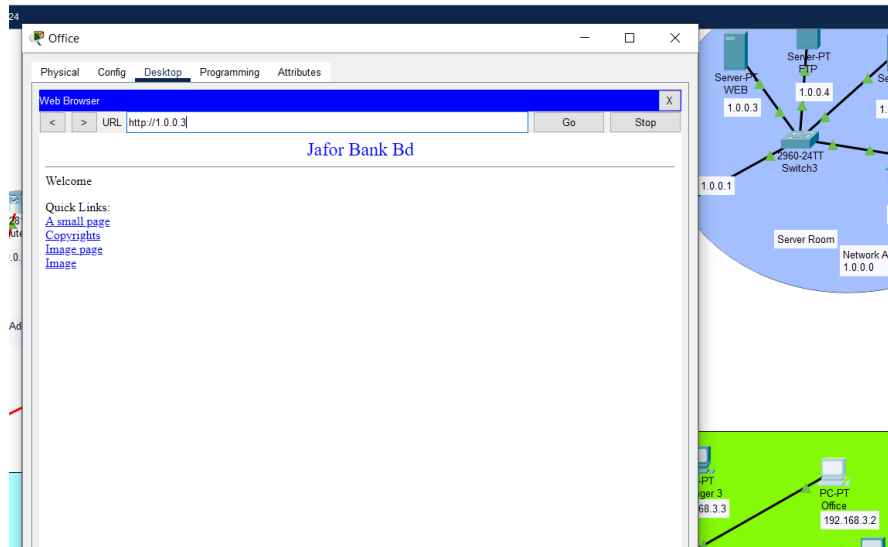


Figure 3.5: Output of Web from Branch 3

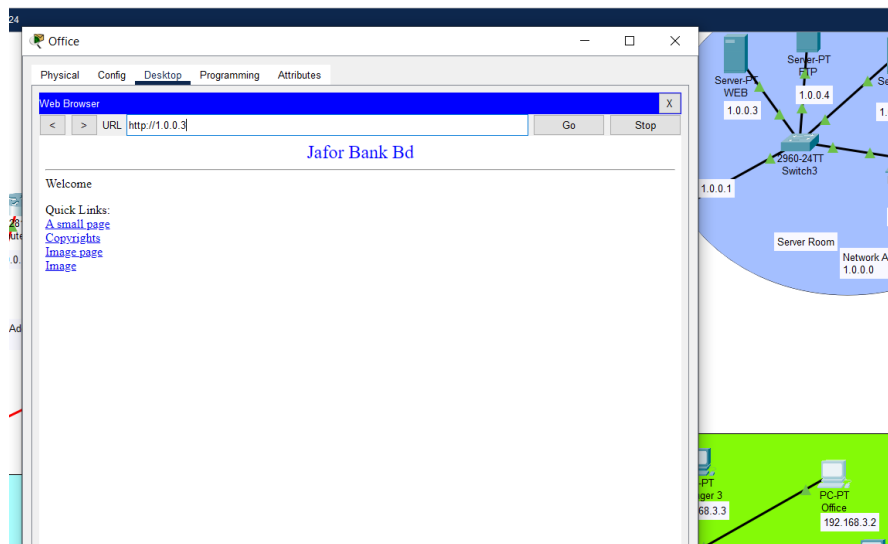


Figure 3.6: Output of Web from Branch 3

```

Cisco Packet Tracer PC Command Line 1.0
C:\>ftp 1.0.0.4
Trying to connect...1.0.0.4
Connected to 1.0.0.4
220- Welcome to FT Ftp server
Username:manager
331- Username ok, need password
Password:
230- Logged in
(passive mode On)
ftp>dir

Listing /ftp directory from 1.0.0.4:
 0  : asa842-k8.bin                               5571584
 1  : asa923-k8.bin                               30468096
 2  : c1841-advipervicesk9-mz.124-15.T1.bin       33591768
 3  : c1841-ipbase-mz.123-14.T7.bin               13832032
 4  : c1841-ipbasek9-mz.124-12.bin                16599160
 5  : c1900-universalk9-mz.SPA.155-3.M4a.bin       33591768
 6  : c2600-advipervicesk9-mz.124-15.T1.bin       33591768
 7  : c2600-i-mz.122-28.bin                       5571584
 8  : c2600-ipbasek9-mz.124-8.bin                 13169700
 9  : c2800nm-advipervicesk9-mz.124-15.T1.bin     50938004
10  : c2800nm-advipervicesk9-mz.151-4.M4.bin      33591768
11  : c2800nm-ipbase-mz.123-14.T7.bin             5571584
12  : c2800nm-ipbasek9-mz.124-8.bin               15522644
13  : c2900-universalk9-mz.SPA.155-3.M4a.bin       33591768
14  : c2950-16q412-mz.121-22.EA4.bin            3058048
15  : c2950-16q412-mz.121-22.EA8.bin            3117390
16  : c2960-lanbase-mz.122-25.FX.bin              4414921
17  : c2960-lanbase-mz.122-25.SEE1.bin            4670455
18  : c2960-lanbasek9-mz.150-2.SE4.bin            4670455
19  : c3560-advipervicesk9-mz.122-37.SEE1.bin     8662192
20  : c3560-advipervicesk9-mz.122-46.SE.bin       10713279
21  : c800-universalk9-mz.SPA.152-4.M4.bin        33591768
22  : c800-universalk9-mz.SPA.154-3.M6a.bin       83029236
23  : cat3k-csa-universalk9-16-03-02.SPA.bin     505532840

```

Figure 3.7: Output of FTP from Branch 2 as Manager

```

36 : test1.txt                                     22
ftp>put 1.jaforbank.txt
%Error opening c:\1.jaforbank.txt (No such file or directory)
ftp>put 1.jaforbank

Writing file 1.jaforbank to 1.0.0.4:
File transfer in progress...

[Transfer complete - 21 bytes]

21 bytes copied in 0.048 secs (437 bytes/sec)
ftp>dir

Listing /ftp directory from 1.0.0.4:
 0  : 1.jaforbank                                  21
 1  : asa842-k8.bin                               5571584
 2  : asa923-k8.bin                               30468096

```

Figure 3.8: Output of FTP from Branch 2 as Manager

```

37 : test1.txt                                     22
ftp>rename asa842-k8.bin l1l1l1l1.bin

Renaming asa842-k8.bin
ftp>
[OK Renamed file successfully from asa842-k8.bin to l1l1l1l1.bin]
ftp>delete asa923-k8.bin

Deleting file asa923-k8.bin from 1.0.0.4: ftp>
[Deleted file asa923-k8.bin successfully ]
ftp>quit

221- Service closing control connection.
C:\>dir

Volume in drive C has no label.
Volume Serial Number is 5E12-4AF3
Directory of C:\

1/1/1970    6:0 PM           21          1.jaforbank
1/1/1970    6:0 PM           26          sampleFile.txt
              47 bytes           2 File(s)

C:\>

```

[Top](#)

Figure 3.9: Output of FTP from Branch 2 as Manager

p1

Physical Config **Desktop** Programming Attributes

Command Prompt

```

C:\>ftp 1.0.0.4
Trying to connect...1.0.0.4
Connected to 1.0.0.4
220- Welcome to FT Ftp server
Username:client
331- Username ok, need password
Password:
230- Logged in
(passive mode On)
ftp>get test1.txt

Reading file test1.txt from 1.0.0.4:
File transfer in progress...

[Transfer complete - 22 bytes]

22 bytes copied in 0.025 secs (880 bytes/sec)
ftp>delete test1.txt

Deleting file test1.txt from 1.0.0.4: ftp>
%Error ftp://1.0.0.4/test1.txt (No such file or directory Or Permission denied)
550-Requested action not taken. permission denied).

ftp>put new.txt
%Error opening c:new.txt (No such file or directory)
ftp>dir

Listing /ftp directory from 1.0.0.4:
0 : 1.jaforbank                                     21
1 : l1l1l1l1.bin                                    5571584
2 : cl841-advipservicesk9-mz.124-15.T1.bin         33591768
3 : cl841-ipbase-mz.123-14.T7.bin                   13832032
4 : cl841-ipbasek9-mz.124-12.bin                    16599160
5 : cl900-universalk9-mz.SPA.155-3.M4a.bin          33591768

```

Figure 3.10: Output of FTP from Branch 1 as Client

3.3 Results Overall Discussion

Here you can see the overall architecture of our Networking final project :

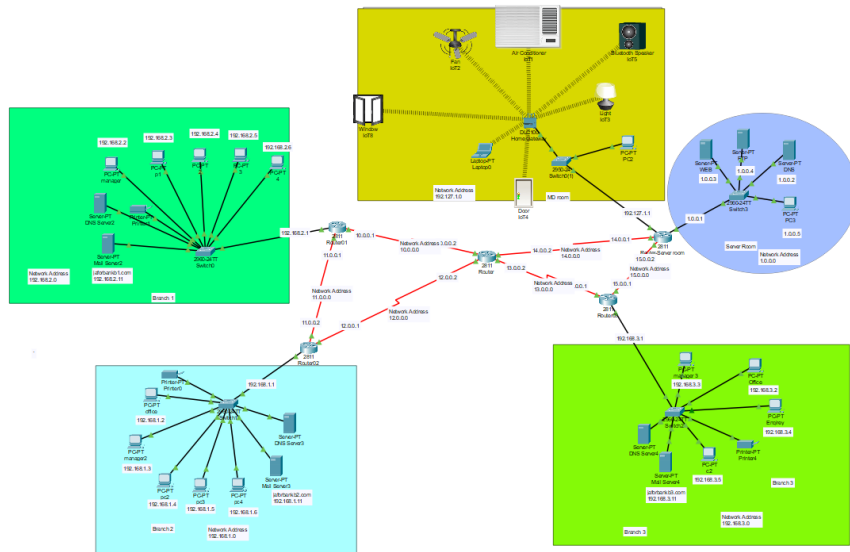


Figure 3.11: Full view

Chapter 4

Conclusion

4.1 Discussion

Here I completed an advanced Banking networking system which is done by Cisco packet tracer platform. The Banking Networking System project implemented in collaboration with Cisco brings significant advancements and improvements to traditional banking systems. The project also prioritizes high availability and redundancy to minimize downtime and ensure uninterrupted banking services. By following the procedure planning step which idea I give in the project proposal, my project successfully completed as per expectations.

4.2 Limitations

Limitations of my project are implementing costs which create financial challenges, particularly for smaller banks or institutions with limited budgets. Then banks need to assess and plan for scalability continually and also security risk of hacking or scams through the internet network.

- The main Limitation is implementing the project in the real world. Because we only simulate it via packet tracer.
- Due to less time and work pressure we could not add more features that could make the project more useful.

4.3 Scope of Future Work

the future scope of work for the bank networking system with Cisco Packet Tracer includes expanding services, integrating fintech solutions, enhancing security measures and artificial intelligence. For future work it will contribute to a more innovative, secure, and customer-centric banking experience.

1. Add time based transmission.

2. Make the project more user friendly.
3. Real life implementation.

References

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