



SZABIST

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DATA COMMUNICATION AND NETWORK OF SZABIST

Project Report

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ACKNOWLEDGEMENTS

First of all, our biggest gratitude goes to God “Allah” who has consistently supported us with continued strength and knowledge all through our project.

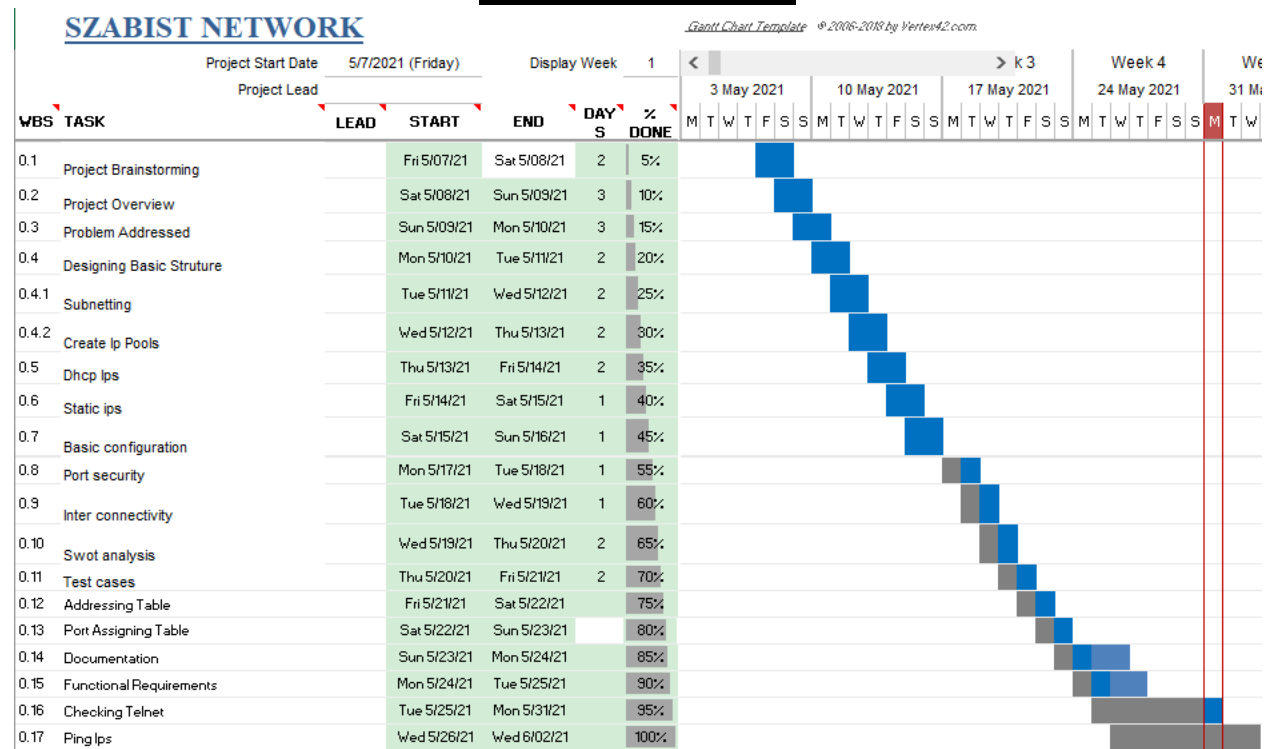
Special big thanks to my supervisor, **Professor Naveed Ghani** who always educated and fed us with drops of science from his ocean of sciences.

My deepest thanks to **Professor Mubeen Ahmed Khan**, who’s guidance and mentorship during our project never ceases to amaze us.

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GANTT CHART



ABSTRACT:

Computer networks have become increasingly ubiquitous. However, with the increase in networked applications, there has also been an increase in difficulty to manage and secure these networks. One of the most significant challenges to networks is attacks on their resources caused by inadequate network security.

The purpose of this project is to design a suitable network system for SZABIST.

Research was conducted for this project through a review of existing network pertaining to intrusion detection systems and how they function. This project will help us enhance our knowledge about computer networks work.

INTRODUCTION:

The computer network represents a component, especially on how it enhances the functional performance in different fields and organizations, such as companies and schools. A university's computer network performs so many functions, such as connecting students with the university, faculty, and the library. Most universities today use the network to provide online education by connecting widely dispersed students with their professors directly. For this reason, computer networks play a vital role in the education area by providing efficient communications for the university environment.

OBJECTIVES:

The main goal of this project is to present a Local Area Network design suitable for SZABIST. Many universities in developing countries are searching for ways to integrate networks that have security, backup, and other features available in a university network in a developed country. The universities in developing countries are faced with challenges in designing a network that is equal in the standards used by developed countries. The main problem developing countries face deals with a profound budget deficit. This project will help to design a network that employs low-cost solutions without unacceptable compromises in security or quality.

CAPACITY :

This is the ability of the network to withstand intense pressure from utilization. Most times, the networks are mainly crowded by many users that the network capacity could not handle. It is very important to design a network in such a way to handle many users without failure. This network is designed for a user population of 1000. If more users access the network, it will be able to scale.

RELIABILITY

Reliability refers to the ability of the computer network's hardware and software component to consistently perform according to its specifications. This project's network will be highly reliable in performance because its components will be chosen from Cisco Packet Tracer, a major and well-regarded software. Reliability of the security in the network is in high level. This is because there are many powerful devices used to secure data like the firewall device that is used in filtering data entering into the network. If any issue happens to the data, there is a way of

SECURITY:

Due to the constant development of software programs which has led to the increase in the theft and the number of cyber security attacks, security has become important for all hosts on a network. Network security must protect all information and users supplied by a network. Security involves a pro-active prevention process to avert any danger or attack in a network. A computer administrator must be present in order to enforce the security of data access in the network. Restoring the data from backup servers. All routers and switches are protected by passwords and encryptions. We have also implemented port security features on servers that will ensure that no intruder access our network.

IMPLEMENTING A NETWORK OF SZABIST:

SZABIST (Shaheed Zulfiqar Ali Bhutto Institute of Science and Technology) is well renown institute of Pakistan. We are attempting at replicating the network of SZABIST. We have made VLANS for each department that are common in all three campuses for better network management. We have assigned IP addresses to each PC through dhcp service. We have statically assigned IP address to the server and printers in SZABIST.

The network of all these campuses is interconnected. The data network Centre of Szabist is built at 99 Campus. There are many devices that were used in designing the network, such as routers, switches, and servers. All devices were connected to each other to make integration network system and configured by putting IP addresses to all devices. All devices in the network were secured by passwords, and these passwords were encrypted to be more secure. The servers used for this network design are DHCP server and DNS servers. This report and design included additional components such as a web server, mail server, etc.

CHOOSE THE EQUIPMENT

Each network must have a media for transferring information from one node to another, or from one device to other devices. These media play a significant role in determining the transmission speed of the network, maximum distance, shielding against interference, and the cost of the network. There are two options for general use: One of them is a physical connection, and the other one is wireless

PHYSICAL CONNECTIONS

Cable networks are hardware materials used for connecting network devices together such as routers to switches, computers to switches...etc. There are many kinds of network cables used to connect devices. Such cables include optical fiber and twisted pair cable. These cables differ from each other in terms of cost of the network, way to install, the distance between devices, and speed. We have use two types of wires in our network.

1. COPPER CROSS OVER

A crossover Ethernet cable is a type of Ethernet cable used to connect computing devices together directly.

Unlike straight through cable, the RJ45 crossover cable uses two different wiring standards: one end uses the T568A wiring standard, and the other end uses the T568B wiring standard. The internal wiring of Ethernet crossover cables reverses the transmit and receive signals. It is most often used to connect two devices of the same type: e.g. two computers (via network interface controller) or two switches to each other.

Use crossover cables for the following cabling:

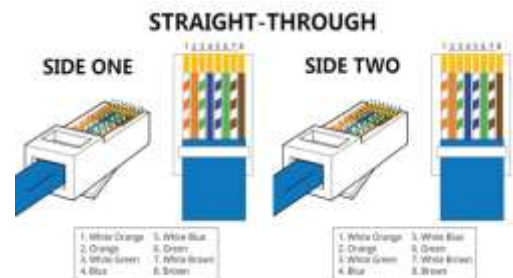
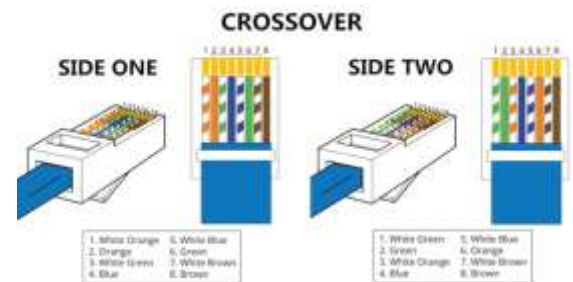
Switch to switch

Router to router

PC to PC

2. COPPER STRAIGHT-THROUGH

A straight through cable is a type of twisted pair cable that is used in local area networks to connect a computer to a network hub such as a router. This type of cable is also sometimes called a patch cable and is an alternative to wireless connections where one or more computers access a router through a wireless signal. On a straight through cable, the wired pins match. Straight through cable use one wiring standard: both ends use T568A wiring standard or both ends use



T568B wiring standard. The following figure shows a straight through cable of which both ends are wired as the T568B standard.

Use copper straight-through cables for the following cabling:

Switch to router

Switch to PC or server

WIRELESS

Wireless is used to depict media communications in which electromagnetic waves transfer the sign over part or most of the transmission path, so there is less need for cable. There are many advantages in wireless transmission when compared to wire. This includes the easy network installation with less time because "Wireless networks save money on cabling costs and are easier than wired networks to install, operate, and maintain.

ACL IMPLEMENTATION ON FACULTY-PRINTER:

ACLs are a network filter utilized by routers and some switches to permit and restrict data flows into and out of network interfaces. When an ACL is configured on an interface, the network device analyzes data passing through the interface, compares it to the criteria described in the ACL, and either permits the data to flow or prohibits it.

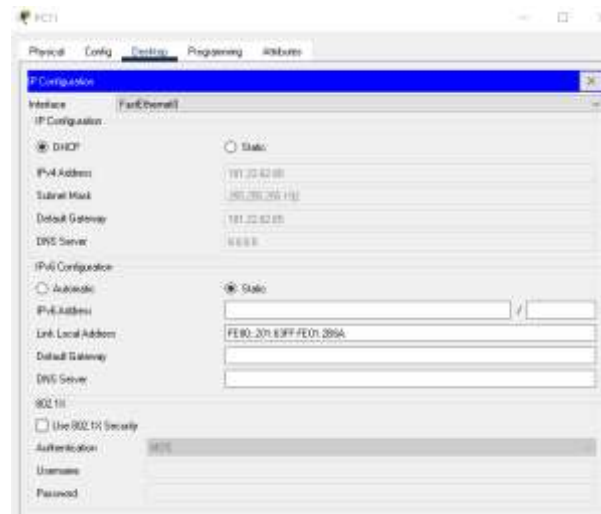
We have implemented ACL security on FACULTY Printer so that no other system can access Faculty-printer.

SERVERS

The term server refers to a device or a computer program that supports other devices or programs which are called clients. This is known as the client-server model; one server can support many clients and can give different functionalities or characteristics to different clients. The cost of purchasing many servers is very high, and institutions in developing countries cannot afford such high-priced systems. According to Jan, "The server is 61 usually the most expensive computer on the network."29 (26). As a result, few servers will be used for this project's network design. The few servers that will be used in this project are DHCP server.

DHCP Server

Dynamic Host Configuration Protocol (DHCP) server will be connected to the switch device in order to connect to many computers. Each computer that is connected to the network needs an IP address. The DHCP will distribute the IP address to each computer. Cisco DHCP server is used because it is easy to configure the DHCP device using packet tracer simulation program. After configuring DHCP server, all hosts on the local area must change the IP configuration option from static to DHCP to get the IP address automatically. The picture shows how a computer gets IP address from DHCP server:



TOPOLOGY:

STAR TOPOLOGY:

The star topology is generally used for all networks whereby each device or computer is connected to a center hub by a direct line. The center hub can be a switch, router, or server. Each computer connects directly to the center device such as the hub, router, and server. A star topology is designed with each node connected directly to a central network hub, switch, or concentrator. It is easy to replace, install or remove hosts or other devices, the problem can be easily detected-It is easier to modify or add a new computer without disturbing the rest of the network by simply running a new line from the computer to the central location and plugging it to the hub. This topology will be used for this design because each computer is independent of other computers in the network, and it is less expensive than mesh and ring topology and easy to install.

FUNCTIONAL REQUIREMENTS:

1. Three campuses have separate local area networks. Staff users from two campuses should be capable of accessing other campuses.
2. There should be clear restriction of Lab (students) host not capable of pinging any office (staff) hosts.
3. Printing services should be available to all the university users.

4. Wireless access is available to all the staff and student and guest as well on every campus.
5. Internet should be provided to all the sections.
6. IP network design is required
7. Hardware requirements with costs specification.
8. Configuration details on the hardware (Routers, switches and workstations).

CONCLUSION:

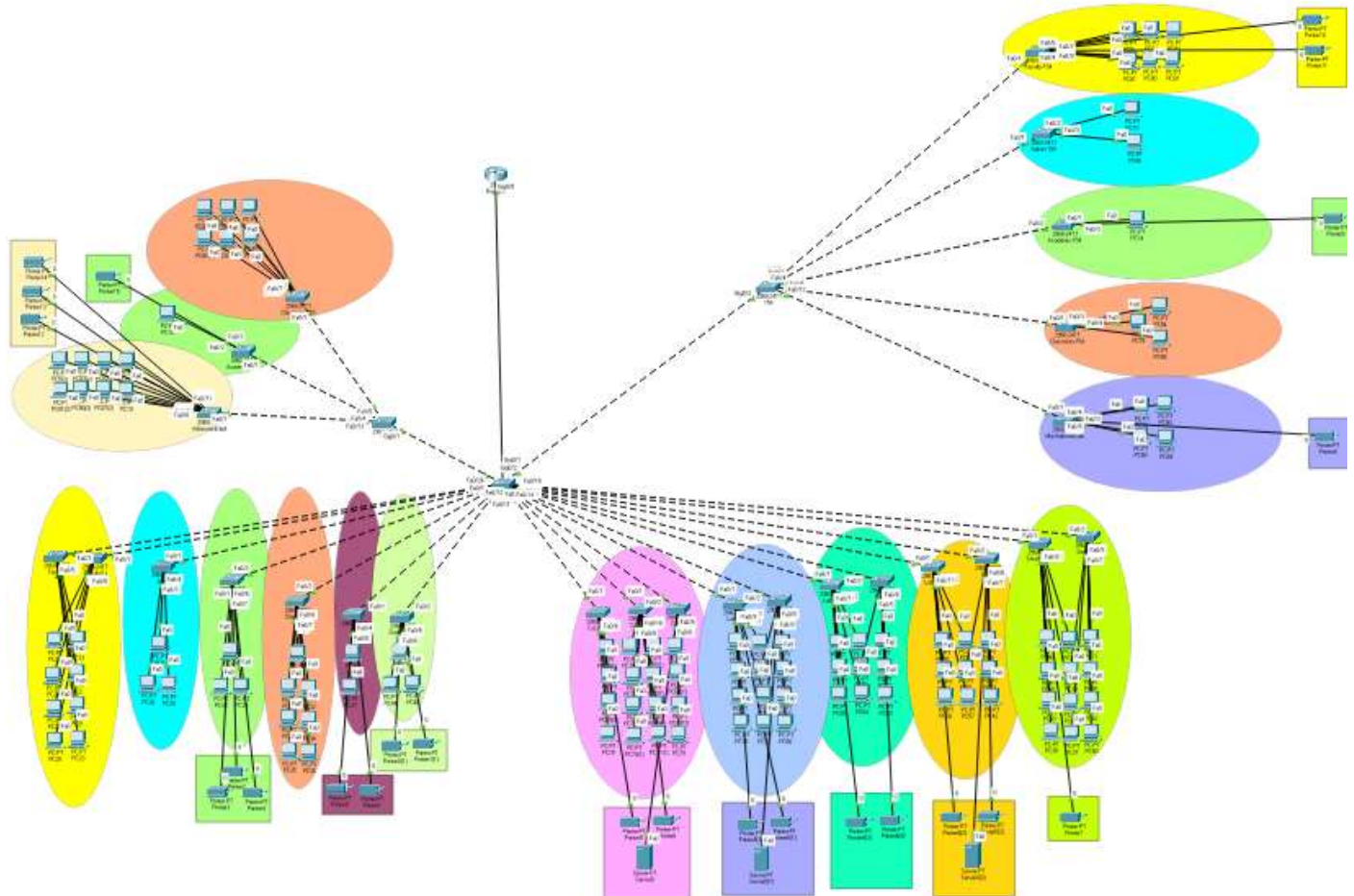
In conclusion, a network is two or more computing machines connected together using a telecommunication system for the purpose of communicating and sharing resources. Without a network, our university would not be able to share resources and increase productivity more effectively. Our network allows students to use the Internet over large areas. This enables the students to access resources of all of the campuses, be it printers, servers or internet. As you can see, our network has many benefits to the end user. Whether your network is wired or wireless, networks are an important part of technology.

Feedback from the stakeholders involved in this project has been extremely positive. Use of Cisco's products has enabled us to make large scale networks which would not be possible otherwise.

SWOT ANALYSIS

<p><u>STRENGTHS</u></p> <ul style="list-style-type: none">• Cost effective.• Flexible.• Simplified cost and consumption model• Faster provisioning of system and applications• Secured Infrastructure• Compliant facilities• Maintenance cost reduction• Convenient level of accessibility• Expandability• Entergy saving	<p><u>WEAKNESS</u></p> <ul style="list-style-type: none">• Increased dependency• High speed internet connection• Data transfer bottleneck• Post training required• Lack of physical control of data• Not secured• Financial aspect• Reliability and trust• Geographical factors
<p><u>OPPORTUNITIES</u></p> <ul style="list-style-type: none">• Adaptive to future needs• Standardized process• Quick solution of a problem• High tech work environment• Offering modern information solutions according to the latest technology	<p><u>THREATS</u></p> <ul style="list-style-type: none">• Security concerns (data security)• Difficulty from migration from one to another platform• Hidden cost (back-up, problem solving and recovery)• Compatibility reduction• Viruses• System damage• Corrupt system

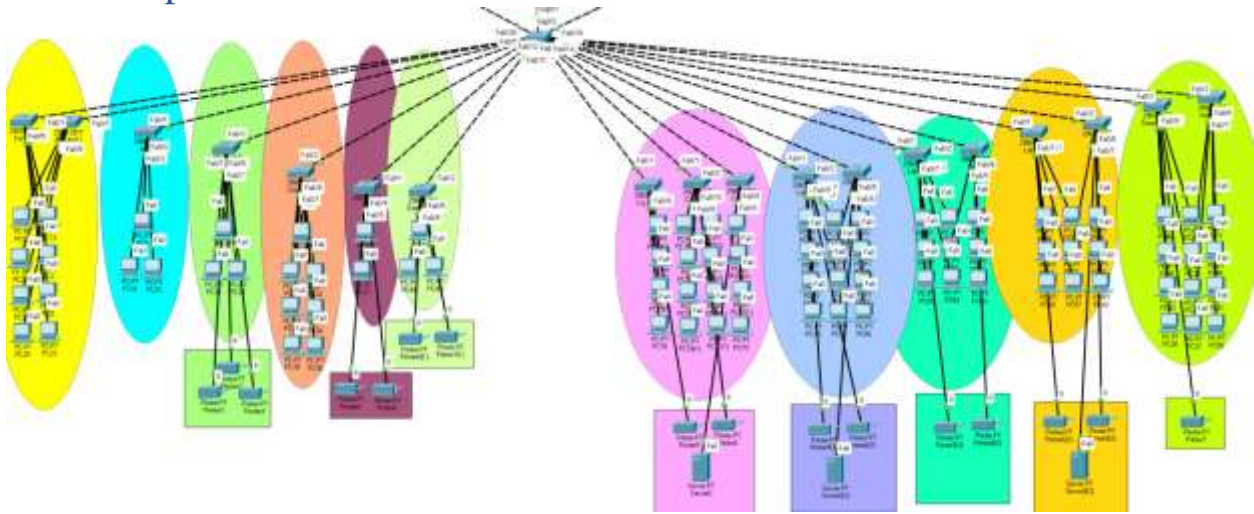
GRAPHICAL REPRESENTATION OF NETWORK:



SZABIST CAMPUSES KARACHI

There will be one Edge Router which is located at the 100 campus and its inter connecting with switches of all the campuses including 100-campus.

100-Campus:



100 Campus is the main campus of SZABIST Karachi.

List of components:

Switches: 18

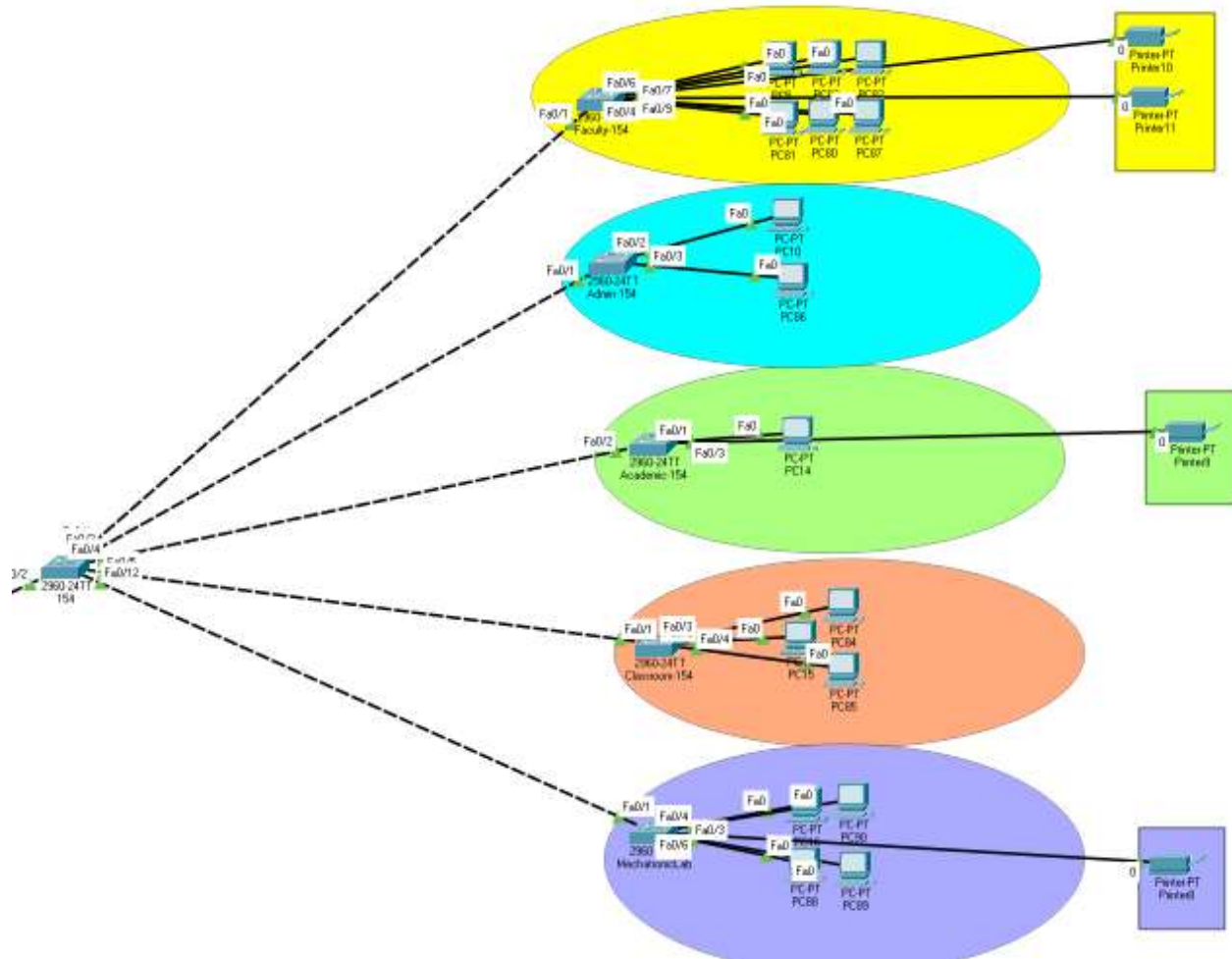
PC'S: 284

Server: 3

Printer: 16

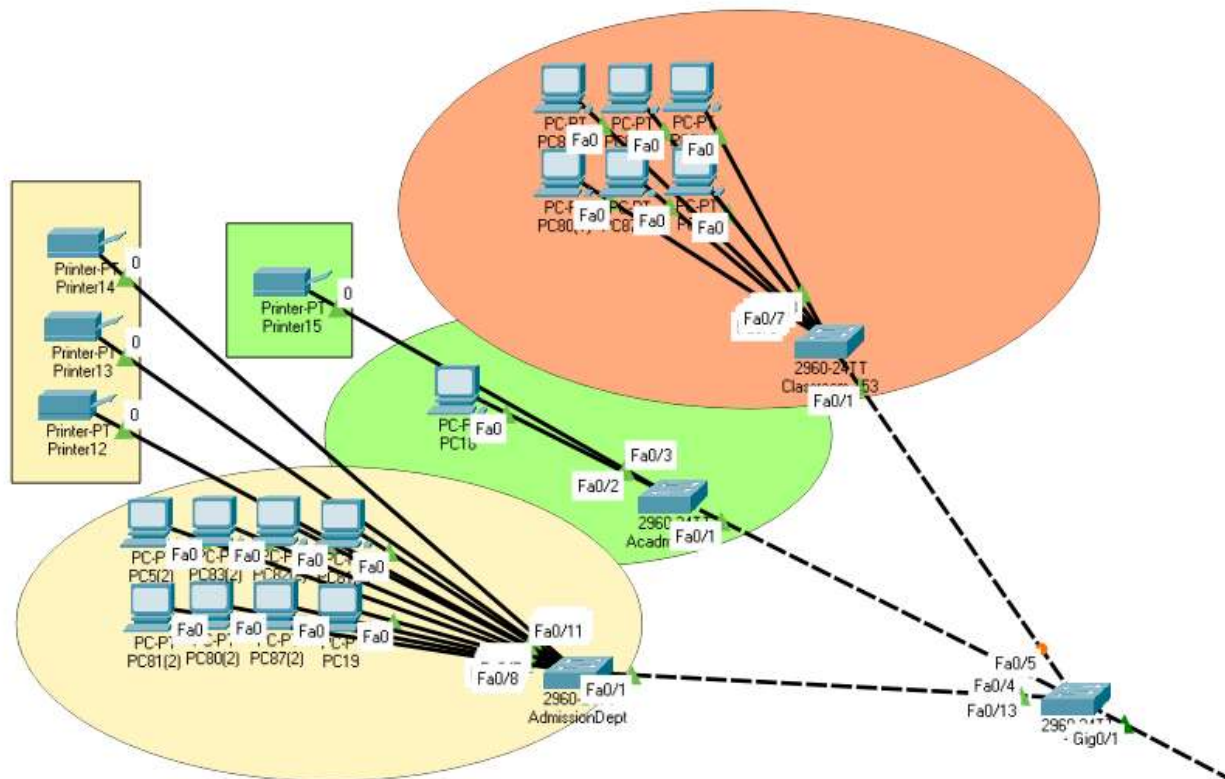
VLANS	NAME	SWITCHES (2960)	PCS	SERVER	PRINTER
2	FACULTY	2	30	0	0
3	ADMIN	1	4	0	0
4	IT	1	10	0	2
5	ACADEMICS	1	5	0	3
6	CLASSROOM	1	20	0	0
7	CS LAB	3	58	1	2
8	LAB 3	2	38	1	2
9	LAB 4	2	35	0	2
10	LAB 5	2	35	1	2
11	SMARTLAB	2	40	0	1
12	GAMINGLAB	1	9	0	2

154-Campus:

List of components:**Switches:** 5**PC'S:** 44**Printer:** 4

VLANS	NAME	SWITCHES	PCS	SERVER	PRINTER
2	FACULTY	1	18	0	2
3	ADMIN	1	2	0	0
5	ACADEMICS	1	1	0	1
6	CLASSROOM	1	8	0	0
13	MECHATRONICS	1	15	0	1

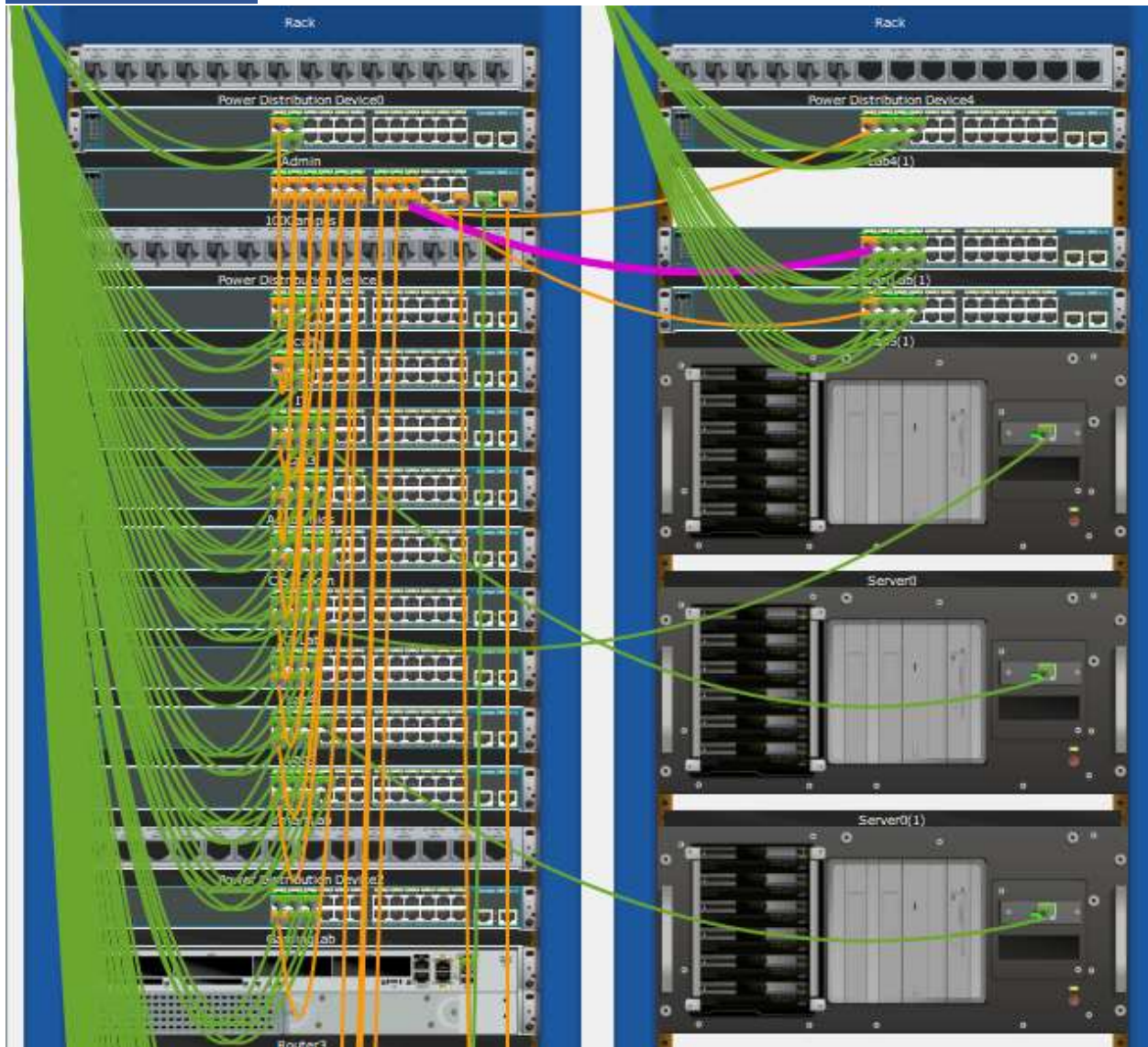
153-Campus:

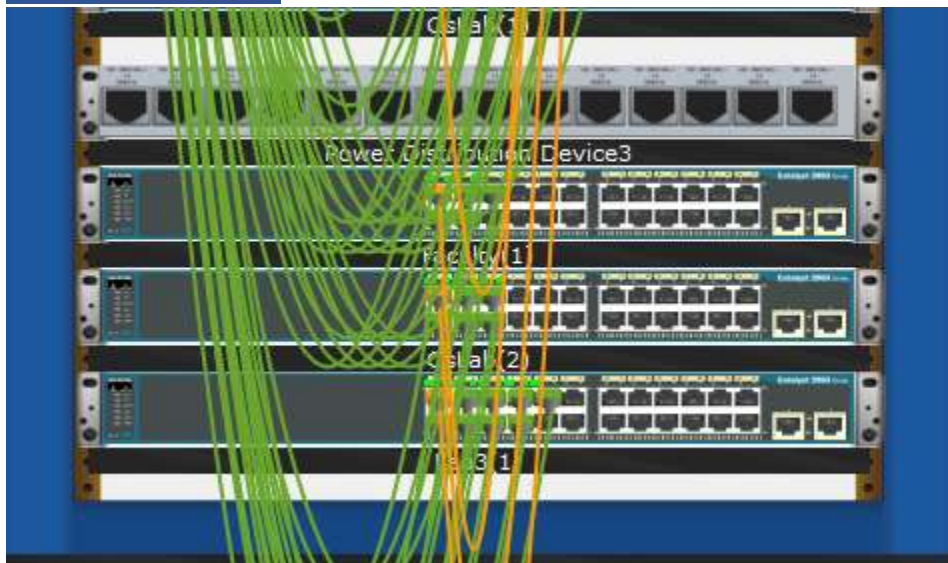
List of components:**Switches:** 3**PC'S:** 15**Printer:** 4

VLANS	NAME	SWITCHES	PCS	SERVER	PRINTER
5	ACADEMICS	1	1	0	1
6	CLASSROOM	1	6	0	0
14	ADMISSIONDEPT	1	8	0	3

PHYSICAL LAYOUT OF NETWORK:

100-CAMPUS:





ADDRESSING TABLE:

Device	Interface	IP Address	Subnet Mask	Default Gateway
EDGE ROUTE (R)	G0/0.1	181.22.57.1	255.255.255.192	N/A
	G0/0.2	181.22.57.129	255.255.255.192	N/A
	G0/0.3	181.22.57.193	255.255.255.224	N/A
	G0/0.4	181.22.62.1	255.255.255.192	N/A
	G0/0.6	181.22.62.65	255.255.255.192	N/A
	G0/0.7	181.22.62.145	255.255.255.240	N/A
	G0/0.8	181.22.62.129	255.255.255.240	N/A
	G0/0.9	181.22.64.1	255.255.255.192	N/A
	G0/0.10	181.22.79.1	255.255.255.192	N/A
	G0/0.11	192.168.1.1	255.255.255.224	N/A
	G0/0.12	192.168.2.1	255.255.255.192	N/A
	G0/0.13	181.22.62.161	255.255.255.224	N/A
	G0/0.14	181.22.62.194	255.255.255.240	N/A
100-SWITCH	VLAN 2	181.22.64.2	255.255.255.192	181.22.64.1
	VLAN 3	181.22.79.2	255.255.255.192	181.22.79.1
	VLAN 4	181.22.62.130	255.255.255.240	181.22.62.129
	VLAN 5	192.168.1.2	255.255.255.224	192.168.1.1
	VLAN 6	192.168.2.2	255.255.255.192	192.168.2.1
	VLAN 7	181.22.57.2	255.255.255.128	181.22.57.1

	VLAN 8	181.22.57.66	255.255.255.192	181.22.57.65
	VLAN 9	181.22.57.194	255.255.255.192	181.22.57.193
	VLAN 10	181.22.62.2	255.255.255.192	181.22.62.1
	VLAN 11	181.22.62.66	255.255.255.192	181.22.62.65
	VLAN 12	181.22.62.146	255.255.255.224	181.22.62.145
154-SWITCH	VLAN 2	181.22.64.3	255.255.255.192	192.168.5.1
	VLAN 3	181.22.79.3	255.255.255.192	181.22.79.1
	VLAN 5	192.168.1.3	255.255.255.224	192.168.1.1
	VLAN 6	192.168.2.3	255.255.255.192	192.168.2.1
	VLAN 13	181.22.62.162	255.255.255.224	181.22.62.161
153-SWITCH	VLAN 5	192.168.1.4	255.255.255.224	192.168.1.1
	VLAN 6	192.168.2.4	255.255.255.192	192.168.2.1
	VLAN 14	181.22.62.194	255.255.255.240	181.22.62.193
FACULTY-100-1	VLAN 2	181.22.64.4	255.255.255.192	181.22.64.1
FACULTY-100-2	VLAN 2	181.22.64.5	255.255.255.192	181.22.64.1
FACULTY-154	VLAN 2	181.22.64.6	255.255.255.192	181.22.64.1
ADMIN-100	VLAN 3	181.22.79.4	255.255.255.192	181.22.79.1
ADMIN-154	VLAN 3	181.22.79.5	255.255.255.192	181.22.79.1
ACADEMIC-100	VLAN 5	192.168.1.5	255.255.255.224	192.168.1.1
ACADEMIC-154	VLAN 5	192.168.2.5	255.255.255.224	192.168.1.1

ACADEMIC-153	VLAN 5	192.168.1.7	255.255.255.224	192.168.2.1
CLASSROOM-100	VLAN 6	192.168.2.5	255.255.255.192	192.168.2.1
CLASSROOM-154	VLAN 6	192.168.2.6	255.255.255.192	192.168.2.1
CLASSROOM-153	VLAN 6	192.168.2.7	255.255.255.192	192.168.2.1
CS-LAB-1	VLAN 7	181.22.57.3	255.255.255.128	181.22.57.1
CS-LAB-2	VLAN 7	181.22.57.4	255.255.255.128	181.22.57.1
CS-LAB-3	VLAN 7	181.22.57.5	255.255.255.128	181.22.57.1
LAB-3-1	VLAN 8	181.22.57.67	255.255.255.192	181.22.57.65
LAB-3-2	VLAN 8	181.22.57.68	255.255.255.192	181.22.57.65
LAB-4-1	VLAN 9	181.22.57.195	255.255.255.192	181.22.57.193
LAB-4-2	VLAN 9	181.22.57.196	255.255.255.192	181.22.57.193
LAB-5-1	VLAN 10	181.22.62.3	255.255.255.192	181.22.62.1
LAB-5-2	VLAN 10	181.22.62.4	255.255.255.192	181.22.62.1
SMART-LAB-1	VLAN 11	181.22.62.67	255.255.255.192	181.22.62.65
SMART-LAB-2	VLAN 11	181.22.62.69	255.255.255.192	181.22.62.65
IT	VLAN 4	181.22.62.131	255.255.255.240	181.22.62.129
GAMING LAB	VLAN 12	181.22.62.146	255.255.255.240	181.22.62.145
MECHATRONICS LAB	VLAN 13	181.22.62.162	255.255.255.224	181.22.62.161
ADMISSION DEPT	VLAN 14	181.22.62.195	255.255.255.240	181.22.62.193

FACULTY-PRINTER-1	VLAN 2	181.22.64.10	255.255.255.192	181.22.64.1
FACULTY-PRINTER-2	VLAN 2	181.22.64.11	255.255.255.192	181.22.62.1
ACADEMIC-PRINTER-1	VLAN 5	192.168.1.13	255.255.255.224	192.168.1.1
ACADEMIC-PRINTER-2	VLAN 5	192.168.1.14	255.255.255.224	192.168.1.1
ACADEMIC-PRINTER-3	VLAN 5	192.168.1.15	255.255.255.224	192.168.1.1
ACADEMIC-PRINTER-4	VLAN 5	192.168.1.16	255.255.255.224	192.168.1.1
ACADEMIC-PRINTER-5	VLAN 5	192.168.1.10	255.255.255.224	192.168.1.1
CS-PRINTER-1	VLAN 7	181.22.57.7	255.255.255.128	181.22.57.1
CS-PRINTER-2	VLAN 7	181.22.57.8	255.255.255.128	181.22.57.1
CS-SERVER	VLAN 7	181.22.57.9	255.255.255.128	181.22.57.1
LAB-3-PRINTER-1	VLAN 8	181.22.57.69	255.255.255.192	181.22.57.65
LAB-3-PRINTER-2	VLAN 8	181.22.57.70	255.255.255.192	181.22.57.65
LAB-3-SERVER	VLAN 8	181.22.57.71	255.255.255.192	181.22.57.65
LAB-4-PRINTER-1	VLAN 9	181.22.57.197	255.255.255.192	181.22.57.193
LAB-4-PRINTER-1	VLAN 9	181.22.57.198	255.255.255.192	181.22.57.193
LAB-5-PRINTER-1	VLAN 10	181.22.62.5	255.255.255.192	181.22.62.1
LAB-5-PRINTER-2	VLAN 10	181.22.62.6	255.255.255.192	181.22.62.1
LAB-5-SERVER	VLAN 10	181.22.62.7	255.255.255.192	181.22.62.1

SMARTLAB- PRINTER	VLAN 11	181.22.62.68	255.255.255.192	181.22.62.65
IT-PRINTER-1	VLAN 4	181.22.62.132	255.255.255.240	181.22.62.129
IT-PRINTER-2	VLAN 4	181.22.62.133	255.255.255.240	181.22.62.129
GAMING- PRINTER-1	VLAN 12	181.22.62.148	255.255.255.240	181.22.62.145
GAMING- PRINTER-2	VLAN 12	181.22.62.149	255.255.255.240	181.22.62.145
MECHA- PRINTER-1	VLAN 13	181.22.62.163	255.255.255.224	181.22.62.161
ADMISSION- PRINTER-1	VLAN 14	181.22.62.197	255.255.255.240	181.22.62.193
ADMISSION- PRINTER-2	VLAN 14	181.22.62.197	255.255.255.240	181.22.62.193
ADMISSION- PRINTER-3	VLAN 14	181.22.62.198	255.255.255.240	181.22.62.193

IPS THROUGH DHCP TABLE:

Automatic IPS

```
Router(config)#do show ip dhcp binding
```

IP address	Client-ID/ Hardware address	Lease expiration	Type
181.22.57.12	0090.2B2A.6381	--	Automatic
181.22.57.13	000C.85E1.C58C	--	Automatic
181.22.57.14	0040.0BB5.BE80	--	Automatic
181.22.57.10	0010.1115.0086	--	Automatic
181.22.57.11	000C.CFE5.D339	--	Automatic
181.22.57.15	000C.CF39.2680	--	Automatic
181.22.57.16	0004.9AD7.844E	--	Automatic
181.22.57.18	0001.4376.BC8D	--	Automatic
181.22.57.17	0001.9782.C911	--	Automatic
181.22.57.19	0004.9AD2.6C52	--	Automatic
181.22.57.22	0060.2F4C.27CC	--	Automatic
181.22.57.21	0002.1698.EC4C	--	Automatic
181.22.57.23	0001.96AD.4353	--	Automatic
181.22.57.20	0001.9764.2922	--	Automatic
181.22.57.24	000A.4105.D96B	--	Automatic
181.22.57.25	000D.BDC9.D8B0	--	Automatic
181.22.57.138	00D0.5826.3334	--	Automatic
181.22.57.140	0000.0C67.1367	--	Automatic
181.22.57.137	0030.A3B8.426D	--	Automatic
181.22.57.139	0001.9755.6874	--	Automatic
181.22.57.141	0003.E407.0DC2	--	Automatic
181.22.57.142	00D0.971E.DACC	--	Automatic
181.22.57.143	0060.47CE.D0AB	--	Automatic
181.22.57.147	0009.7C52.5D42	--	Automatic
181.22.57.148	0001.64BE.210C	--	Automatic
181.22.57.146	0001.42CE.4C65	--	Automatic
181.22.57.145	000A.F3C2.6844	--	Automatic
181.22.57.144	0060.3ED6.8EDE	--	Automatic
181.22.57.200	0090.2188.9E25	--	Automatic
181.22.57.201	0005.5E59.A2E4	--	Automatic


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181.22.57.201    0005.5E59.A2E4    --    Automatic
181.22.57.202    0000.0C87.7A37    --    Automatic
181.22.57.204    0001.6416.1846    --    Automatic
181.22.57.203    0060.2F7B.E34D    --    Automatic
181.22.57.205    000A.F322.8E99    --    Automatic
181.22.57.207    0001.436E.5B58    --    Automatic
181.22.57.206    000D.BD8D.6101    --    Automatic
181.22.57.208    00D0.D35C.8DAE    --    Automatic
181.22.62.9       00E0.B085.A549    --    Automatic
181.22.62.10      0030.A309.9DCC    --    Automatic
181.22.62.11      0009.7C35.3B21    --    Automatic
181.22.62.12      0090.211B.28E3    --    Automatic
181.22.62.13      00D0.BC31.3B43    --    Automatic
181.22.62.14      00D0.5864.6E8A    --    Automatic
181.22.62.15      00D0.BAEC.199A    --    Automatic
181.22.62.16      0001.966C.188D    --    Automatic
181.22.62.17      00E0.B048.B0D8    --    Automatic
181.22.62.71      0001.6301.2B6A    --    Automatic
181.22.62.72      0001.C71E.8151    --    Automatic
181.22.62.76      0006.2AE2.A448    --    Automatic
181.22.62.74      0060.5C8D.8325    --    Automatic
181.22.62.73      0060.2F0A.2D65    --    Automatic
181.22.62.75      000B.BE10.9083    --    Automatic
181.22.62.77      00D0.D364.C189    --    Automatic
181.22.62.79      0002.17C1.D037    --    Automatic
181.22.62.78      0001.964E.7511    --    Automatic
181.22.62.80      0002.4A4C.C9E3    --    Automatic
181.22.62.81      00D0.BA0A.7D77    --    Automatic
181.22.62.82      0001.961E.AA9C    --    Automatic
181.22.62.151     0004.9ACB.CDAC    --    Automatic
181.22.62.152     000C.CFE9.21DA    --    Automatic
181.22.62.153     00D0.BCE6.B9CE    --    Automatic
181.22.64.14      0002.4AC0.A51B    --    Automatic
181.22.64.12      000A.F351.4454    --    Automatic
--More--

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181.22.64.12      000A.F351.4454      --      Automatic
181.22.64.13      00E0.8F66.E5BC      --      Automatic
181.22.64.15      0005.5EC5.D98D      --      Automatic
181.22.64.16      0001.43BE.8662      --      Automatic
181.22.64.17      0004.9AD6.4220      --      Automatic
181.22.64.18      0030.A363.E2B2      --      Automatic
181.22.64.19      00E0.B002.EC6A      --      Automatic
181.22.64.20      0060.47BE.EDC2      --      Automatic
181.22.64.21      0001.43AB.57D3      --      Automatic
181.22.64.22      00D0.9753.02D1      --      Automatic
181.22.64.23      0005.5E64.058A      --      Automatic
181.22.64.24      0090.2B96.0378      --      Automatic
181.22.64.25      0001.6386.B6E7      --      Automatic
181.22.79.15      00E0.8FCC.876B      --      Automatic
181.22.79.16      0090.0CC9.C720      --      Automatic
181.22.79.17      0090.21C2.7BBD      --      Automatic
181.22.79.18      0040.0BCE.77B0      --      Automatic
181.22.79.19      00D0.9742.1AB8      --      Automatic
192.168.2.13      0050.0F29.7328      --      Automatic
192.168.2.12      000A.F3D6.11C7      --      Automatic
192.168.2.15      0002.4A71.53BA      --      Automatic
192.168.2.11      0010.1103.000E      --      Automatic
192.168.2.14      00D0.BA14.1179      --      Automatic
192.168.2.17      0060.3E83.BBBA      --      Automatic
192.168.2.16      0005.5EA7.9C55      --      Automatic
192.168.2.18      0060.47BE.080A      --      Automatic
192.168.2.19      0000.0CDE.E656      --      Automatic
192.168.2.20      0090.2BB5.E082      --      Automatic
181.22.62.135     00D0.5898.1C51      --      Automatic
181.22.62.136     0003.E46E.1951      --      Automatic
192.168.1.18      0009.7C10.B968      --      Automatic
192.168.1.20      0060.3ED9.799D      --      Automatic
192.168.1.21      0001.969D.7439      --      Automatic
192.168.1.19      00E0.A30D.D3AC      --      Automatic

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192.168.1.20      0060.3ED9.799D      --      Automatic
192.168.1.21      0001.969D.7439      --      Automatic
192.168.1.19      00E0.A30D.D3AC      --      Automatic
181.22.62.167     00D0.FF31.26E2      --      Automatic
181.22.62.168     0001.96DD.1B72      --      Automatic
181.22.62.169     00D0.BA93.5391      --      Automatic
181.22.62.170     0001.C935.3217      --      Automatic
181.22.62.201     00D0.BCC1.84DA      --      Automatic
181.22.62.200     00D0.FF52.7A57      --      Automatic
181.22.62.202     000B.BEA0.462E      --      Automatic
181.22.62.203     00D0.5884.BCAC      --      Automatic
181.22.62.204     0006.2A75.3459      --      Automatic
181.22.62.205     0003.E478.DDB3      --      Automatic
181.22.62.206     0006.2AB3.6B3A      --      Automatic

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Router(config)#
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Router(config)#
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PORT ASSIGNING TABLE:

VLANs	Name	Device	Switchport N mber			
			Access Ports		device	Trunk Ports
2	Faculty	100	FACULTY-1	fa 0/1 – fa 0/24	100	Fa 0/24 Gi 0/2
			FACULTY-2	fa 0/1 – fa 0/24		
		154	FACULTY-1	fa 0/1 – fa 0/24		
3	Admin	100	Admin-1	fa 0/1 – fa 0/24	100	Fa 0/24 Gi 0/1 Gi 0/2
		154	Admin-2	fa 0/1 – fa 0/24		
		153	Admin-3	fa 0/1 – fa 0/24		
4	IT	100	IT-1	fa 0/1 – fa 0/24	100	Fa 0/24
5	Academics	100	Academics-1	fa 0/1 – fa 0/24	100	Fa 0/24 Gi 0/1 Gi 0/2
		154	Academics-2	fa 0/1 – fa 0/24		
		153	Academics-3	fa 0/1 – fa 0/24		
6	Classroom	100	Classroom-1	fa 0/1 – fa 0/24	100	Fa 0/24 Gi 0/1 Gi 0/2
		154	Classroom-2	fa 0/1 – fa 0/24		
		153	Classroom-3	fa 0/1 – fa 0/24		
7	CS-Lab	100	CS-Lab-1	fa 0/1 – fa 0/24	100	Fa0/24
			CS-Lab-2	fa 0/1 – fa 0/24		
			CS-Lab-3	fa 0/1 – fa 0/24		
8	Lab-3	100	Lab-3-1	fa 0/1 – fa 0/24	100	Fa0/24
			Lab-3-2	fa 0/1 – fa 0/24		
9	Lab-4	100	Lab-4-1	fa 0/1 – fa 0/24	100	Fa0/24

			Lab-4-2	fa 0/1 – fa 0/24		
10	Lab-5	100	Lab-5-1	fa 0/1 – fa 0/24	100	Fa0/24
			Lab-5-2	fa 0/1 – fa 0/24		
11	SmartLab	100	SmartLab-1	fa 0/1 – fa 0/24	100	Fa0/24
			SmartLab-2	fa 0/1 – fa 0/24		
12	GamingLab	100	GamingLab-1	fa 0/1 – fa 0/24	100	Fa0/24
13	MechatronicLab	154	MechatronicLab-1	fa 0/1 – fa 0/24	154	Gi0/2
14	AdmissionDept	153	AdmissionDept-1	fa 0/1 – fa 0/24	153	Gi 0/1