BUILDING A CISCO PACKET TRACER NETWORK FOR UNIVERSITIES

A COURSE PROJECT REPORT

By

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In partial satisfaction of the requirements for the degree of

BACHELOR OF TECHNOLOGY
in
COMPUTER SCIENCE ENGINEERING

with specialization in CSE Cyber Security

COLLEGE OF ENGINEERING AND TECHNOLOGY
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KATTANKULATHUR - 603203

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SRM INSTITUTION OF SCIENCE AND TECHNOLOGY
KATTANKULATHUR-603203

BONAFIDE CERTIFICATE

Certified that this lab report titled "**BUILDING A CISCO PACKET TRACER NETWORK FOR UNIVERSITIES**" is the bonafide work done **by T.Pavana Narasimah(RA2111030010202), Harish Bhandari(RA2111030010216),Shirya Varnita(RA2111030010210) ,Kandulgunta Subramanyam(RA2111030010199)**who carried out the lab exercises under my supervision. Certified further, that to the best of my knowledge, the work reported here in does not form part of any other work.

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Network and Communications

ABSTRACT:

In today's digital age, universities require a robust and reliable network infrastructure to support the needs of students, faculty, and staff. This mini project focuses on designing and building a network infrastructure for universities using Cisco Packet Tracer, a powerful network simulation tool. The network will provide essential services such as internet connectivity, email services, file sharing, and video conferencing. The project aims to demonstrate how Cisco Packet Tracer can be used to design, implement and test a network infrastructure before deploying it in a production environment.

INTRODUCTION:

Universities are increasingly relying on network infrastructure to support various academic and administrative tasks. With the rise of digital learning and remote work, universities require a network that can provide seamless and reliable connectivity to students, faculty, and staff. Building a network infrastructure for universities is a complex task that requires careful planning, implementation, and testing. Cisco Packet Tracer is an excellent tool that can be used to simulate and test network infrastructure before deploying it in a production environment. In this project, we will demonstrate how Cisco Packet Tracer can be used to design and build a network infrastructure for universities.

REQUIREMENT ANALYSIS:

Before designing the network infrastructure, we need to identify the network requirements and the services that the network should provide. The following are some of the essential services that a university network should provide:

- Internet connectivity: The network should provide seamless and reliable internet connectivity to students, faculty, and staff.
- Email services: The network should support email services to enable students, faculty, and staff to communicate efficiently.
- File sharing: The network should provide a secure and efficient filesharing system to enable students, faculty, and staff to share files and collaborate on projects.
- Video conferencing: The network should support video conferencing to enable remote learning and virtual meetings.
- Security: The network should be designed with security in mind, and measures should be put in place to ensure the confidentiality, integrity, and availability of data.

Once we have identified the network requirements, we can start designing the network topology and selecting the appropriate devices to meet those requirements. The next step is to configure the devices with the appropriate settings and simulate network traffic to test the network's performance and identify any issues that need to be resolved.

Hardware Requirements:

- A computer with a minimum of 4GB RAM and a dual-core processor
- A graphics card that supports OpenGL 2.0 or later
- A monitor with a resolution of 1024 x 768 or higher
- A keyboard and mouse Software Requirements:

- Cisco Packet Tracer: You will need to download and install Cisco Packet Tracer, which is a network simulation tool used to design and test network infrastructure. You can download it from the Cisco Networking Academy website.
- Operating System: Cisco Packet Tracer runs on Windows, Linux, and macOS. Ensure that your computer meets the minimum system requirements for the operating system you plan to use.

Web Browser: You will need a web browser to access the Cisco Networking Academy website and download Cisco Packet Tracer.

ARCHITECTURE AND DESIGN:

We have taken 4 departments namely IT, NWC, CINTEL and MEDICAL SCIENCES, which are connected to each other using routers. All the departments have 3 PC’s each and a server, namely DHCP are configured

and connected to all 3 PCs in each network. We have also configured IP address of all the devices using the given addressing table.

Addressing Table:

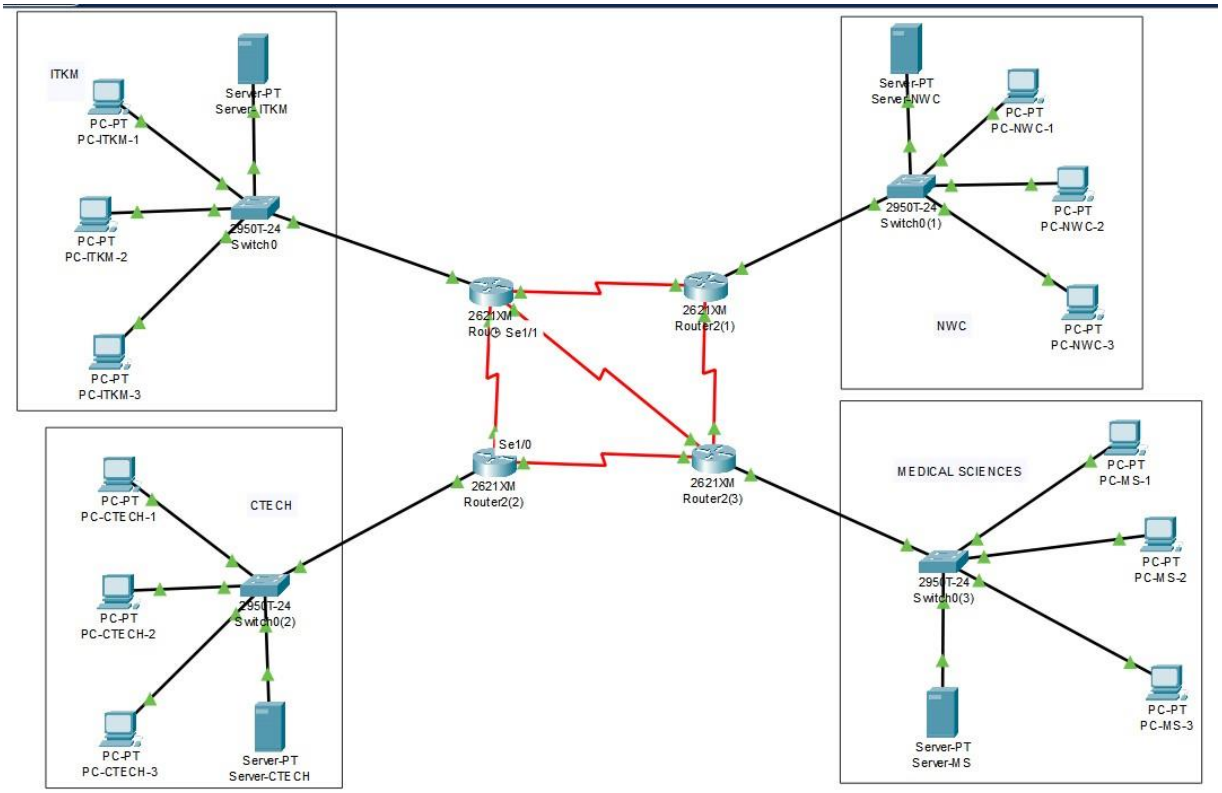
Device	Interface	IP Address	Subnet Mask	Default Gateway
R1	Fa0/0	192.168.0.1/24	255.255.255.0	-
	Se1/0	192.168.4.1/24	255.255.255.0	-
	Se1/1	192.168.5.1/24	255.255.255.0	-
	Se1/2	192.168.6.1/24	255.255.255.0	-
R2	Fa0/0	192.168.1.1/24	255.255.255.0	-
	Se1/0	192.168.4.1/24	255.255.255.0	-
	Se1/1	192.168.7.1/24	255.255.255.0	-
R3	Fa0/0	192.168.12.1/24	255.255.255.0	-
	Se1/0	192.168.5.1/24	255.255.255.0	-
	Se1/1	192.168.8.1/24	255.255.255.0	-
R4	Fa0/0	192.168.0.1/24	255.255.255.0	-
	Se1/0	192.168.7.1/24	255.255.255.0	-
	Se1/1	192.168.8.1/24	255.255.255.0	-
	Se1/2	192.168.6.1/24	255.255.255.0	-
PC ITKM-1		192.168.0.5/24	255.255.255.0	192.168.0.1

PC ITKM-2		192.168.0.4/24	255.255.255.0	192.168.0.1
PC ITKM-3		192.168.0.3/24	255.255.255.0	192.168.0.1
Server-ITKM		192.168.0.2/24	255.255.255.0	192.168.0.1
PC NWC-1		192.168.1.4/24	255.255.255.0	192.168.1.1
PC NWC-2		192.168.1.5/24	255.255.255.0	192.168.1.1
PC NWC-3		192.168.1.3/24	255.255.255.0	192.168.1.1
Server-NWC		192.168.1.1/24	255.255.255.0	192.168.1.1
PC CTECH-1		192.168.12.3/24	255.255.255.0	192.168.12.1
PC CTECH-2		192.168.12.5/24	255.255.255.0	192.168.12.1
PC CTECH-3		192.168.12.4/24	255.255.255.0	192.168.12.1
ServerCTECH		192.168.12.2/24	255.255.255.0	192.168.12.1
PC MS-1		192.168.13.3/24	255.255.255.0	192.168.13.1
PC MS-1		192.168.13.5/24	255.255.255.0	192.168.13.1
PC MS-1		192.168.13.4/24	255.255.255.0	192.168.13.1
Server- MS		192.168.13.2/24	255.255.255.0	192.168.13.1

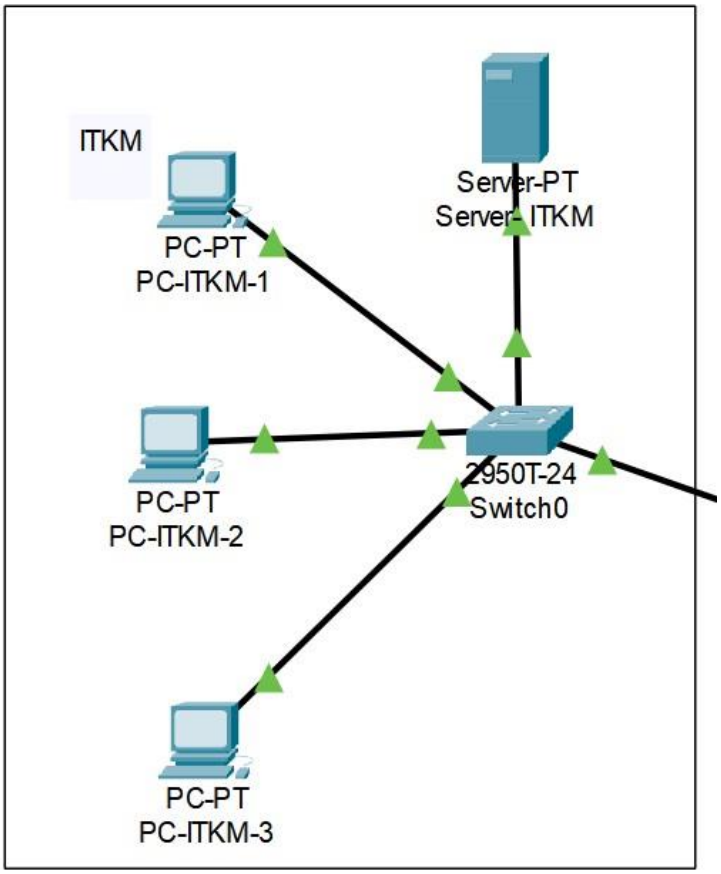
The above addressing table is used to configure all the given devices in the network. The four routers are connected to a switch each, and are interconnected to each other. These switches are further connected to a number of end point devices.

IMPLEMENTATION:

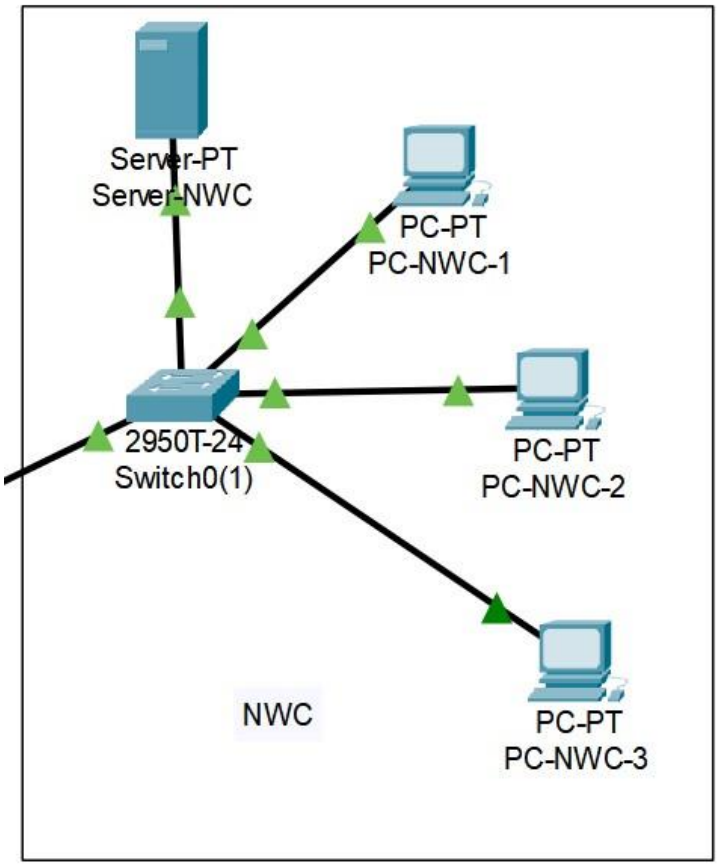
Building a network for universities implementation using Packet tracer



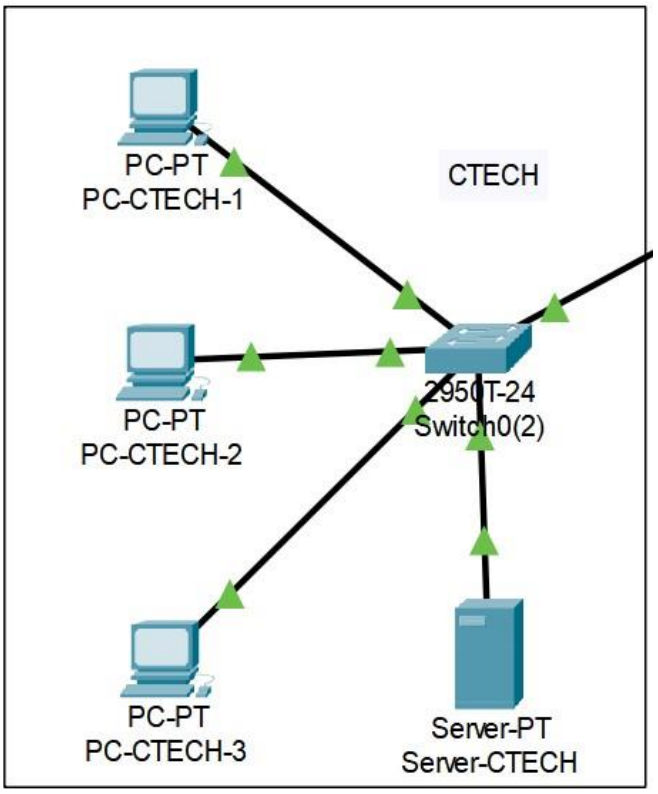
ITKM DEPARTMENT



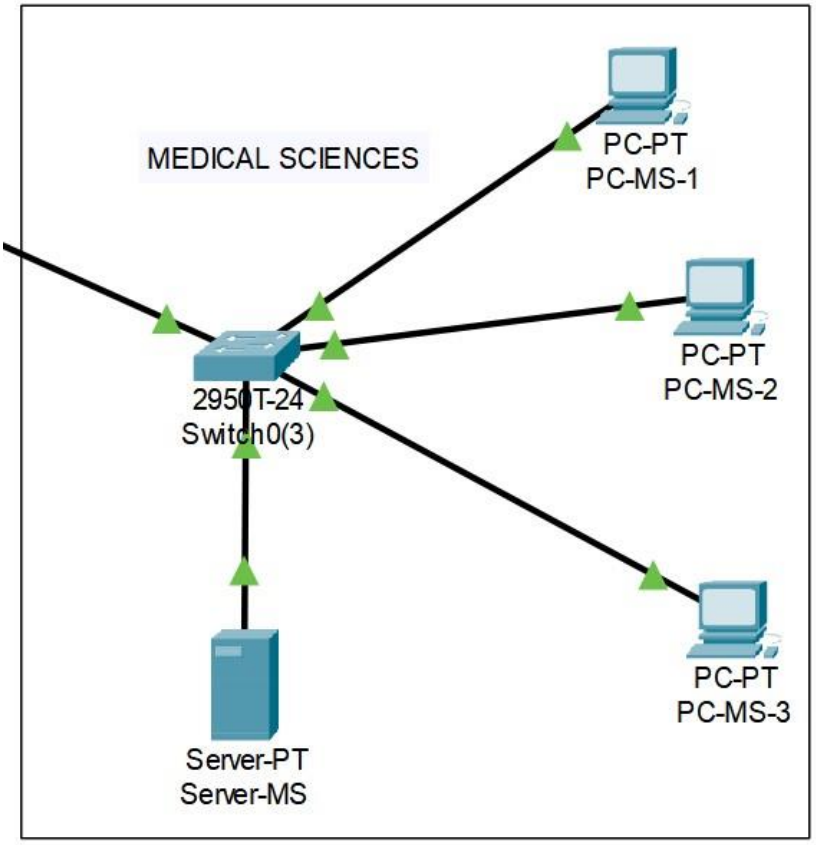
NWC DEPARTMENT



CTECH DEPARTMENT



MEDICAL SCIENCES DEPARTMENT



CLI INTERFACE:

ROUTER 1:

```
Router>
Router con0 is now available Press
RETURN to get started.
Press RETURN to get started!
Router>enable
Router#
Router#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#interface Serial1/0
Router(config-if)#
Press RETURN to get started.
Press RETURN to get started!
Router>en
Router#config t
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#interface Se1/0
Router(config-if)#ip address 192.168.4.1 255.255.255.0
Router(config-if)#no shutdown

%LINK-5-CHANGED: Interface Serial1/0, changed state to down
Router(config-if)#exit
Router(config)#ipinterface Se1/1
Router(config-if)#ip address 192.168.5.1 255.255.255.0
Router(config-if)#no shutdown

%LINK-5-CHANGED: Interface Serial1/1, changed state to down
Router(config-if)#exit
Router(config)#interface Se1/2
Router(config-if)#ip address 192.168.6.1 255.255.255.0
Router(config-if)#no shutdown

%LINK-5-CHANGED: Interface Serial1/2, changed state to down
Router(config-if)#exit
Router(config)#
Router(config)#
Router(config)#interface Serial1/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial1/1
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial1/2
Router(config-if)#
%LINK-5-CHANGED: Interface Serial1/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial1/0, changed state to up
```

%LINK-5-CHANGED: Interface Serial1/1, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial1/1, changed state to up

%LINK-5-CHANGED: Interface Serial1/2, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial1/2, changed state to up
Router con0 is now available
Press RETURN to get started.
Press RETURN to get started!
Router>en
Router#config
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#router ospf 1
Router(config-router)#network 192.168.0.1 0.0.0.255 area0
                                          ^
% Invalid input detected at '^' marker.

Router(config-router)#network 192.168.0.1 0.0.0.255 area 0
Router(config-router)#network 192.168.4.1 0.0.0.255 area 0 Router(config-router)#network 192.168.5.1 0.0.0.255 area 0
Router(config-router)#network 192.168.6.1 0.0.0.255 area 0
Router(config-router)#network 192.168.0.0 0.0.0.255 area 0
Router(config-router)#no network 192.168.0.1 0.0.0.255 area 0
Router(config-router)#
03:57:30: %OSPF-5-ADJCHG: Process 1, Nbr 192.168.7.1 on Serial1/0 from LOADING to FULL, Loading Done

03:59:39: %OSPF-5-ADJCHG: Process 1, Nbr 192.168.8.2 on Serial1/2 from LOADING to FULL, Loading Done

04:03:16: %OSPF-5-ADJCHG: Process 1, Nbr 192.168.12.1 on Serial1/1 from LOADING to FULL, Loading Done

ROUTER 2:

System Bootstrap, Version 12.1(3r)T2, RELEASE SOFTWARE (fc1) Copyright
(c) 2000 by cisco Systems, Inc.
Cisco 2621 (MPC860) processor (revision 0x200) with 253952K/8192K bytes of memory

Readonly ROMMON initialized

Self decompressing the image :
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Compiled Wed 27-Apr-04 19:01 by miwang

Cisco 2621 (MPC860) processor (revision 0x200) with 253952K/8192K bytes of memory
.
Processor board ID JAD05190MTZ (4292891495)
M860 processor: part number 0, mask 49 Bridging
software.
X.25 software, Version 3.0.0.
2 FastEthernet/IEEE 802.3 interface(s)
8 Low-speed serial(sync/async) network interface(s) 32K
bytes of non-volatile configuration memory.
63488K bytes of ATA CompactFlash (Read/Write)

Press RETURN to get started!

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up

Router>en
Router#config t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface fa0/0
Router(config-if)#ip address 192.168.1.1 255.255.255.0
Router(config-if)#no shutdown
Router(config-if)#exit
Router(config)#exit
Router#

```
%SYS-5-CONFIG_I: Configured from console by console
Router con0 is now available Press
RETURN to get started.
Router>enable
Router#
Router#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#interface Serial1/0
Router(config-if)#ip address 192.168.4.2 255.255.255.0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial1/1
Router(config-if)#ip address 192.168.7.1 255.255.255.0
Router(config-if)#no shutdown

%LINK-5-CHANGED: Interface Serial1/1, changed state to down
Router(config-if)#interface Se1/0
Router(config-if)#no shutdown

Router(config-if)#
%LINK-5-CHANGED: Interface Serial1/0, changed state to up

Router(config-if)#no sh
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial1/0, changed state tno s
% Ambiguous command: "no s"
Router(config-if)#no shutdown
Router(config-if)#ip address 192.168.4.2 255.255.255.0
Router(config-if)#no shutdown
Router(config-if)#
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial1/1
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial1/0
Router(config-if)#
%LINK-5-CHANGED: Interface Serial1/1, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial1/1, changed state to up
Router con0 is now available Press RETURN to get started.
Router>en
Router#config
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#router ospf 2
Router(config-router)#network 192.168.1.0 0.0.0.255 area 0
Router(config-router)#network 192.168.4.0 0.0.0.255 area 0
```

Router(config-router)#network 192.168.7.0 0.0.0.255 ar
03:53:11: %OSPF-5-ADJCHG: Process 2, Nbr 192.168.6.1 on Serial1/0 from LOADING to FULL, Loading Done

% Incomplete command.
Router(config-router)#network 192.168.7.0 0.0.0.255 area 0
Router(config-router)#
03:55:41: %OSPF-5-ADJCHG: Process 2, Nbr 192.168.8.2 on Serial1/1 from LOADING to FULL, Loading Done

ROUTER 3:

System Bootstrap, Version 12.1(3r)T2, RELEASE SOFTWARE (fc1) Copyright
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Cisco 2621 (MPC860) processor (revision 0x200) with 253952K/8192K bytes of memory

Readonly ROMMON initialized

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Compiled Wed 27-Apr-04 19:01 by miwang

Cisco 2621 (MPC860) processor (revision 0x200) with 253952K/8192K bytes of memory
.
Processor board ID JAD05190MTZ
(4292891495) M860 processor: part number 0,
mask 49 Bridging software.
X.25 software, Version 3.0.0.

2 FastEthernet/IEEE 802.3 interface(s)
8 Low-speed serial(sync/async) network interface(s) 32K
bytes of non-volatile configuration memory.
63488K bytes of ATA CompactFlash (Read/Write)

Press RETURN to get started!

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up

Router>en Router#config t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface fa0/0 Router(config-if)#ip address 192.168.12.1 255.255.255.0 Router(config-if)#no shutdown Router(config-if)#exit Router(config)#exit Router# %SYS-5-CONFIG_I: Configured from console by console

Router#
Router con0 is now available Press
RETURN to get started.
Router>en Router#config t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface Se1/0 Router(config-if)#ip address 192.168.5.2 255.255.255.0 Router(config-if)#no shutdown

Router(config-if)# %LINK-5-CHANGED: Interface Serial1/0, changed state to up

Router(config-if)#exit Router(config)#interface Se %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial1/0, changed state to up

% Incomplete command.
Router(config)#interface Se1/1 Router(config-if)#ip address 192.168.8.1 255.255.255.0 Router(config-if)#no shutdown

%LINK-5-CHANGED: Interface Serial1/1, changed state to down Router(config-if)#exit
Router(config)# Router(config)# %LINK-5-CHANGED: Interface Serial1/1, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial1/1, changed state to up Router con0 is now available Press RETURN to get started. Router> Router>en Router#config
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)# Router(config)#router ospf 4 Router(config-router)#network 192.168.12.0 0.0.0.255 area 0 Router(config-router)#network 192.168.5.0 0.0.0.255 area 0 Router(config-router)# 02:39:56: %OSPF-5-ADJCHG: Process 4, Nbr 192.168.6.1 on Serial1/0 from LOADING to FULL, Loading Done

Router(config-router)#network 192.168.8.0 0.0.0.255 area 0 Router(config-router)# 02:40:29: %OSPF-5-ADJCHG: Process 4, Nbr 192.168.8.2 on Serial1/1 from LOADING to FULL, Loading Done

ROUTER 4:

System Bootstrap, Version 12.1(3r)T2, RELEASE SOFTWARE (fc1) Copyright
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Readonly ROMMON initialized

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Compiled Wed 27-Apr-04 19:01 by miwang

Cisco 2621 (MPC860) processor (revision 0x200) with 253952K/8192K bytes of memory
.
Processor board ID JAD05190MTZ
(4292891495) M860 processor: part number 0,
mask 49 Bridging software.
X.25 software, Version 3.0.0.
2 FastEthernet/IEEE 802.3 interface(s)
8 Low-speed serial(sync/async) network interface(s) 32K
bytes of non-volatile configuration memory.
63488K bytes of ATA CompactFlash (Read/Write)

Press RETURN to get started!

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up
Router>en
Router#config t

```
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#interface Se1/2
Router(config-if)#ip address 192.168.6.2 255.255.255.0
Router(config-if)#no shutdown

Router(config-if)#
%LINK-5-CHANGED: Interface Serial1/2, changed state to up

Router(config-if)#exit
Router(config)#interface Se1/1
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial1/2, changed state to up

Router(config-if)#exit
Router(config)#interface Se1/1
Router(config-if)#ip address 192.168.8.2 255.255.255.0
Router(config-if)#no shutdown

Router(config-if)#
%LINK-5-CHANGED: Interface Serial1/1, changed state to up

Router(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial1/1, changed state to up

Router(config-if)#exit
Router(config)#interface Se1/0
Router(config-if)#ip address 192.168.7.2 255.255.255.0
Router(config-if)#no shutdown

Router(config-if)#
%LINK-5-CHANGED: Interface Serial1/0, changed state to up

Router(config-if)#exit
Router(config)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial1/0, changed state to up
Router con0 is now available Press RETURN to get started.
Router>en
Router#config
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#router ospf 3
Router(config-router)#network 192.168.0.0 0.0.0.255 area 0
Router(config-router)#network 192.168.6.0 0.0.0.255 area 0
Router(config-router)#network 192.168
02:36:12: %OSPF-5-ADJCHG: Process 3, Nbr 192.168.6.1 on Serial1/2 from LOADING to FULL,
Loading Done
.7.
                    ^
% Invalid input detected at '^' marker.

Router(config-router)#network 192.168.7.0 0.0.0.255 area 0
```

Router(config-router)#network 192.1
02:36:33: %OSPF-5-ADJCHG: Process 3, Nbr 192.168.7.1 on Serial1/0 from LOADING to FULL, Loading Done
6
^
% Invalid input detected at '^' marker.

Router(config-router)#network 192.168.8.0 0.0.0.255 area 0
Router(config-router)#
02:40:21: %OSPF-5-ADJCHG: Process 3, Nbr 192.168.12.1 on Serial1/1 from LOADING to FULL, Loading Done

ITKM SWITCH:

C2950 Boot Loader (C2950-HBOOT-M) Version 12.1(11r)EA1, RELEASE SOFTWARE (fc1)
Compiled Mon 22-Jul-02 18:57 by miwang
Cisco WS-C2950T-24 (RC32300) processor (revision C0) with 21039K bytes of memory.
2950T-24 starting...
Base ethernet MAC Address: 000A.4190.439B Xmodem
file system is available.
Initializing Flash... flashfs[0]: 1 files, 0 directories
flashfs[0]: 0 orphaned files, 0 orphaned directories
flashfs[0]: Total bytes: 64016384 flashfs[0]: Bytes
used: 3058048 flashfs[0]: Bytes available:
60958336 flashfs[0]: flashfs fsck took 1 seconds.
...done Initializing Flash.

Boot Sector Filesystem (bs:) installed, fsid: 3
Parameter Block Filesystem (pb:) installed, fsid: 4

Loading "flash:/c2950-i6q4l2-mz.121-22.EA4.bin"...
[OK]
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Cisco Internetwork Operating System Software
IOS (tm) C2950 Software (C2950-I6Q4L2-M), Version 12.1(22)EA4, RELEASE SOFTWARE(fc1) Copyright (c) 1986-2005 by cisco Systems, Inc.
Compiled Wed 18-May-05 22:31 by jharirba

Cisco WS-C2950T-24 (RC32300) processor (revision C0) with 21039K bytes of memory.
Processor board ID FHK0610Z0WC
Running Standard Image
24 FastEthernet/IEEE 802.3 interface(s)
2 Gigabit Ethernet/IEEE 802.3 interface(s)

63488K bytes of flash-simulated non-volatile configuration memory.
Base ethernet MAC Address: 000A.4190.439B
Motherboard assembly number: 73-5781-09
Power supply part number: 34-0965-01
Motherboard serial number: FOC061004SZ
Power supply serial number: DAB0609127D
Model revision number: C0
Motherboard revision number: A0
Model number: WS-C2950T-24
System serial number: FHK0610Z0WC

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Press RETURN to get started!

%LINK-5-CHANGED: Interface FastEthernet0/1, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up

%LINK-5-CHANGED: Interface FastEthernet0/2, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/2, changed state to up

%LINK-5-CHANGED: Interface FastEthernet0/3, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/3, changed state to up %LINK-5-CHANGED: Interface FastEthernet0/4, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/4, changed state to up

%LINK-5-CHANGED: Interface FastEthernet0/5, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/5, changed state to up

%LINK-3-UPDOWN: Interface FastEthernet0/4, changed state to down

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/4, changed state to down

%LINK-5-CHANGED: Interface FastEthernet0/4, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/4, changed state to up

NWC SWITCH:

C2950 Boot Loader (C2950-HBOOT-M) Version 12.1(11r)EA1, RELEASE SOFTWARE (fc1)
Compiled Mon 22-Jul-02 18:57 by miwang
Cisco WS-C2950T-24 (RC32300) processor (revision C0) with 21039K bytes of memory.
2950T-24 starting...
Base ethernet MAC Address: 000A.4190.439B Xmodem
file system is available.
Initializing Flash...
flashfs[0]: 1 files, 0 directories
flashfs[0]: 0 orphaned files, 0 orphaned directories
flashfs[0]: Total bytes: 64016384 flashfs[0]: Bytes
used: 3058048 flashfs[0]: Bytes available:
60958336 flashfs[0]: flashfs fsck took 1 seconds.
...done Initializing Flash.

Boot Sector Filesystem (bs:) installed, fsid: 3 Parameter Block Filesystem (pb:) installed, fsid: 4

Loading "flash:/c2950-i6q4l2-mz.121-22.EA4.bin"...
########################## [OK] Restricted Rights Legend

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Rights clause at FAR sec. 52.227-19 and subparagraph (c)
(1) (ii) of the Rights in Technical Data and Computer
Software clause at DFARS sec. 252.227-7013.
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Press RETURN to get started!

%LINK-5-CHANGED: Interface FastEthernet0/4, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/4, changed state to up

%LINK-5-CHANGED: Interface FastEthernet0/2, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/2, changed state to up

%LINK-5-CHANGED: Interface FastEthernet0/5, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/5, changed state to up

%LINK-5-CHANGED: Interface FastEthernet0/1, changed state to up %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up

%LINK-5-CHANGED: Interface FastEthernet0/3, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/3, changed state to up

CTECH SWITCH:

C2950 Boot Loader (C2950-HBOOT-M) Version 12.1(11r)EA1, RELEASE SOFTWARE (fc1)
Compiled Mon 22-Jul-02 18:57 by miwang
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2950T-24 starting...
Base ethernet MAC Address: 000A.4190.439B Xmodem
file system is available.
Initializing Flash...

flashfs[0]: 1 files, 0 directories
flashfs[0]: 0 orphaned files, 0 orphaned directories
flashfs[0]: Total bytes: 64016384 flashfs[0]: Bytes
used: 3058048 flashfs[0]: Bytes available:
60958336 flashfs[0]: flashfs fsck took 1 seconds.
...done Initializing Flash.

Boot Sector Filesystem (bs:) installed, fsid: 3 Parameter Block Filesystem (pb:) installed, fsid: 4

Loading "flash:/c2950-i6q4l2-mz.121-22.EA4.bin"...
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Press RETURN to get started!

%LINK-5-CHANGED: Interface FastEthernet0/2, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/2, changed state to up

%LINK-5-CHANGED: Interface FastEthernet0/5, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/5, changed state to up

%LINK-5-CHANGED: Interface FastEthernet0/4, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/4, changed state to up

%LINK-5-CHANGED: Interface FastEthernet0/1, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up

%LINK-5-CHANGED: Interface FastEthernet0/3, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/3, changed state to up

Switch>enable Switch# Switch#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#interface FastEthernet0/1 Switch(config-if)# Switch(config-if)#exit
Switch(config)#interface FastEthernet0/2 Switch(config-if)# Switch(config-if)#exit
Switch(config)#interface FastEthernet0/2 Switch(config-if)# Switch(config-if)#exit
Switch(config)#interface FastEthernet0/3 Switch(config-if)#

MEDICAL SCIENCES SWITCH:

C2950 Boot Loader (C2950-HBOOT-M) Version 12.1(11r)EA1, RELEASE SOFTWARE (fc1)
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2950T-24 starting...
Base ethernet MAC Address: 000A.4190.439B Xmodem
file system is available.
Initializing Flash...
flashfs[0]: 1 files, 0 directories flashfs[0]: 0
orphaned files, 0 orphaned directories flashfs[0]:
Total bytes: 64016384 flashfs[0]: Bytes used:
3058048 flashfs[0]: Bytes available: 60958336
flashfs[0]: flashfs fsck took 1 seconds.
...done Initializing Flash.

Boot Sector Filesystem (bs:) installed, fsid: 3
Parameter Block Filesystem (pb:) installed, fsid: 4

Loading "flash:/c2950-i6q4l2-mz.121-22.EA4.bin"...

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%LINK-5-CHANGED: Interface FastEthernet0/5, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/5, changed state to up

%LINK-5-CHANGED: Interface FastEthernet0/4, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/4, changed state to up

%LINK-5-CHANGED: Interface FastEthernet0/1, changed state to up %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up

%LINK-5-CHANGED: Interface FastEthernet0/3, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/3, changed state to up

EXPERIMENT RESULTS & ANALYSIS:

RESULT:

The implementation of an building networks for university using cisco packet tracer has been executed successfully using cisco packet tracer.

RESULT ANALYSIS:

OSPF ROUTING RESULTS**:**

ROUTER-1:

Router>en
Router#show ip route ospf

- 192.168.1.0 [110/65] via 192.168.4.2, 02:04:19, Serial1/0
- 192.168.7.0 [110/128] via 192.168.4.2, 02:01:50, Serial1/0
- [110/128] via 192.168.6.2, 02:01:50, Serial1/2
- 192.168.8.0 [110/128] via 192.168.5.2, 01:58:09, Serial1/1
- [110/128] via 192.168.6.2, 01:58:09, Serial1/2
- 192.168.12.0 [110/65] via 192.168.5.2, 01:58:34, Serial1/1

ROUTER-2:

Router>en Router#show ip route ospf • 192.168.0.0 [110/65] via 192.168.4.1, 02:02:20, Serial1/0 • [110/65] via 192.168.7.2, 02:02:20, Serial1/1 • 192.168.5.0 [110/128] via 192.168.4.1, 02:04:50, Serial1/0 • 192.168.6.0 [110/128] via 192.168.4.1, 02:02:20, Serial1/0 • [110/128] via 192.168.7.2, 02:02:20, Serial1/1 • 192.168.8.0 [110/128] via 192.168.7.2, 02:02:02, Serial1/1 • 192.168.12.0 [110/129] via 192.168.4.1, 01:58:30, Serial1/0 • [110/129] via 192.168.7.2, 01:58:30, Serial1/1

ROUTER-3:

Router>en Router#show ip route ospf • 192.168.0.0 [110/65] via 192.168.5.1, 01:58:59, Serial1/0 • [110/65] via 192.168.8.2, 01:58:59, Serial1/1 • 192.168.1.0 [110/129] via 192.168.5.1, 01:58:59, Serial1/0 • [110/129] via 192.168.8.2, 01:58:59, Serial1/1 • 192.168.4.0 [110/128] via 192.168.5.1, 01:59:34, Serial1/0 • 192.168.6.0 [110/128] via 192.168.5.1, 01:58:59, Serial1/0 • [110/128] via 192.168.8.2, 01:58:59, Serial1/1 • 192.168.7.0 [110/128] via 192.168.8.2, 01:58:59, Serial1/1

ROUTER-4:

Router>en Router#show ip route ospf • 192.168.1.0 [110/65] via 192.168.7.1, 02:03:09, Serial1/0 • 192.168.4.0 [110/128] via 192.168.6.1, 02:03:09, Serial1/2 • [110/128] via 192.168.7.1, 02:03:09, Serial1/0 • 192.168.5.0 [110/128] via 192.168.6.1, 01:59:19, Serial1/2 • [110/128] via 192.168.8.1, 01:59:19, Serial1/1 • 192.168.12.0 [110/65] via 192.168.8.1, 01:59:19, Serial1/1

CONCLUSION & FUTURE WORK:

CONCLUSION:

In conclusion, building a robust and reliable network infrastructure is essential for universities to meet the demands of digital learning and remote work. The network infrastructure should provide essential services such as internet connectivity, email services, file sharing, video conferencing, and robust security measures. Cisco Packet Tracer is an excellent tool that can be used to design, implement and test network infrastructure before deploying it in a production environment.

In this project, we have demonstrated how Cisco Packet Tracer can be used to design and build a network infrastructure for universities. We have discussed the key requirements that a university network should meet, such as reliable internet connectivity, email services, file sharing, video conferencing, and robust security measures. We have also highlighted the hardware and software requirements needed to build the network infrastructure using Cisco Packet Tracer.

Overall, this project has provided valuable insights into the design and implementation of a network infrastructure for universities. It has demonstrated the importance of careful planning, implementation, and testing in building a reliable and efficient network infrastructure. By using Cisco Packet Tracer, we can simulate and test network infrastructure before deploying it in a production environment, thus minimizing the risk of network downtime and ensuring a seamless and reliable network experience for students, faculty, and staff.

FUTURE WORK:

Future work could include scaling the network to accommodate future growth, effectively monitoring and managing the network infrastructure, integrating with cloud services, enhancing network security, and improving the user experience and support. The specific areas of focus should align with the needs and goals of the university and its users.

6. REFERENCES

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- https://www.wikipedia.org/
- https://www.google.co.in/
- Froom, R., Sivasubramanian, B. and Frahim, E., 2010. Implementing Cisco IP Switched Networks (SWITCH) Foundation Learning Guide: Foundation learning for SWITCH 642-813. Cisco press.