A Project Report On

Enterprise Network for University

Submitted in Fulfillment for the Award of Degree

In

DIPLOMA IN COMPUTER ENGINNERING

[Batch 2020 –2023]

Submitted by

Hetvi D. Mehta [206030307004]

Under the Guidance of
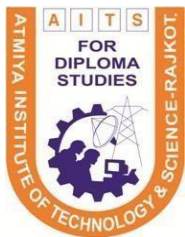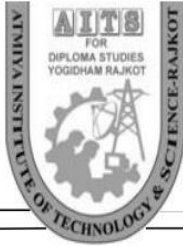
Mrs. Bhumika S. Zalavadia

Department Head

Mrs. Bhumika S. Zalavadia

Submitted to

Atmiya Institute of
Technology & Science for
Diploma Studies

Gujarat Technological University

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April 17, 2023

Project Certificate

This is to certify that **Hetvi D. Mehta [206030307004]** studying in 6th semester of Diploma Computer Engineering at *'Atmiya Institute of Technology & Science For Diploma Studies'* affiliated to Gujarat Technological University, has successfully completed his/her project work entitled **Enterprise Network for University** during January 2023 to May 2023.

This work is submitted as a fulfillment towards the requirement of the degree of Diploma in Computer Engineering for academic year 2020 – 2023.

We take this opportunity to wish his success in all his future endeavors.

Mrs. Bhumika S. Zalavadia

[Head]

Computer Engineering Department

Bhumika S. Zalavadia

[Guide]

Computer Engineering Department

Examiner

Exam Date:

Acknowledgement

Under the guidance of Mrs. Bhumika S. Zalavadia, I am able to bring my project to this state. I would also like to express my gratitude towards my other faculties and my Head of Department, Mrs. Bhumika S. Zalavadia for their kind co-operation and encouragement, which helped using the completion of this project.

I am also thankful to the institution for giving us such an amazing opportunity for making this project and giving suitable instructions and guidelines for the project.

Last but not the least; I thank my friends who shared the necessary information and useful web links for preparing my project.

Thanks again to everyone.

Hetvi D. Mehta [206030307004]

Abstract

This Enterprise network is for the easy communication through the University. The network is used for maintaining Internet connectivity in the University. This network also maintains that which websites should be accessible through which VLANs. This is a flexible network where we can block the access of any computer in Network according to our requirements. In this Network, the blocking of access and communication with WWW is provided using Access-control list and Network Address Translation (NAT). This network also provides Port Security so that any unknown Computer or Laptop can't be connected in Network through Ethernet or LAN Port. As it is a flexible network, Network manager can make Changes in the Network accordingly. As the Network settings are Password protected, none except Network manager can make any changes in the Network. As the network is flexible, it can be expanded as per need.

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Introduction

1.1 Project at Glance

1.2 Purpose

1.3 Scope

1.4 Technical Description

1.1 Project at Glance

- The purpose of this Network project is to provide connectivity between 3 labs/sections which are located at different location apart from each other.
- We will provide internet connectivity to them.
- To provide internet connectivity, we did OSPF routing in the network.
- Students can only access CMS server and can't access faculty and account server in the network because we block them with access control lists.
- Here, we have created 2 VLANs in SWITCH-1 so we can break broadcast traffic between account and faculty department.
- We will also provide port security in SWITCHES, it will give us security against any intrudermeans any unknown person can't use their device like laptop in our network.
- It is very flexible network means we can change the settings in access control lists and VLANS as per our requirements.

1.2 Purpose

- By using this Network, we can manage and maintain the university enterprise network easily.
- Student can access CMS server of students.
- Faculty can access CMS server of students and faculties.
- Accounts section and Faculty can access the faculty section server.
- The Account's server can only be accessed by Account section.

1.3 Scope

It can associate with three Sections/labs.

1. Accounts
2. Faculty
3. Student

Accounts

- Accounts section can access any website through Internet.
- Accounts section can access all the three servers which are Accounts server, CMS server and Server of Faculty section.

Faculty

- Faculty section can also access any website through Internet.

- Faculty can access CMS server and Server of Faculty section.

Student

- Student can't access any website except educational website through Internet.

- Students can access CMS server through Internet.

1.4 Technical Description

Packet Tracer

- Packet Tracer is a software designed by Cisco.

- Packet Tracer is a cross-platform visual simulation tool.

- It allows users to create network topologies and imitate modern computer networks.

- This software allows users to simulate the configuration of Cisco routers and switches using a simulated command line interface.

- Packet Tracer offers an effective, interactive environment for learning networking concepts And protocols.

- Packet Tracer helps to create own virtual networks for exploration.

- It enables multi-user, real-time collaboration and competition for dynamic learning.

Chapter 2

System Analysis

2.1 Introduction of the Network

2.2 Hardware and Software Requirement

2.3 Implementation Status

2.1 Introduction of the Network

- This is an enterprise network for University.

- As there are three different sections in which the computers are placed, which are Student lab, Faculty block and Account section.

- There are three servers in the network, which are account.edu.in, faculty.edu.in, cms.edu.in

- In Student lab, there are 8 computer of IP series 192.168.10.2 to 192.168.10.9, all these computers are connected to each other through Switch-2.

- In Account section, there are 7 computer of IP series 192.168.40.2 to 192.168.40.8 and Accounts server of IP 192.168.40.254, which are included in VLAN-3.

- In Faculty block, there are 6 computer of IP series 192.168.20.2 to 192.168.20.7, CMS server of IP 192.168.20.253 and Faculty server of IP 192.168.40.254, which are included in VLAN-2.

- Account section and Faculty block are connected to each other through Switch-1.

- All the three sections are connected to each other through Router-1 and Router-2 which are connected through Switch-3.

- We can also access WWW (which is here represented by WAN Routers and other servers) through the ISP Router.

2.2 Hardware and Software Requirement

Software

Cisco Packet Tracer
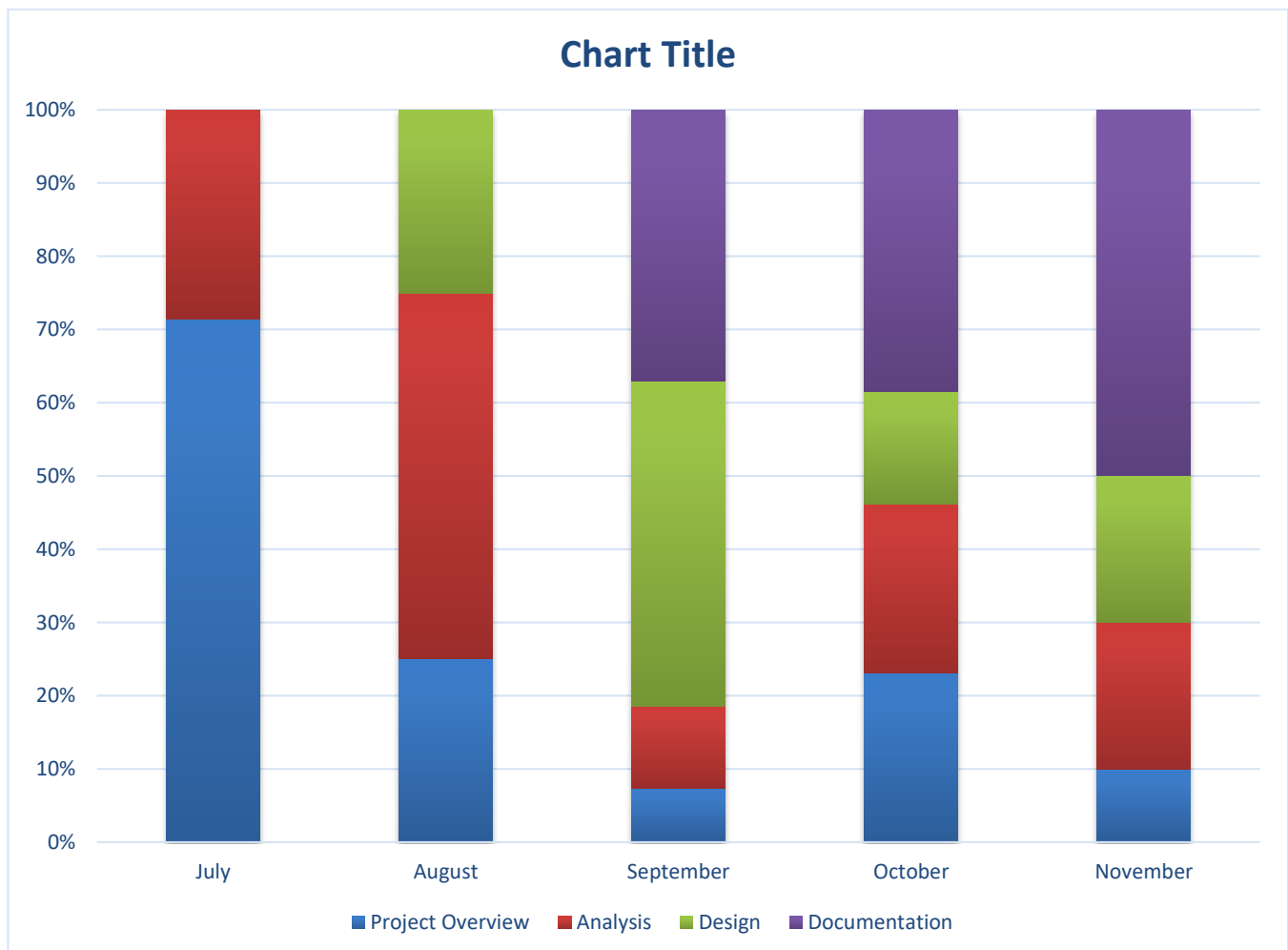
Hardware

Computers: 21
 Switches: 3
 Routers: 6
 Servers: 6

Protocols and Technologies Used in this Network

- OSPF Routing

- Access Control List

- VLAN

- Inter-VLAN Routing

- Network Address Translation

- Port Security

- Domain Name System

- Secure Shell

2.3 Implementation Status

Chart Title

**2.3 Implantation Chart**

Chapter 3

# System Design

3.1 Use– case Diagram

3.2 Network Diagram

3.1 Use case Diagram

- It describes the sequence of interactions between actors and the system necessary to deliver the service that satisfied the goal.
- The use case diagram graphically represents what happens if any actor is interacting with a system.
- It shows relationships and dependencies clearly in the diagram.
- The main purpose of the diagram is to identify requirements.
- It summarizes some of the relationships between use cases, actors and systems.
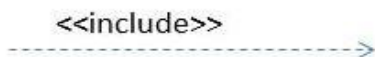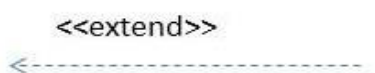
Actor name

Actor

Use case name
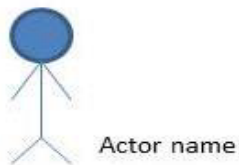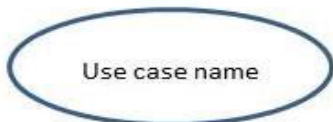
Use case

Generalization symbol used between actors and between use cases
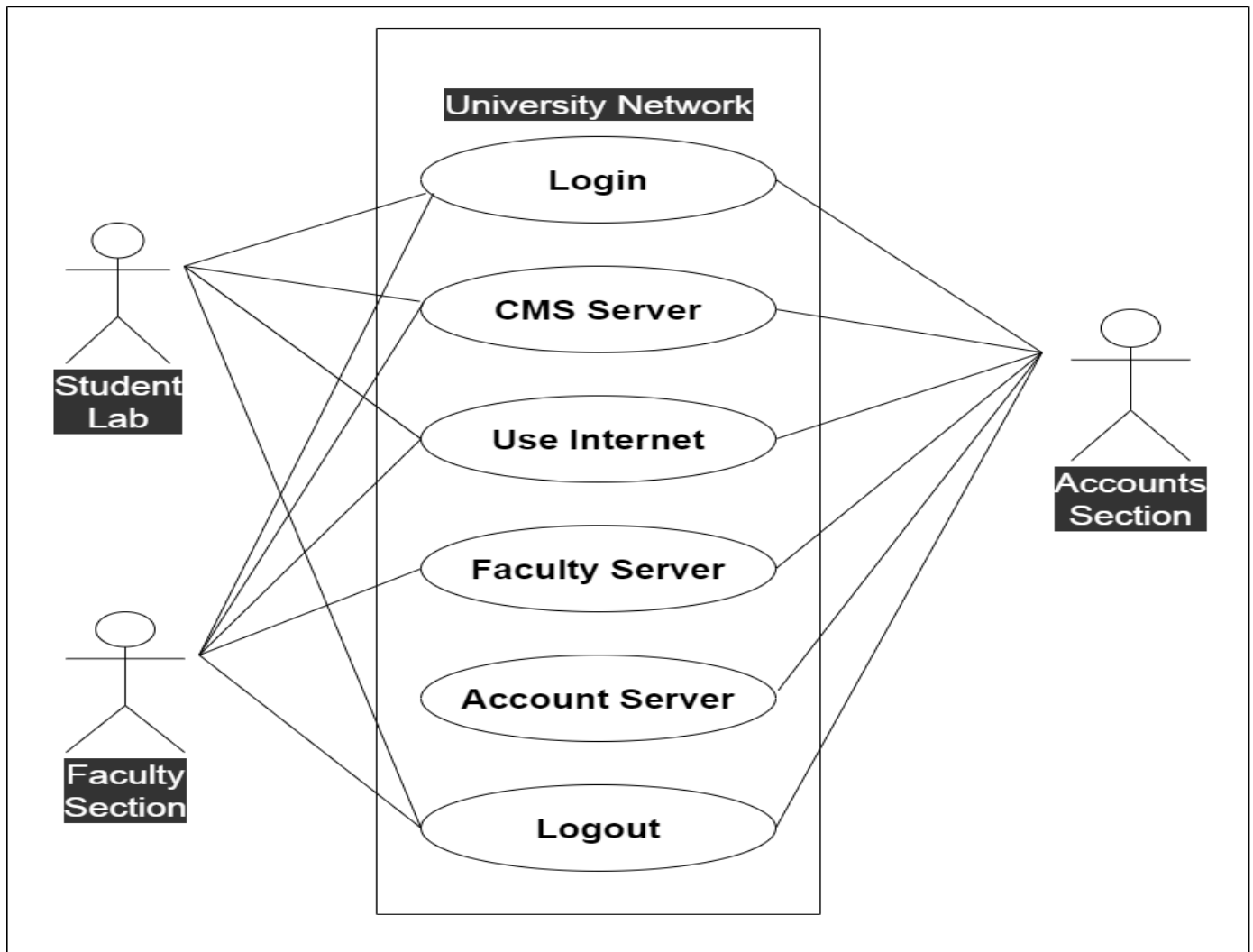
Association between actor and use case

<<include>>

Include relationship between use cases

<<extend>>

Extend relationship between use cases

3.1 Use Case Diagram

3.1 Network Diagram

- A network diagram is a visual representation of a computer or telecommunications network.

- It shows the components that make up a network and how they interact, including routers, devices, hubs, firewalls, etc.

- A network diagram may contain lots of detail or just provide a broad overview.

- For instance, a diagram of a LAN might could show the IP addresses of individual computers, while the diagram of a MAN (metropolitan area network) could represent buildings or areas with a single node.

- A network diagram can be either physical or logical.

- A logical network diagram describes the way information flows through a network. Therefore, logical network diagrams typically show subnets (including VLAN IDs, masks, and addresses), network devices like routers and firewalls, and routing protocols.

- A physical network diagram shows the actual physical arrangement of the components that make up the network, including cables and hardware.
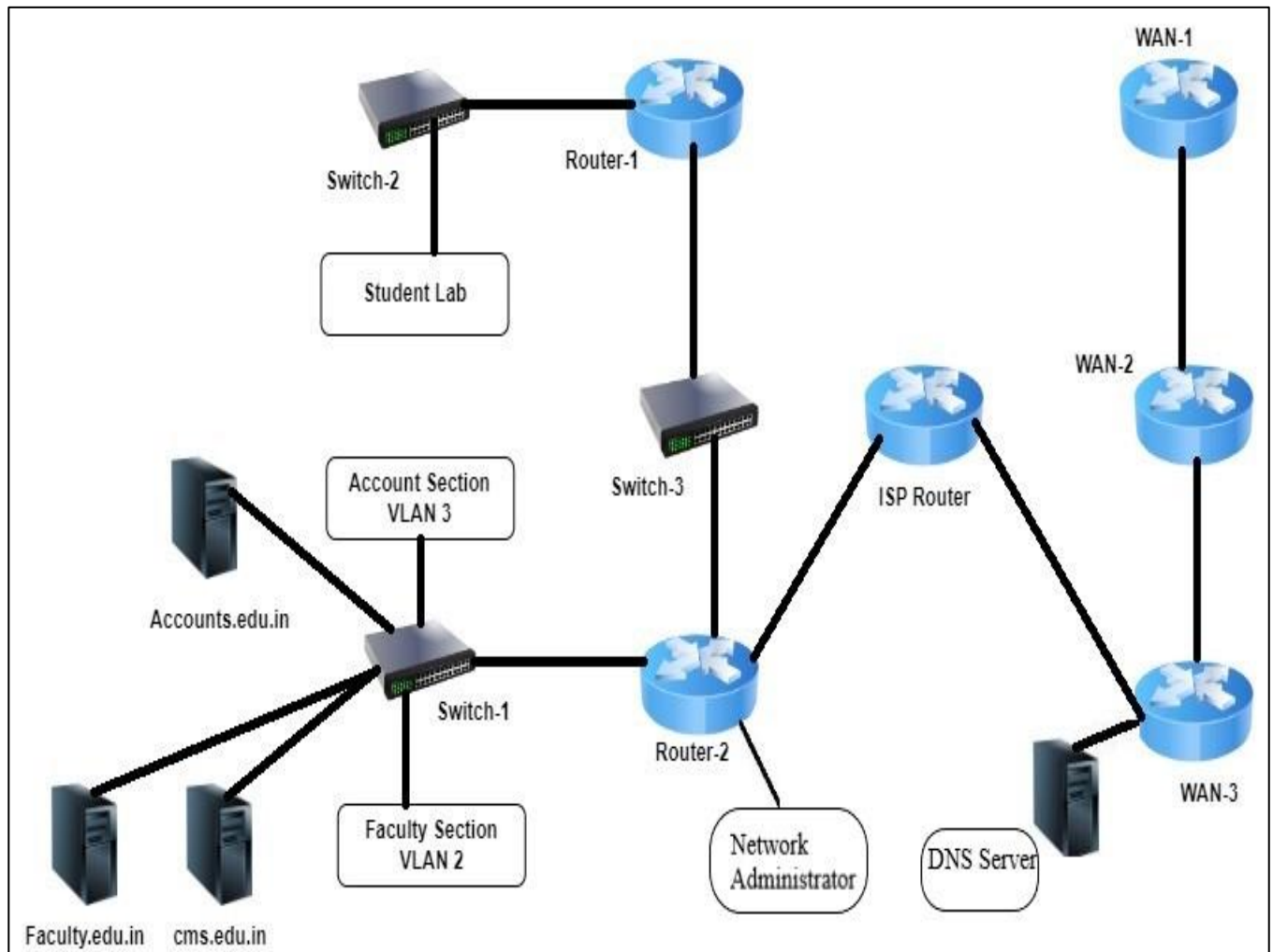
3.2 Network Diagram

Chapter 4

Testing

4.1 Testing

4.2 Types of network testing

4.3 Network Performance Test

4.4 Network Testing Tools

4.5 Network Testing

4.1 Testing

As a rule, Network testing takes that all the devices are powered on and connected successfully. The purpose of Network testing is to detect any inconstancies between device connections. Network testing is a broad means of testing security controls across a network to identify and demonstrate vulnerabilities and determine risks. The Network testing problem is important because networks are hard to build correctly, and even networks that appear to work most of the time may have subtle bugs that require intermittent action, such as re-starting network elements. Sometimes, the bugs prevent all communication.

4.2 Types of network testing

- Concurrency Testing

- Configuration Testing

- Peak Load Testing

- Volume Testing

4.2.1 Concurrency Testing

Concurrency testing tests two clients using the same server. This is a variation of functional testing that verifies that the server can properly handle simultaneous requests from two clients. The simplest form of concurrency testing verifies that two clients can make multiple non-conflicting server requests during the same period of time.

4.2.2 Configuration Testing

A client/server application typically runs on multiple different platforms and utilizes a server that runs on one or more different platforms. A complete testing program needs to verify that every possible client platform can operate with every possible server platform. This implies the following combinations of tests:

- Test with the client and server on separate machines.

- This testing should be repeated for different platform combinations of server and client.

4.2.3 Peak Load Testing

Peak load testing is placing a load on the server for a short time to emulate the heaviest demand that would be generated at peak user times. his type of test requires a significant number of client systems. If you submit complex transactions to the server from each client in your test network, using minimal user setup, you can emulate the typical load of a much larger number of clients. Your testbed may not have sufficient machines to place a heavy load on your server system — even if your clients are submitting requests at top speed. In this case it may be worthwhile to reconfigure your equipment so that your server is less powerful. An inadequate server configuration should enable you to test the server's management of peak server conditions.

4.2.4 Volume Testing

Volume testing is placing a heavy load on the server, with a high volume of data transfers, for 24 to 48 hours. One way to implement this is to use one set of clients to generate large amounts of new data and another set to verify the data, and to delete data to keep the size of the database at an appropriate level. In such a case, you need to synchronize the verification scripts to wait for the generation scripts. The 4Test script language makes this easy. Usually, you would need a very large test set to drive this type of server load, but if you under-configure your server you will be able to test the sections of the software that handle the outer limits of data capacity.

4.3 Network Performance Test

The performance and stability of its networks is very important. Network monitoring tools are used to monitor networks continuously, preempt outages, and resolve them proactively as needed.

4.3.1 Identification

The first step should be identifying the precise location of the issue within the network before moving to the next step.

4.3.2 Analysis

The root cause of the issue should be uncovered next. There might be more than one cause for the issue and each deserves a specific analysis.

4.3.3 Execution

When the root cause has been ascertained, the IT admin should quickly execute the fix or resolution. Delays can be costly.

4.3.4 Automation

Automation saves valuable time and significantly reduces the workload of network management professionals. Both repetitive actions and troubleshooting steps can be automated.

4.3.5 Audit and Track

Every issue that takes place in the network should be tracked and reviewed. The information maintained in the form of reports helps set a precedent and can provide a clear plan of action when the issue occurs again in future.

4.4 Network Testing Tools

Network testing tools can help create a trail of historical performance data by performing qualitative and quantitative checks, which measure current and historical performance. Network testing tools are essential because network performance testing is usually intended to ensure optimal network performance from the end user's perspective.

4.4.1 SolarWinds Network Performance Monitor

SolarWinds Network Performance Monitor (NPM) is a network monitoring tool known within the industry to be a reliable, affordable solution for helping admins reduce network outages and quickly detect, diagnose, and resolve network performance issues.

4.4.2   ManageEngine OpManager

ManageEngine OpManager is an all-in-one tool providing networks of all sizes and complexities with quality network testing capabilities. OpManager network monitoring tools provide accurate and fast results in real time. OpManager tools are accessible to teams from a single central console, making network testing easier.

4.4.3   Paessler PRTG

Paessler PRTG offers a broad range of network monitoring tools with many advanced, customizable features. smaller networks, PRTG offers a free, pared-down version of its more sophisticated network testing tool.

4.4.4   Zabbix

Zabbix is an open-source, free tool providing instant, customizable alerts when network anomalies are detected during automated network testing. Zabbix was designed to be an enterprise-grade tool for monitoring and tracking the performance and availability of network servers, devices, services, and other IT resources.

4.4.5   LogicMonitor

LogicMonitor is a software as a service (SaaS)-based observability and IT operations data collaboration platform. LogicMonitor also provides automatic alerts and built-in reports for ease of use.
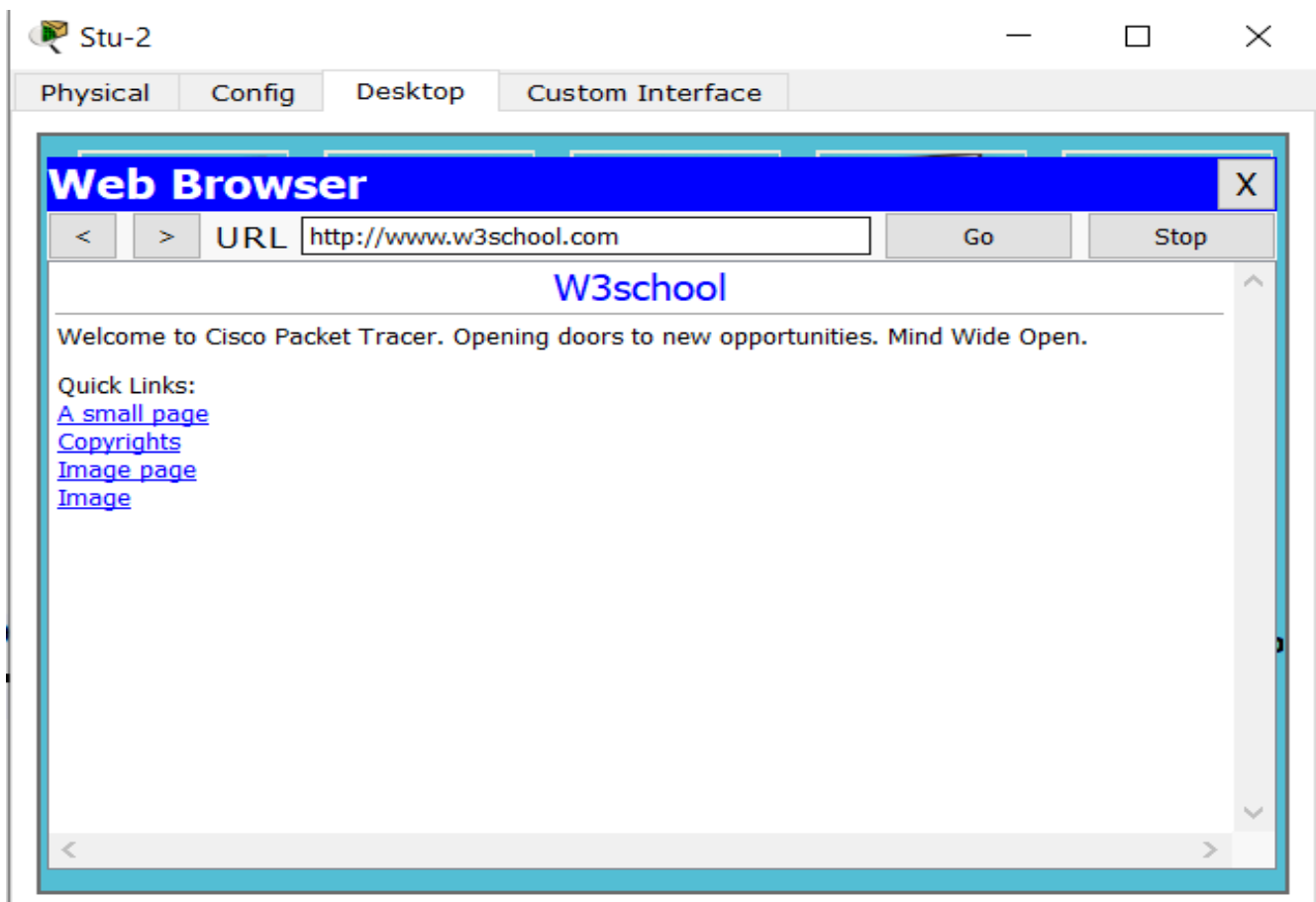
4.5   Network Testing

Above mentioned types of network testing and network tools can be used to test and monitor physical network. But we cannot apply these steps and tools into virtual network in cisco packet tracer. So here given following is manual testing of network in cisco packet tracer which tests Access Control List, DNS Server, Inter-VLAN Routing and Routing.
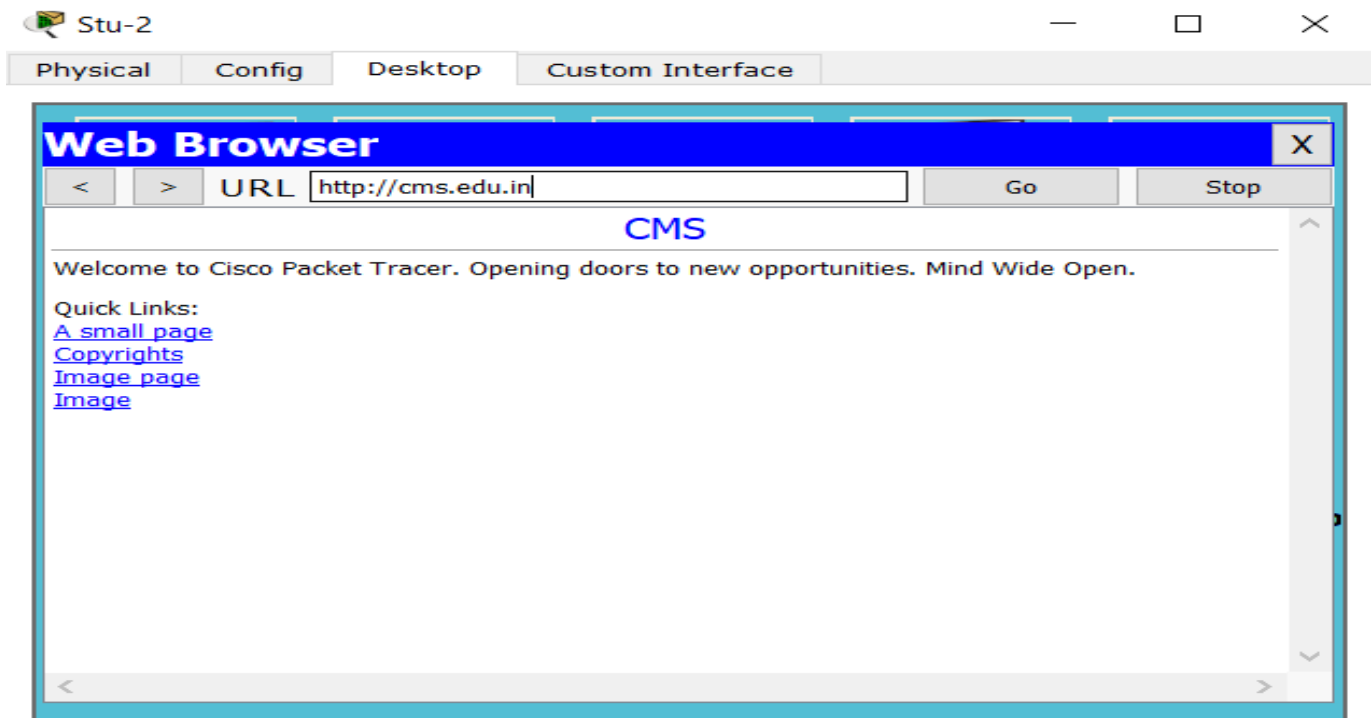
4.5.1 Student Lab Test

	Fire	Last Status	Source	Destination	Type	Color	Time (sec)	Periodic	Num	Edit	Delete
	●	Failed	Stu-9	Acc-4	ICMP		0.000	N	0	(edit)	(delete)
	●	Failed	Stu-9	Fac-2	ICMP		0.000	N	1	(edit)	(delete)
	●	Successful	Stu-2	Stu-3	ICMP		0.000	N	2	(edit)	(delete)

Scenario 0 — New — Delete — Toggle PDU List Window

Realtime

4.5.1.1 Student Lab Test

- Here computers of Student lab can send data to each other but cannot send data to Faculty Block and Accounts section.
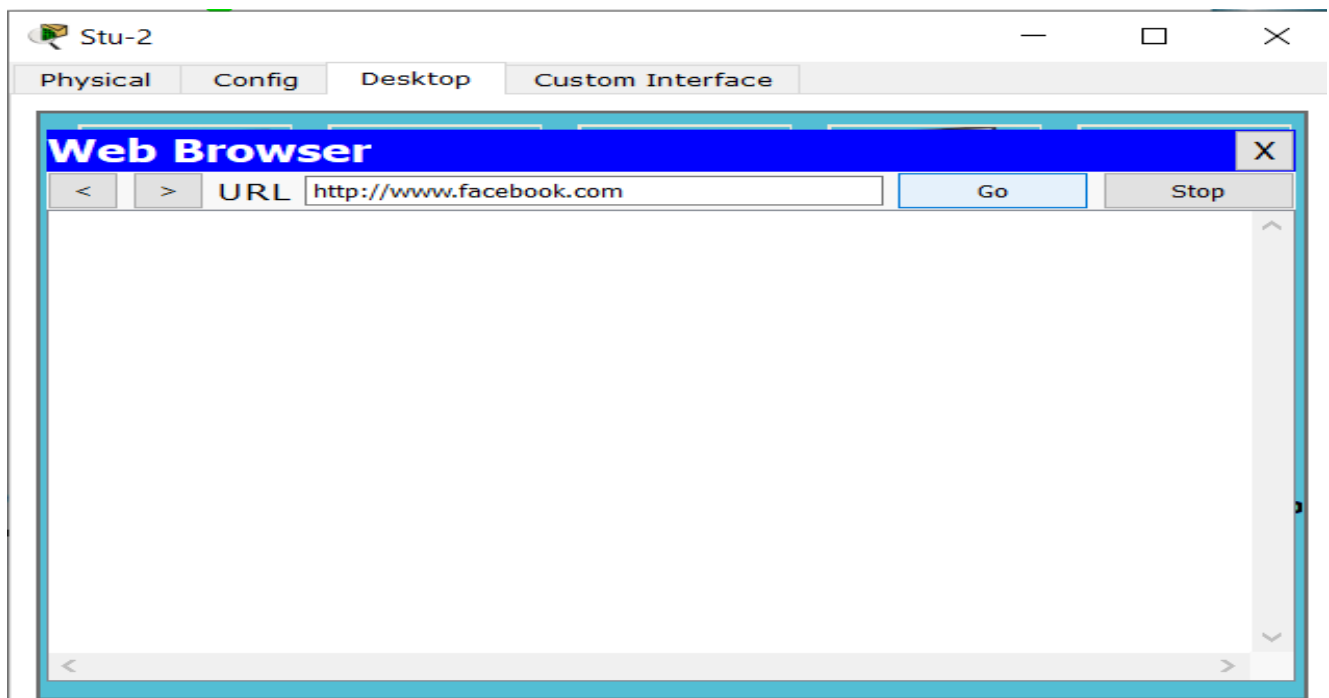
Stu-2

Physical | Config | Desktop | Custom Interface

Web Browser   X

< | > | URL | http://www.w3school.com | Go | Stop

W3school

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Quick Links:
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Copyrights
Image page
Image

4.5.1.2 Student Lab Test

Stu-2 — ☐ ✕

| Physical | Config | Desktop | Custom Interface |

Web Browser ✕

| < | > | URL | http://cms.edu.in | Go | Stop |

CMS

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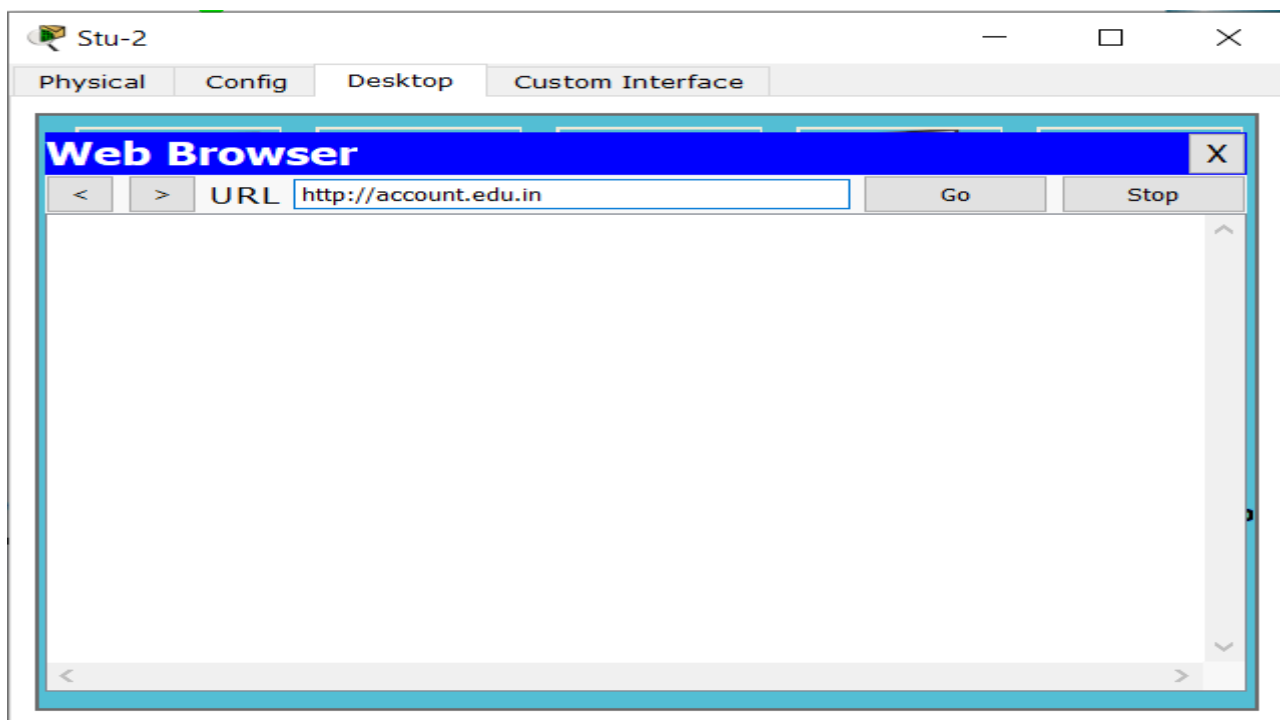Quick Links:
A small page
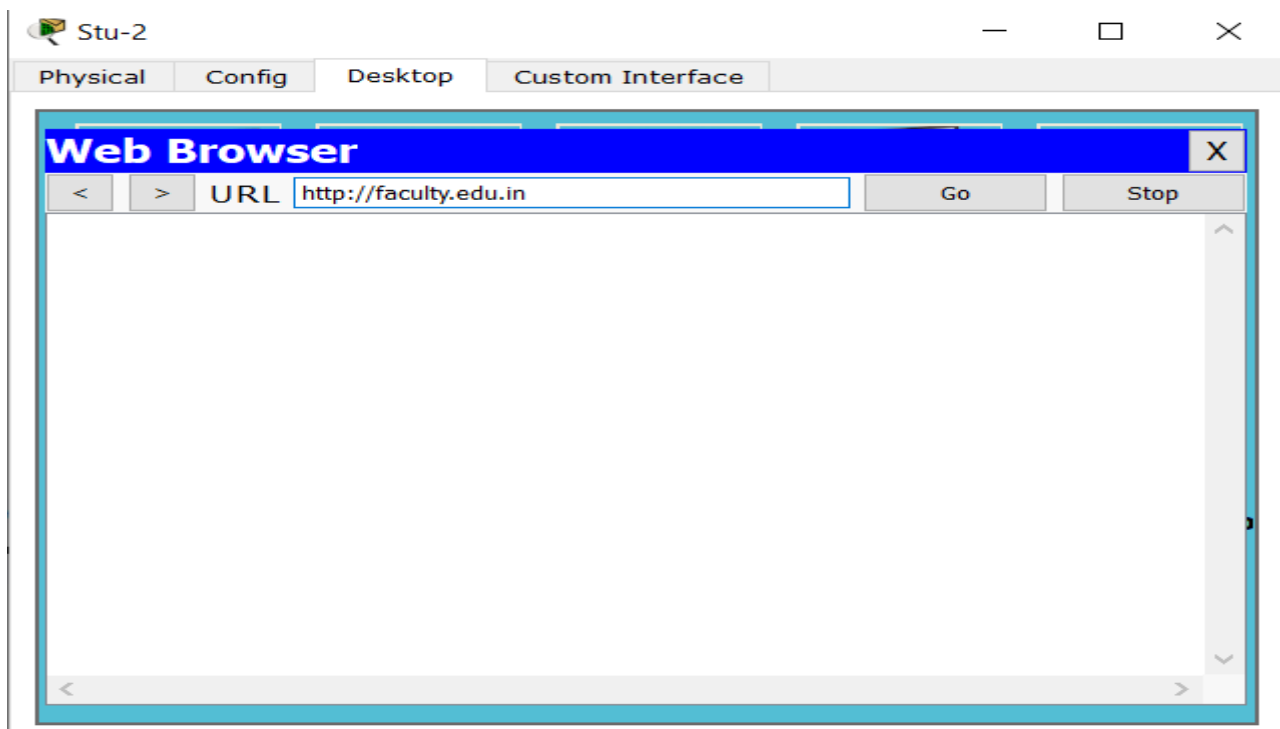Copyrights
Image page
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4.5.1.3 Student Lab Test

- As shown above, due to given Access Control List, computers of Student lab can access "W3School" and "CMS" but cannot access "Faculty server", "Accounts server", and "Facebook" shown as following.

Stu-2 — ☐ ✕

| Physical | Config | Desktop | Custom Interface |

Web Browser ✕

| < | > | URL | http://www.facebook.com | Go | Stop |

4.5.1.4 Student Lab Test

4.5.1.5 Student Lab Test

4.5.1.6 Student Lab Test

4.5.2 VLAN Test

	Fire	Last Status	Source	Destination	Type	Color	Time (sec)	Periodic	Num	Edit	Delete
Scenario 0	●	Successful	Acc-5	Acc-4	ICMP		0.000	N	0	(edit)	(delete)
New Delete	●	Successful	Fac-5	Fac-4	ICMP		0.000	N	1	(edit)	(delete)
Toggle PDU List Window	●	Successful	Acc-8	Fac-2	ICMP		0.000	N	2	(edit)	(delete)

4.5.2.1 VLAN Test

- Here Faculty Block and Accounts are in VLAN.

- The computers in Faculty block and Accounts section can send data to other computers in their respective lab.

- It can also send data to computer in another lab, like from Faculty Block to Accounts section and vice versa.
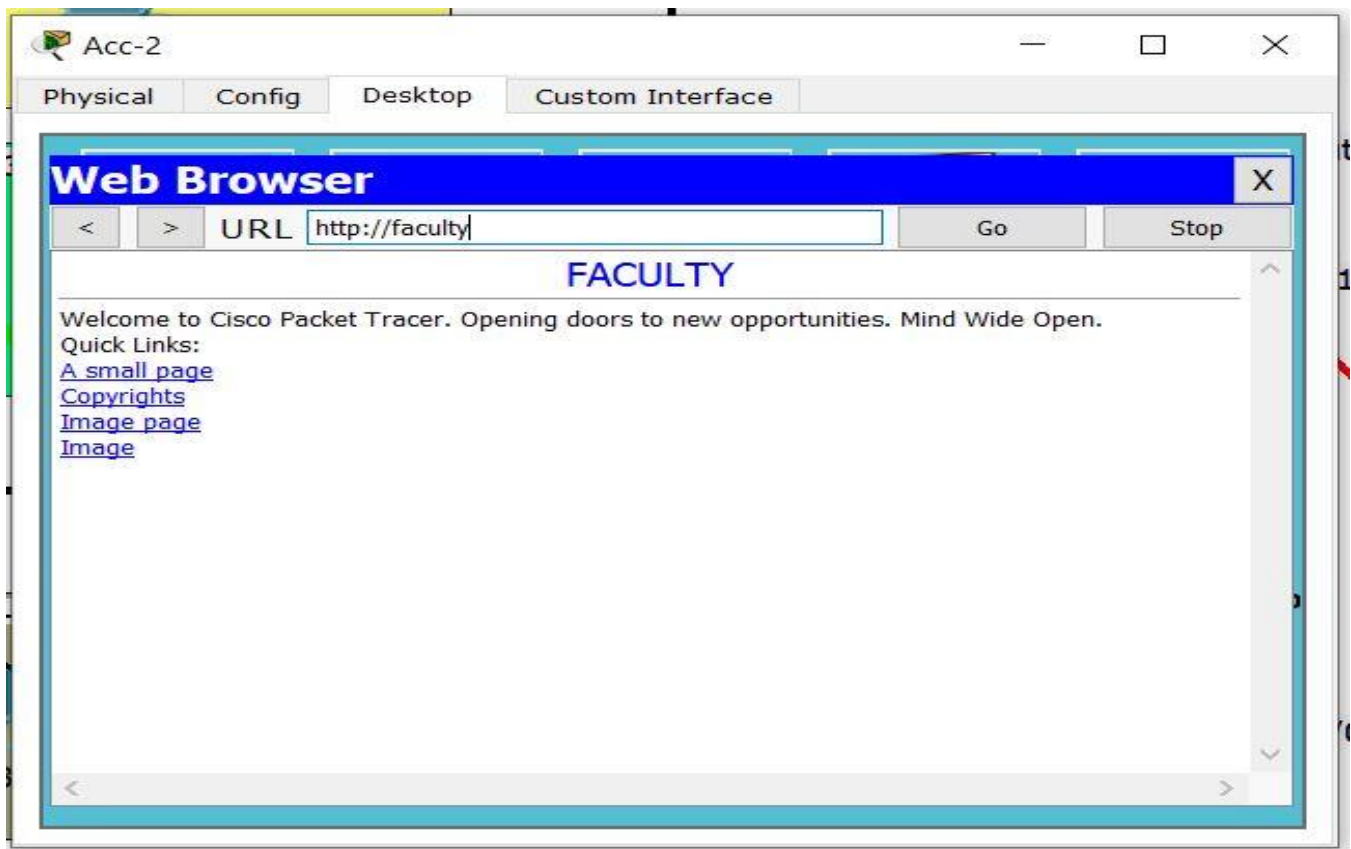
4.5.3 Accounts Section Test

Acc-2   —   □   ×

| Physical | Config | Desktop | Custom Interface |

Web Browser   X

| < | > | URL | http://w3school.com | | Go | Stop |

W3school

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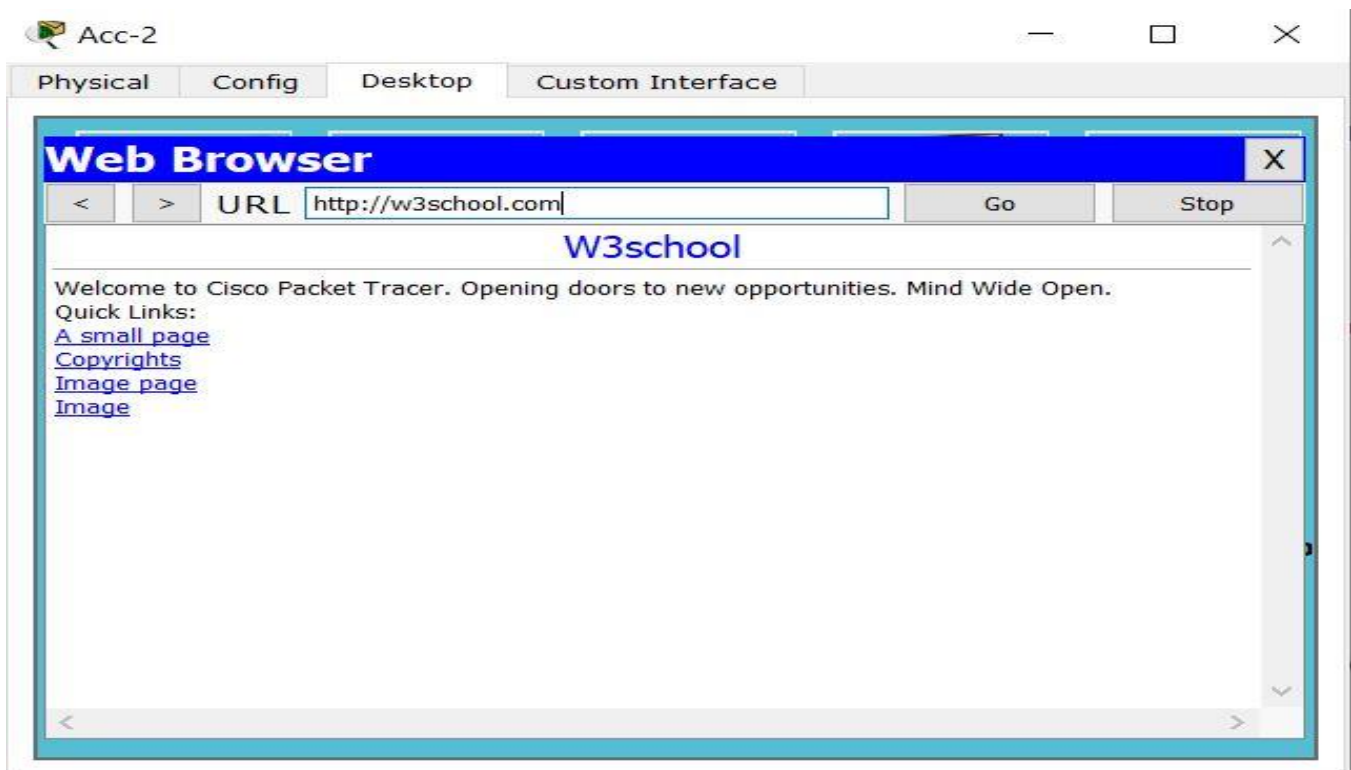
4.5.3.1 Accounts Section Test
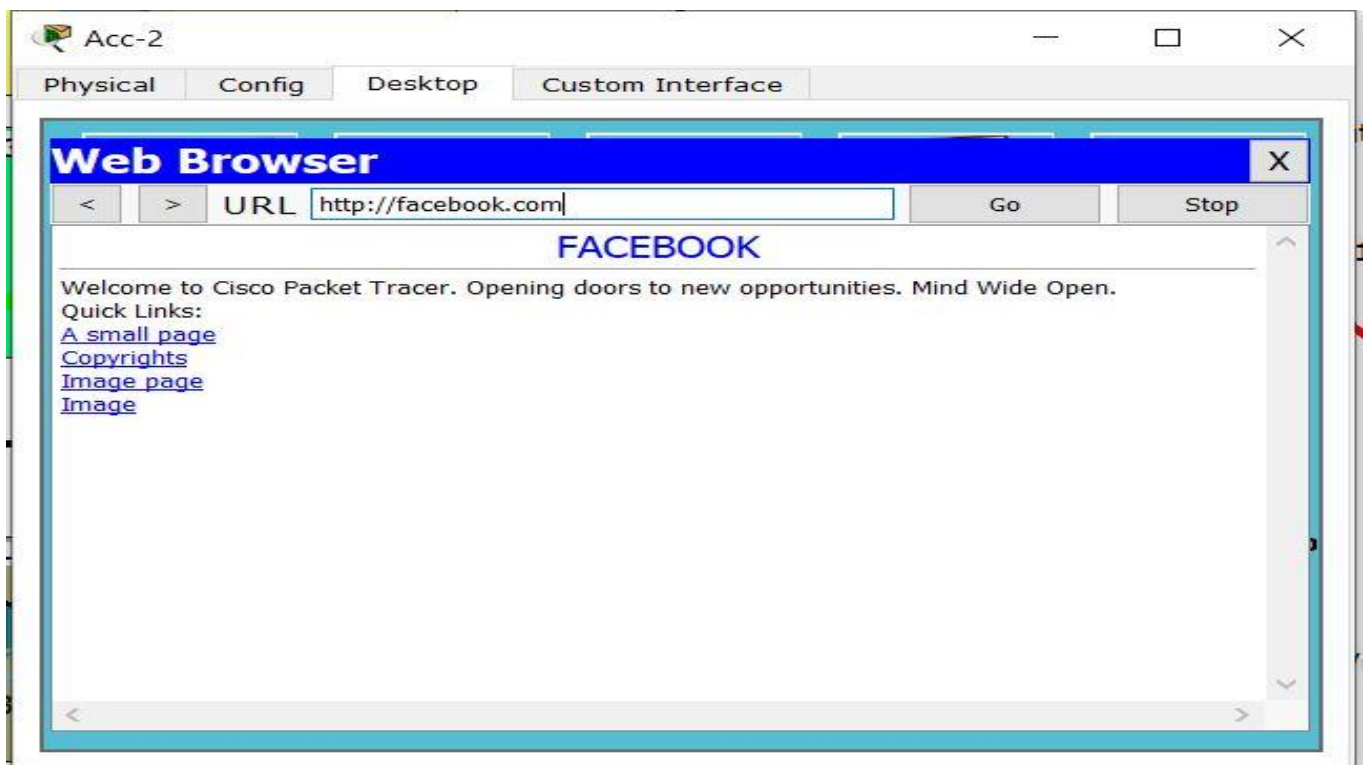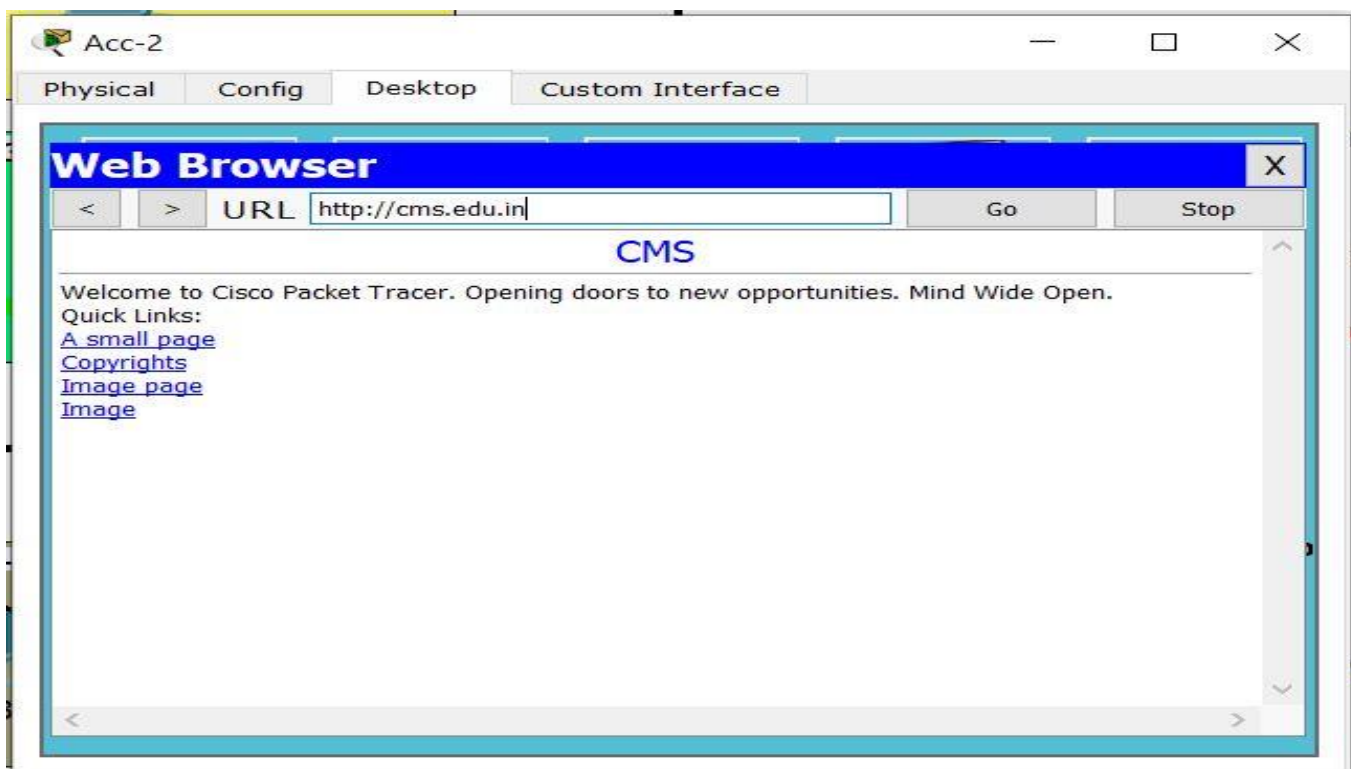
4.5.3.2 Accounts Section Test
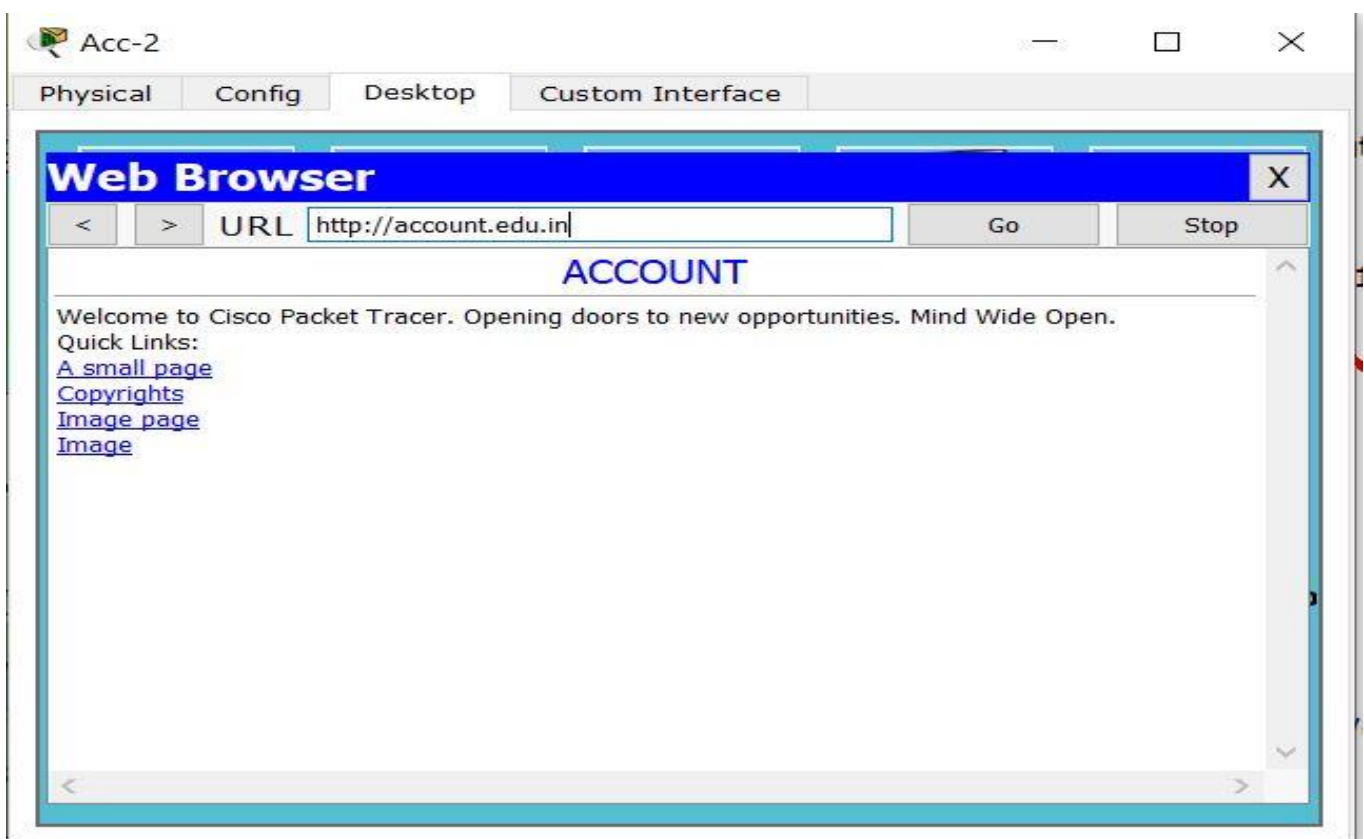
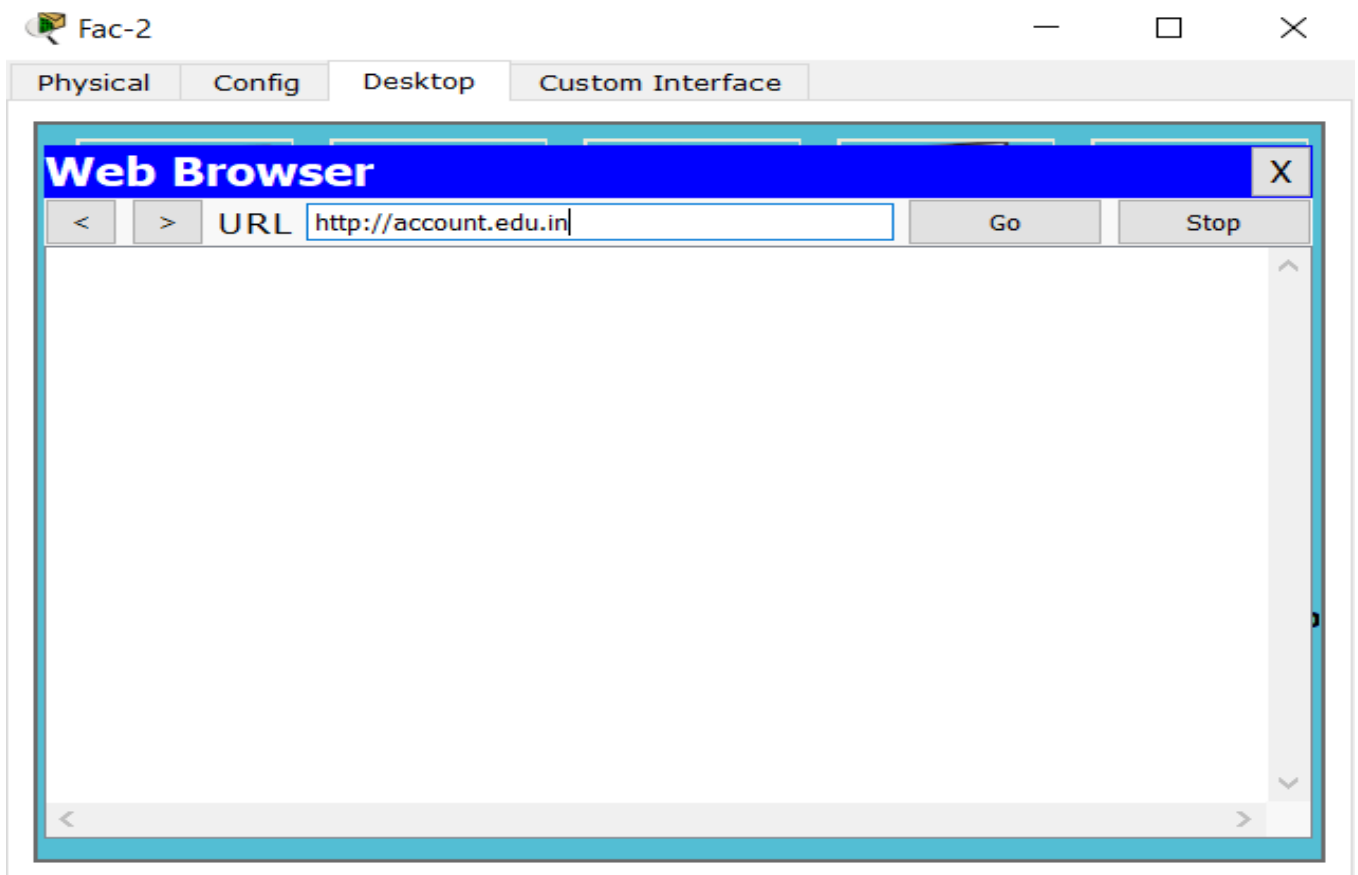## 4.5.3.3 Accounts Section Test

4.5.3.4 Accounts Section Test
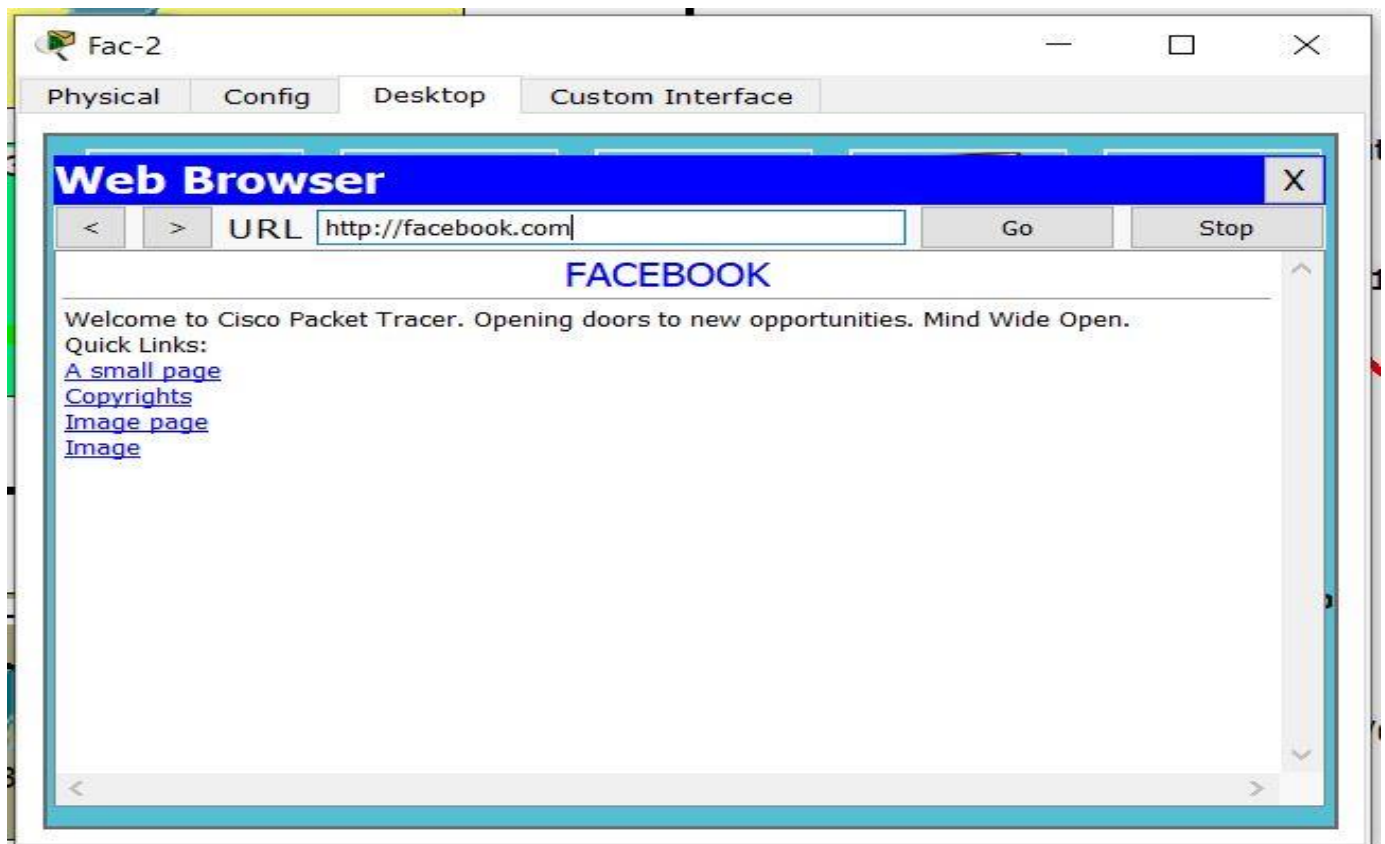

4.5.3.5 Accounts Section Test

- Accounts Section being the section that has most authorities, can access all the servers available in University Network.

- It can also access all the websites on Internet.

- It can send data to computers in Faculty Block via VLAN and Inter-VLAN Routing.
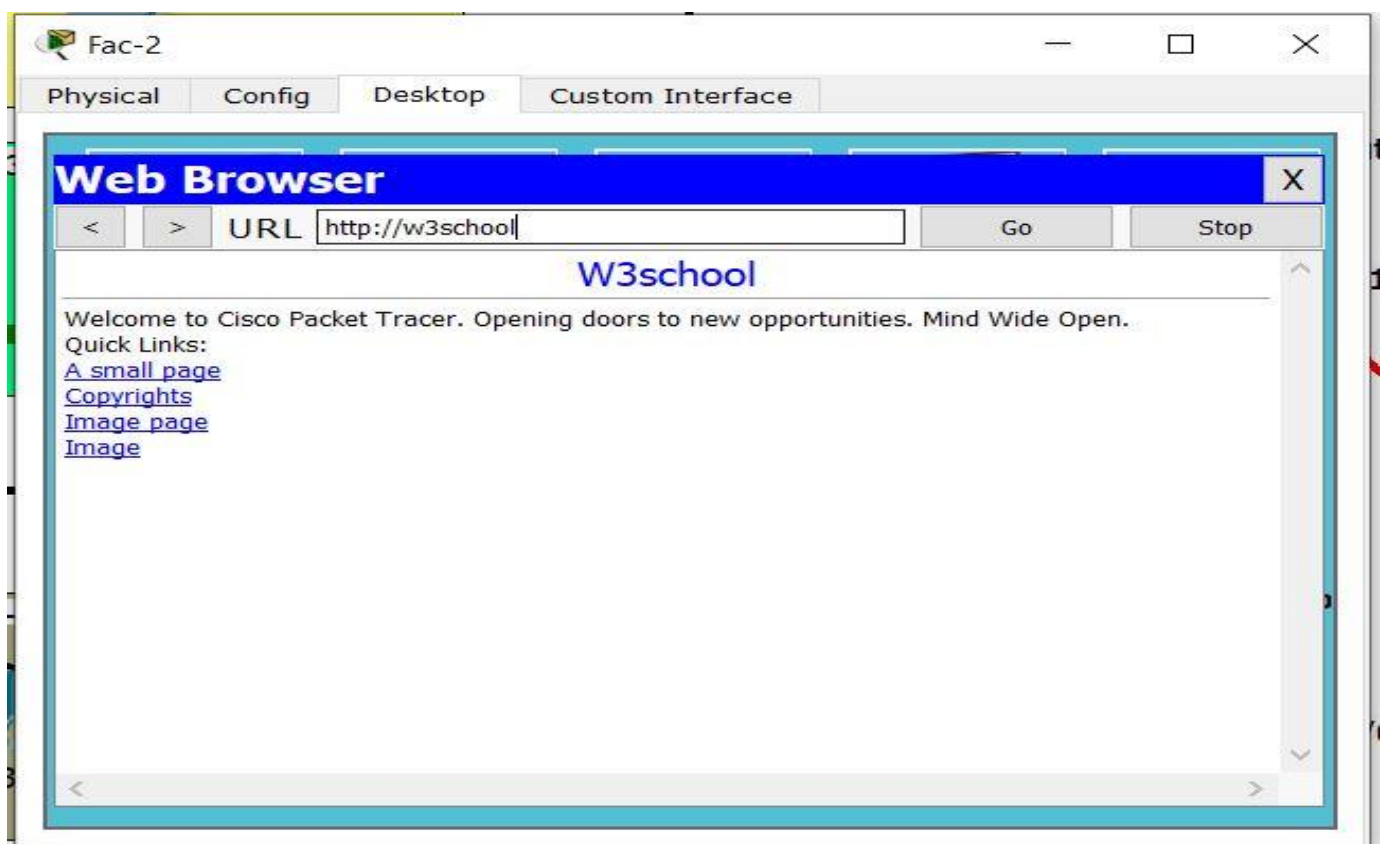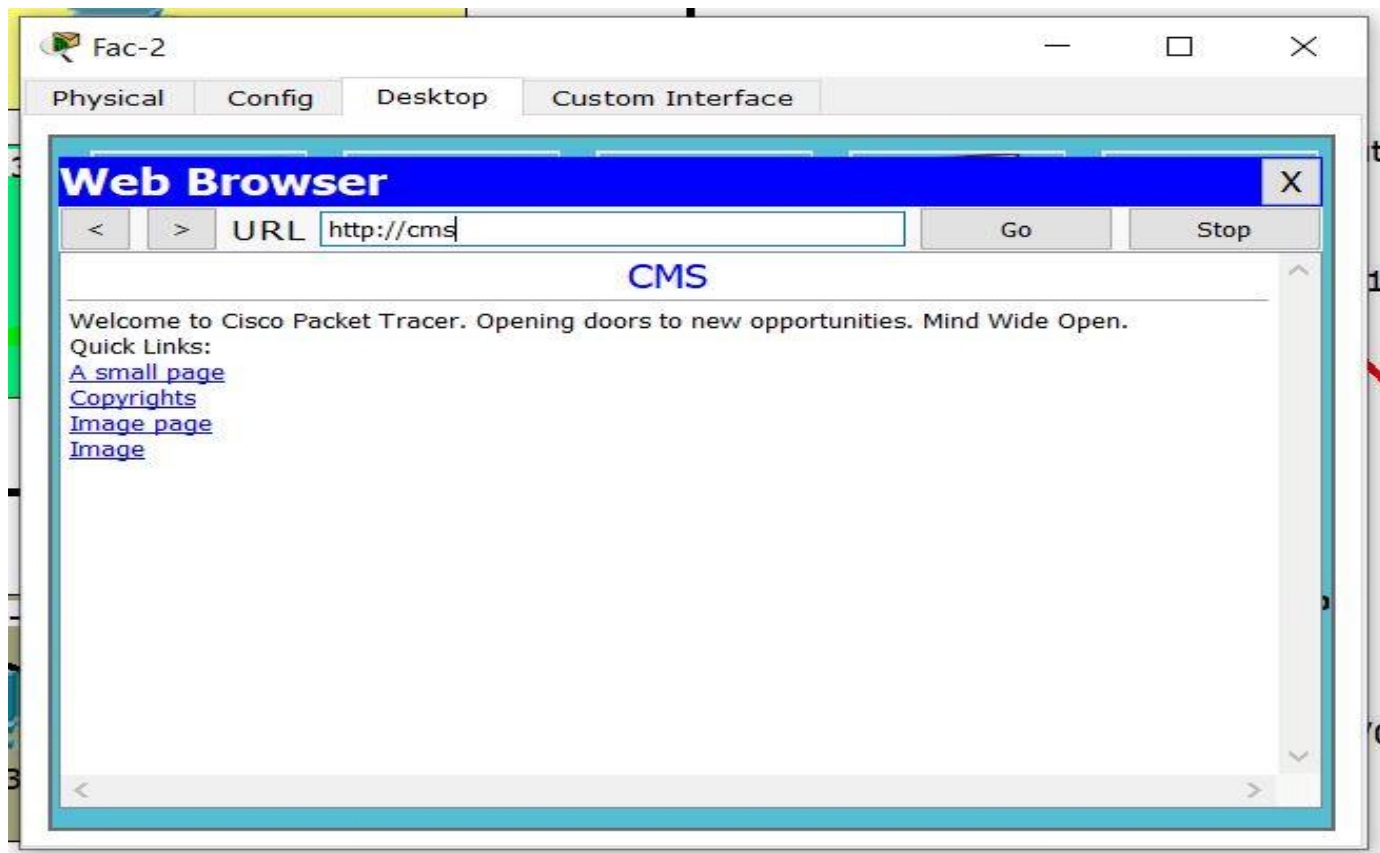
4.5.4 Faculty Block Test

Web Browser

URL http://account.edu.in

4.5.4.1 Faculty Block Test

- Faculty Block can access all the servers in University Network except the server of Accounts section.

- It can access all the websites on Internet.

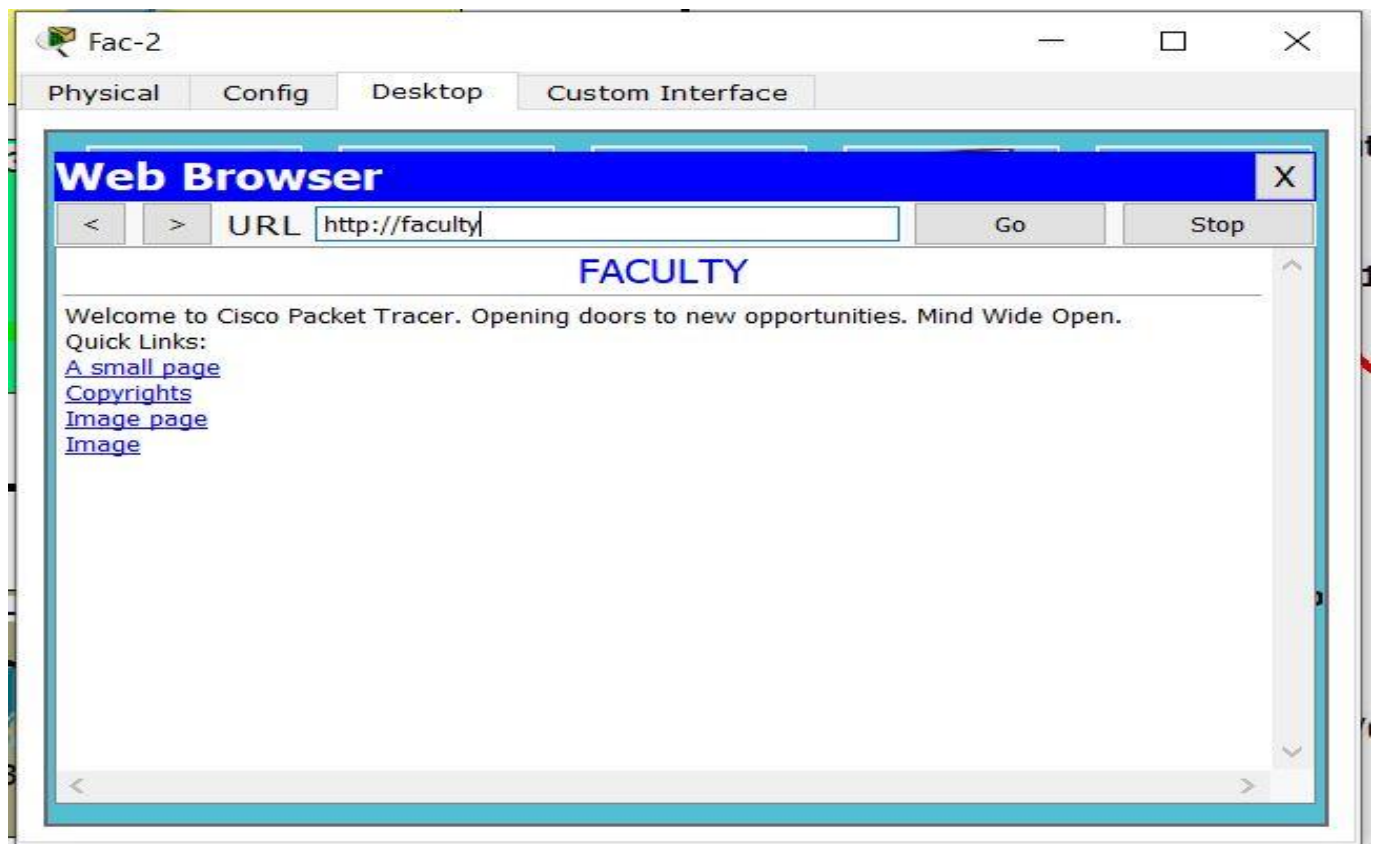- It can also send data to computers of Accounts section via VLAN and Inter-VLAN Routing.

Fac-2 — □ ×

Physical   Config   Desktop   Custom Interface

Web Browser X

< > URL http://facebook.com   Go   Stop

FACEBOOK

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4.5.4.2 Faculty Block Test

Fac-2 — □ ×

Physical   Config   Desktop   Custom Interface

Web Browser X

< > URL http://w3school   Go   Stop

W3school

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4.5.4.3 Faculty Block Test

Fac-2   —   □   ✕

Physical	Config	Desktop	Custom Interface

Web Browser   X

<	>	URL	http://cms		Go	Stop

CMS

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4.5.4.4 Faculty Block Test

Fac-2   —   □   ✕

Physical	Config	Desktop	Custom Interface

Web Browser   X

<	>	URL	http://faculty		Go	Stop

FACULTY

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4.5.4.5 Faculty Block Test

4.5.5 Routers Test

- To test Routers, we can run commands into CLI(Command Line Interface) of Router.

- When we run "show ip route" in CLI of Router, Router's routing table is given as output.

4.5.5.1 Router-1 Test

4.5.5.2 Router-2 Test

ISP — Physical | Config | CLI

IOS Command Line Interface

```
G to FULL, Loading Done


User Access Verification

Password:
Password:

ISP>show ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

O    192.168.10.0/24 [110/66] via 192.168.50.2, 00:04:58, Serial0/0/1
O    192.168.20.0/24 [110/65] via 192.168.50.2, 00:05:38, Serial0/0/1
O    192.168.30.0/24 [110/65] via 192.168.50.2, 00:04:58, Serial0/0/1
O    192.168.40.0/24 [110/65] via 192.168.50.2, 00:05:38, Serial0/0/1
C    192.168.50.0/24 is directly connected, Serial0/0/1
     192.168.100.0/27 is subnetted, 6 subnets
O       192.168.100.0 [110/193] via 192.168.100.129, 00:05:28, Serial0/0/0
O       192.168.100.32 [110/192] via 192.168.100.129, 00:05:28, Serial0/0/0
O       192.168.100.64 [110/129] via 192.168.100.129, 00:05:28, Serial0/0/0
O       192.168.100.96 [110/128] via 192.168.100.129, 00:05:38, Serial0/0/0
C       192.168.100.128 is directly connected, Serial0/0/0
O       192.168.100.160 [110/65] via 192.168.100.129, 00:05:38, Serial0/0/0
ISP>
```

Copy | Paste

Type here to search ... ENG 20:38 29-03-2023

4.5.5.3 ISP Router

WAN-1 — Physical | Config | CLI

IOS Command Line Interface

```
00:00:10: %OSPF-5-ADJCHG: Process 1, Nbr 192.168.100.97 on Serial0/0/0 from LOAD
ING to FULL, Loading Done


User Access Verification

Password:

WAN-1>show ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

O    192.168.10.0/24 [110/258] via 192.168.100.34, 00:05:15, Serial0/0/0
O    192.168.20.0/24 [110/257] via 192.168.100.34, 00:05:45, Serial0/0/0
O    192.168.30.0/24 [110/257] via 192.168.100.34, 00:05:15, Serial0/0/0
O    192.168.40.0/24 [110/257] via 192.168.100.34, 00:05:45, Serial0/0/0
O    192.168.50.0/24 [110/256] via 192.168.100.34, 00:05:45, Serial0/0/0
     192.168.100.0/27 is subnetted, 6 subnets
C       192.168.100.0 is directly connected, FastEthernet0/0
C       192.168.100.32 is directly connected, Serial0/0/0
O       192.168.100.64 [110/65] via 192.168.100.34, 00:05:45, Serial0/0/0
O       192.168.100.96 [110/128] via 192.168.100.34, 00:05:45, Serial0/0/0
O       192.168.100.128 [110/192] via 192.168.100.34, 00:05:45, Serial0/0/0
O       192.168.100.160 [110/129] via 192.168.100.34, 00:05:45, Serial0/0/0
WAN-1>
```

Copy | Paste

Type here to search ... ENG 20:39 29-03-2023

4.5.5.4 WAN-1 Router

WAN-2 — Physical | Config | CLI

IOS Command Line Interface

```
00:00:10: %OSPF-5-ADJCHG: Process 1, Nbr 192.168.100.33 on Serial0/0/0 from LOAD
ING to FULL, Loading Done


User Access Verification

Password:

WAN-2>show ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

O    192.168.10.0/24 [110/194] via 192.168.100.98, 00:05:31, Serial0/0/1
O    192.168.20.0/24 [110/193] via 192.168.100.98, 00:06:01, Serial0/0/1
O    192.168.30.0/24 [110/193] via 192.168.100.98, 00:05:31, Serial0/0/1
O    192.168.40.0/24 [110/193] via 192.168.100.98, 00:06:01, Serial0/0/1
O    192.168.50.0/24 [110/192] via 192.168.100.98, 00:06:01, Serial0/0/1
     192.168.100.0/27 is subnetted, 6 subnets
O       192.168.100.0 [110/65] via 192.168.100.33, 00:06:11, Serial0/0/0
C       192.168.100.32 is directly connected, Serial0/0/0
C       192.168.100.64 is directly connected, FastEthernet0/0
C       192.168.100.96 is directly connected, Serial0/0/1
O       192.168.100.128 [110/128] via 192.168.100.98, 00:06:11, Serial0/0/1
O       192.168.100.160 [110/65] via 192.168.100.98, 00:06:11, Serial0/0/1
WAN-2>
```

Copy | Paste

4.5.5.5 WAN-2 Router

WAN-3 — Physical | Config | CLI

IOS Command Line Interface

```
00:00:10: %OSPF-5-ADJCHG: Process 1, Nbr 192.168.100.97 on Serial0/0/0 from LOAD
ING to FULL, Loading Done


User Access Verification

Password:

WAN-3>show ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

O    192.168.10.0/24 [110/130] via 192.168.100.130, 00:05:48, Serial0/0/1
O    192.168.20.0/24 [110/129] via 192.168.100.130, 00:06:18, Serial0/0/1
O    192.168.30.0/24 [110/129] via 192.168.100.130, 00:05:48, Serial0/0/1
O    192.168.40.0/24 [110/129] via 192.168.100.130, 00:06:18, Serial0/0/1
O    192.168.50.0/24 [110/128] via 192.168.100.130, 00:06:28, Serial0/0/1
     192.168.100.0/27 is subnetted, 6 subnets
O       192.168.100.0 [110/129] via 192.168.100.97, 00:06:18, Serial0/0/0
O       192.168.100.32 [110/128] via 192.168.100.97, 00:06:28, Serial0/0/0
O       192.168.100.64 [110/65] via 192.168.100.97, 00:06:28, Serial0/0/0
C       192.168.100.96 is directly connected, Serial0/0/0
C       192.168.100.128 is directly connected, Serial0/0/1
C       192.168.100.160 is directly connected, FastEthernet0/0
WAN-3>
```
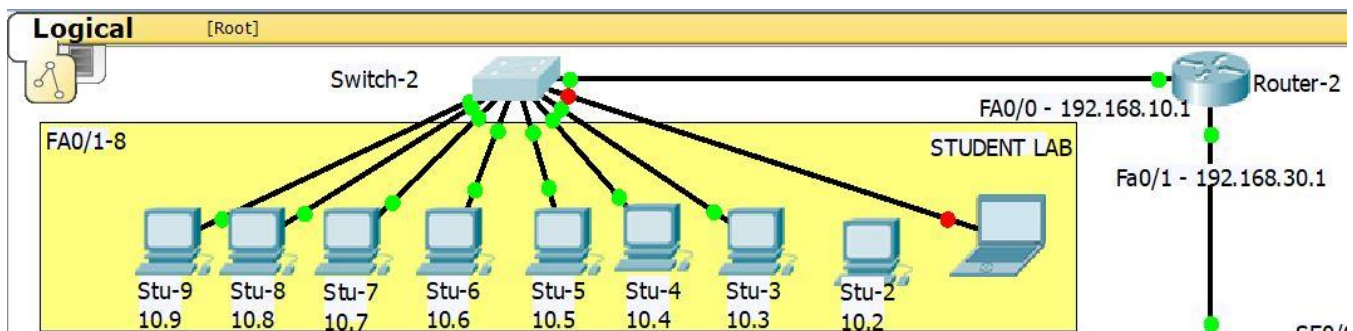
Copy | Paste

4.5.5.6 WAN-3 Router

4.5.6 Port-Security Test

4.5.6.1 Port-Security Test

- Here, as we have given Port-Security in Switches, if any external computer which is not part of the network, tries to connect in network and changes its IP address as the Computer in network.

- But whenever it will try to access Internet through it, the interface on which the computer is connected will automatically shut down due to unknown MAC address.

- The administrator will have to power on the port from privilege mode where it show the violation of security has been done when we run "show port-security interface fa0/1"
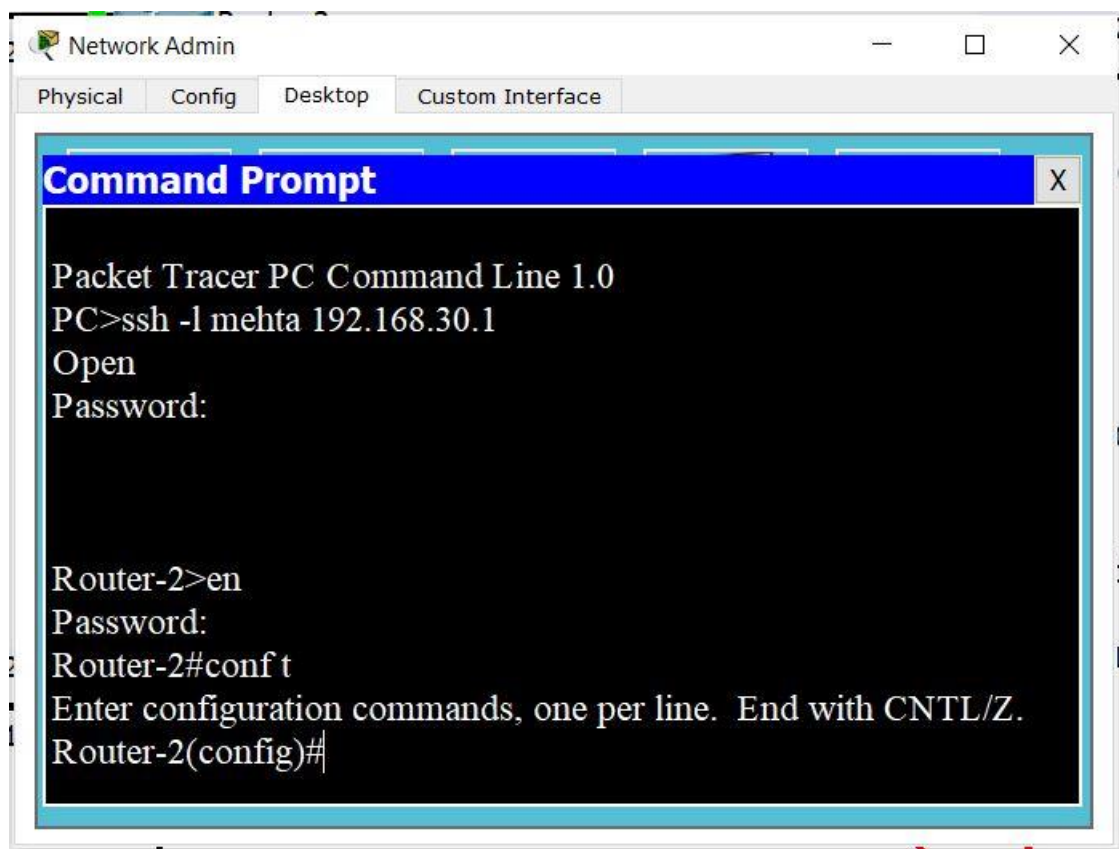

4.5.6.1 Port-Security Test

4.5.7 Network Admin

- It is not feasible if we have to go to where every Router or Switch is located to configure it, we add all the Routers and Switches into domain.

- Here we have a workstation for Network Administrator in Network, in which we have given access of all the Routers and Switches in Network using SSH(Secure Shell).

Network Admin
60.2

4.5.7.1 Network Administrator

Command Prompt

```
Packet Tracer PC Command Line 1.0
PC>ssh -l mehta 192.168.30.1
Open
Password:



Router-2>en
Password:
Router-2#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Router-2(config)#
```
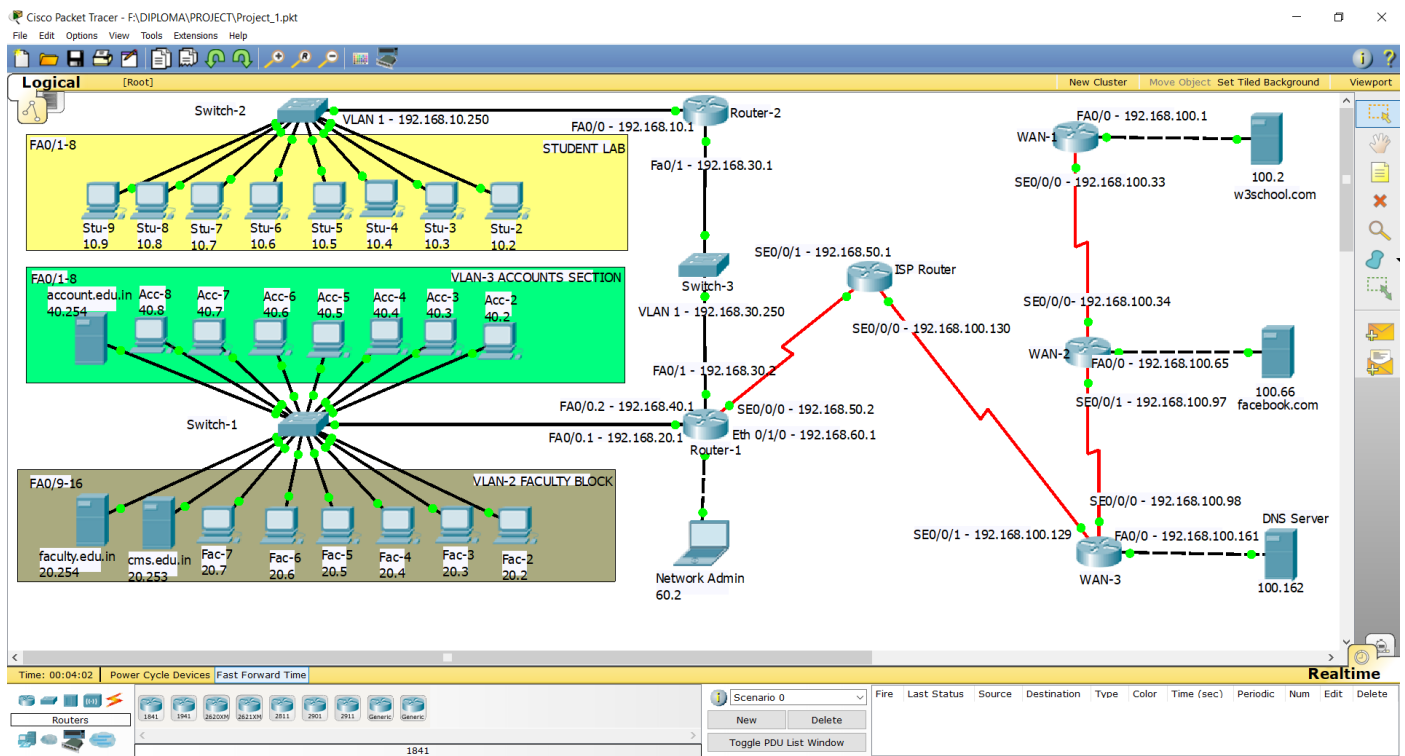
4.5.7.2 Network Administrator

Chapter 5

Glimpse of Project

5.1 Glimpse of Project

5.1 Glimpse of Project

5.1 Glimpse of Project

Chapter 6

Project Management

6.1 Project Limitations

6.2 Future Enhancement

6.3 Conclusion

6.4 Bibliography

6.1 Project Limitations

- Need a qualified Network Administrator to manage the network

- No backup available in this virtual network of cisco packet tracer

- cannot give alternate DNS in cisco packet tracer

- If any link or wire breaks, the network will be disconnected as there is no backup link

6.2 Future Enhancement

- Expand the network in future

- Set up a DHCP Server for dynamic IP allocation

6.3 Conclusion

This is a network that helps to manage the internet connectivity of all the university department network, server and data. By using this, it is easy to sort out data. This network helps to reduce network traffic. This network helps in arrangement of important data. This also reduces the stress of data arrangement. It reduces server problems The University's network can be operated easily and efficiently without having any complications.

6.4 Bibliography

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