COLLAGE NETWORK DESIGN

COURT ROAD NETWORKZ SYSTEMS NAGERCOIL, KANYAKUMARI

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Abstract

The Primary purpose of a computer network is to share resources. A computer network is referred to as client/server if (at least) one of the computers is used to server other computer referred to as client. Beside the computers,other types of devices can be part of the network. In the early day of networking there will be once central server that contains the data and all the clients can access this data through a Network Interface card. Later on client server architecture came into existence, where still burden is there on the server machine. To avoid the disadvantages in distributed computing was introduced which

reduce the burden on the server by providing work sharing capabilities. This paper describes how the concept of distributed computing came into existence based on the advantages and disadvantages that raised in earlier networking concepts. The concepts of distributed computing speaks that once data is available within the server (s), it should be able to be accessed and processed from any kind of client device like computer, computer, mobile phone, PDA, etc.

ACKNOWLEDGMENT

First we would like to thank the Almighty for his wonderful presence with us throughtout the completion of the project and making it as a successful one.

We are expressing our deep gratitude to COURT ROAD NETWORKZ SYSTEMS INSTITUTION which provided us an opportunity in fulfilling our most cherished desire in reaching our goal.

This is a great pleasure to express our deep sense of gratitude and thanks to our guide MISS wincy for her valuable ideas, instantaneous help, effective support and continued encouragement which enabled for the successful completion of the project

We gratefully remember the available suggestion of our respective staff for their valuable and timely guidance for the completion of the project.

We gratefully remember the available suggestion of our respective staff for their valuable and timely guidance for the completion of this project. Finally we would like to express our sincere thanks to all our friends who gave good ideas not suggestions for our project.

INTRODUCTION

Networking is referred as connecting computers electrically for the purpose of sharingin formation. Resources such as a file, application, printer & software. The advantageof networking can be seen in the terms of security, efficiency, manageablility and cost as it allows collaboration between user in a wide range. The switches and router this device that play and important role in data transfer from one place to another using different technology such ad radio waves & wire.

Networking Requirement

- The active networking components (Routers, Switches, Wireless access points etc) with quantity.
- The IP network design for each department.

- Dynamic IP addressing design for all networks

- Identify the configuration and features, wherever appropriate, which is required on the active components to setup the network.
- Analysis, identification and explantion of methodologies to use for access restriction and internet sharing.
- Creating and mapping IP networks with vlans.

HARDWARE REQUIREMENT

- Processor AMD PRO A4-4350B R4,5 COMPUTE CORES 2C +3G 2.50GHz
- RAM 4.00 GB
- System Type 64-bit operating system

REQUIREMENT

- The following use cisco packet tracer to design and implement the network solution
- Use RIP as the routing protocol
- Configure SSH in principal room and telnet in staff room
- Principal room, Staff room, Computer lab 1 and computer lab 2 required to have a wireless network for the users
- Datascience and Multimedia should be in a different vlan
- Class C type IP address used in every department
- Device in Datascience and Multimedia are required to communicate with each other with

  the respective switch configured for inter-

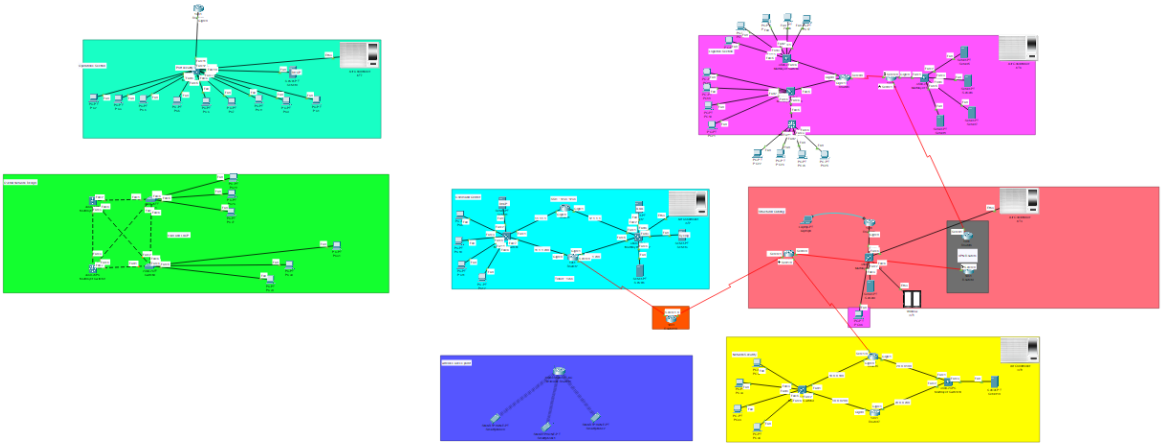
  vlan routing

- Devices in computer lab 5 are allocated IP address statically
- Devices except computer lab 5 are allocated IP address dynamically
- Test communication ensure everything configured is working as expected

SOFTWARE REQUIREMENT

- CISCO Packet Tracer

NETWORK TOPOLOGY

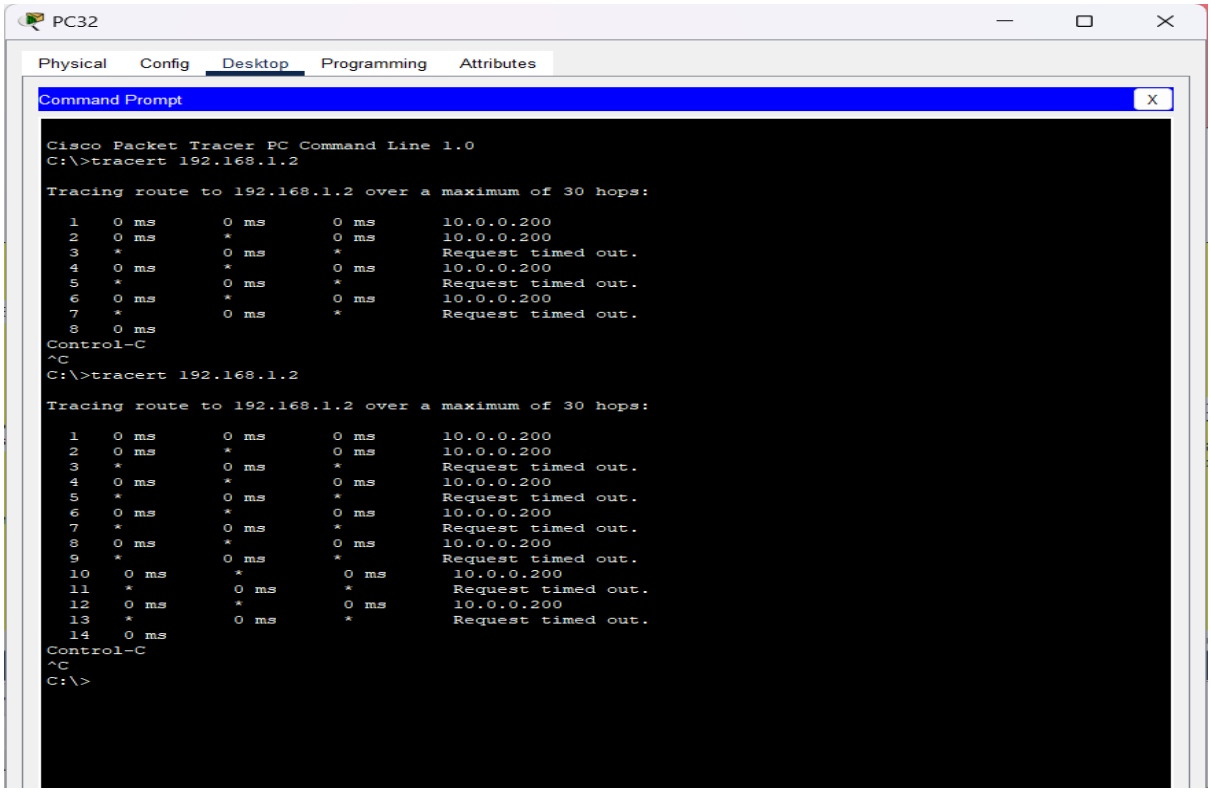


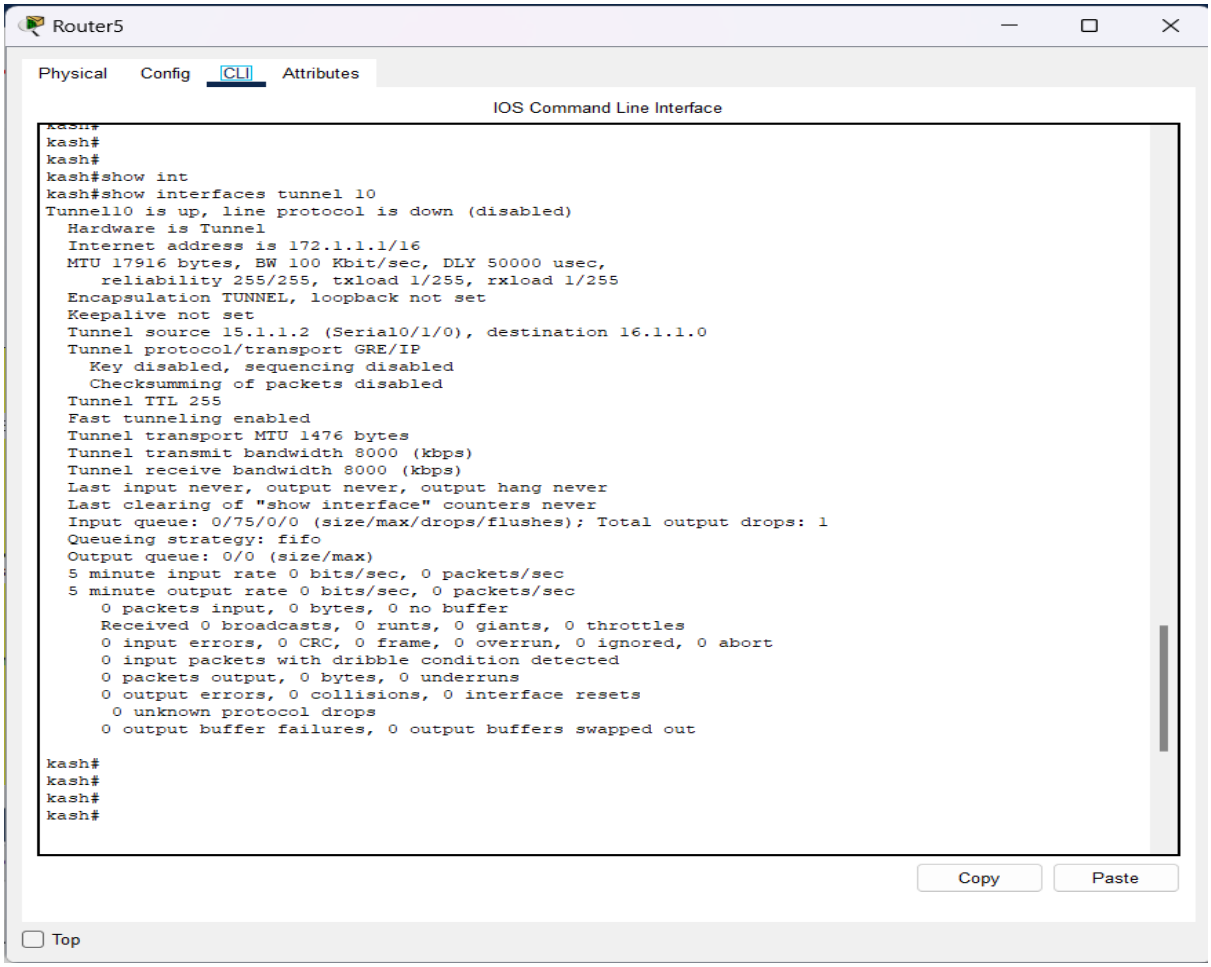
VLan , Trunk and Etherchannel LACP

VLAN CONF

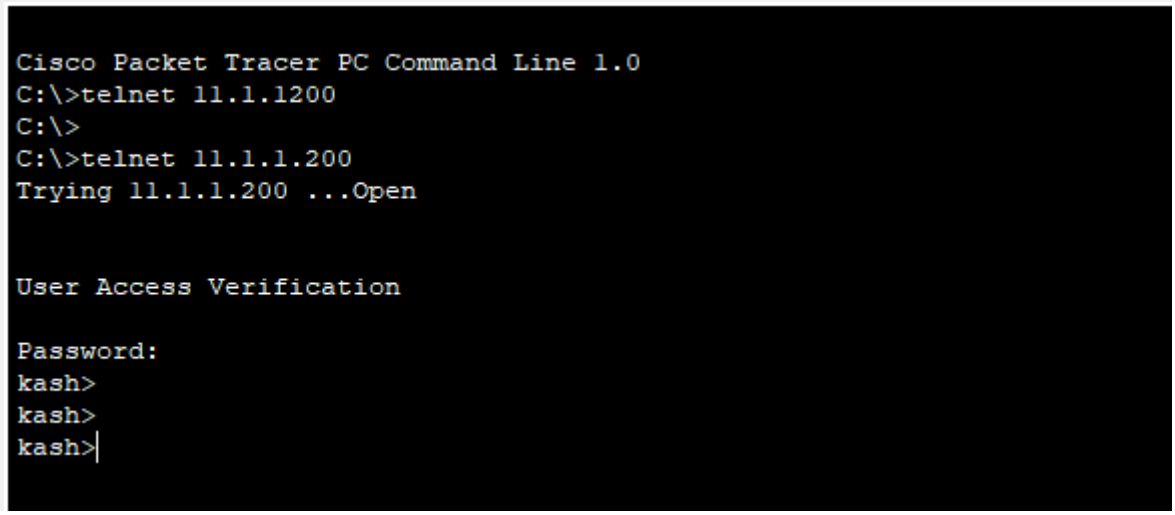
```
Switch>
Switch>
Switch>
Switch>
Switch>en
Switch#
Switch#
Switch#show vlan

VLAN Name                                Status    Ports
---- ----------------------------------- --------- -------------------------------
1    default                             active    Fa0/1, Fa0/2, Fa0/7, Fa0/8
                                                   Fa0/9, Fa0/10, Fa0/11, Fa0/12
                                                   Fa0/13, Fa0/14, Fa0/15, Fa0/16
                                                   Fa0/17, Fa0/18, Fa0/19, Fa0/20
                                                   Fa0/21, Fa0/22, Fa0/23, Fa0/24
                                                   Gig0/1, Gig0/2
3    aa                                  active    Fa0/3
4    bb                                  active    Fa0/4
5    cc                                  active    Fa0/5
1002 fddi-default                        active
1003 token-ring-default                  active
1004 fddinet-default                     active
1005 trnet-default                       active

VLAN Type  SAID       MTU   Parent RingNo BridgeNo Stp  BrdgMode Trans1 Trans2
---- ----- ---------- ----- ------ ------ -------- ---- -------- ------ ------
1    enet  100001     1500  -      -      -        -    -        0      0
3    enet  100003     1500  -      -      -        -    -        0      0
4    enet  100004     1500  -      -      -        -    -        0      0
5    enet  100005     1500  -      -      -        -    -        0      0
1002 fddi  101002     1500  -      -      -        -    -        0      0
1003 tr    101003     1500  -      -      -        -    -        0      0
1004 fdnet 101004     1500  -      -      -        ieee -        0      0
1005 trnet 101005     1500  -      -      -        ibm  -        0      0
 --More--
```

VPN

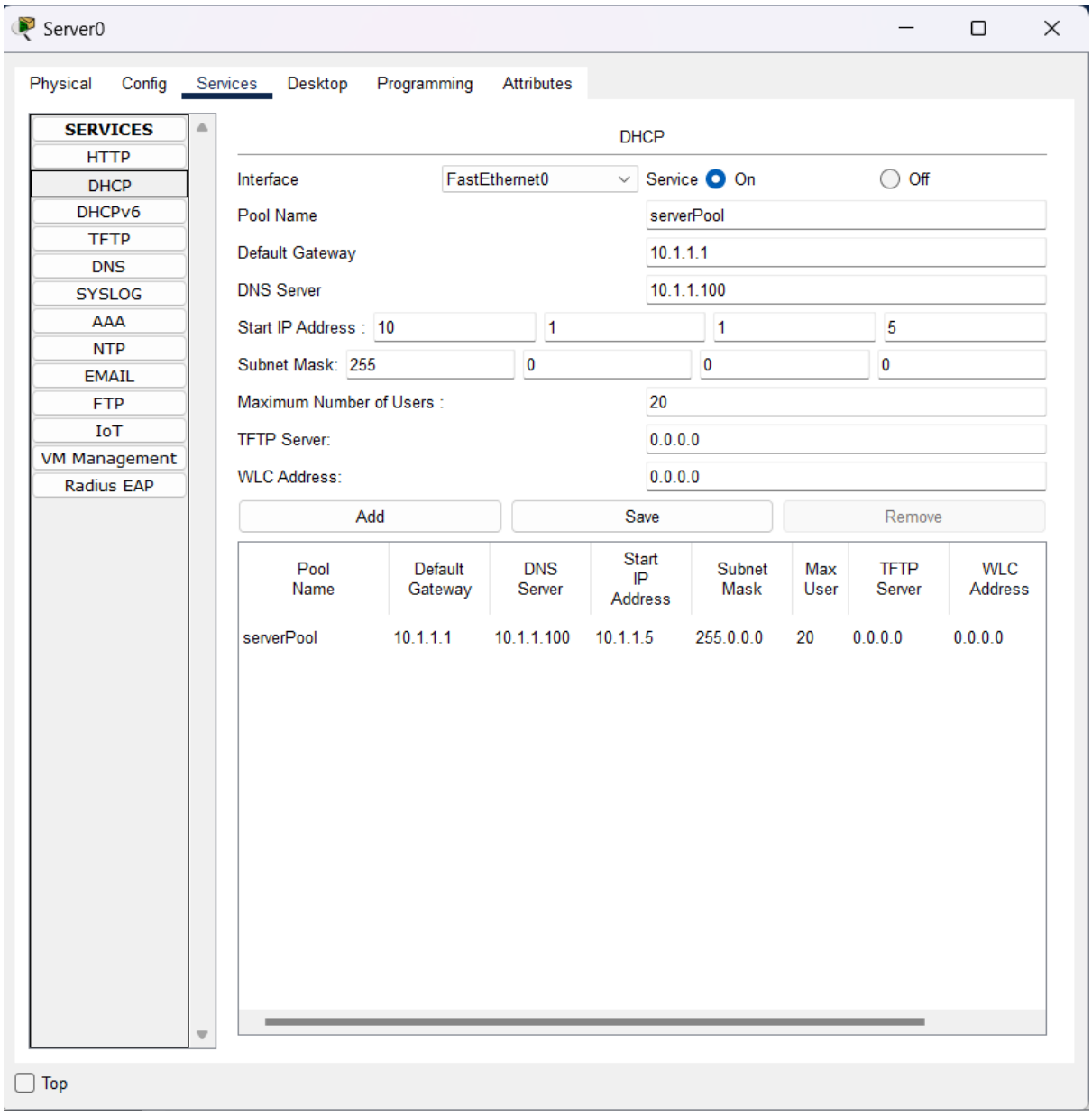



Router5
Physical
Config
CLI
Attributes
IOS Command Line Interface
kash#
kash#
kash#show int
kash#show interfaces tunnel 10
Tunnel10 is up, line protocol is down (disabled)
Hardware is Tunnel
Internet address is 172.1.1.1/16
MTU 17916 bytes, BW 100 Kbit/sec, DLY 50000 usec,
reliability 255/255, txload 1/255, rxload 1/255
Encapsulation TUNNEL, loopback not set
Keepalive not set
Tunnel source 15.1.1.2 (Serial0/1/0), destination 16.1.1.0
Tunnel protocol/transport GRE/IP
Key disabled, sequencing disabled
Checksumming of packets disabled
Tunnel TTL 255
Fast tunneling enabled
Tunnel transport MTU 1476 bytes
Tunnel transmit bandwidth 8000 (kbps)
Tunnel receive bandwidth 8000 (kbps)
Last input never, output never, output hang never
Last clearing of "show interface" counters never
Input queue: 0/75/0/0 (size/max/drops/flushes); Total output drops: 1
Queueing strategy: fifo
Output queue: 0/0 (size/max)
5 minute input rate 0 bits/sec, 0 packets/sec
5 minute output rate 0 bits/sec, 0 packets/sec
0 packets input, 0 bytes, 0 no buffer
Received 0 broadcasts, 0 runts, 0 giants, 0 throttles
0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
0 input packets with dribble condition detected
0 packets output, 0 bytes, 0 underruns
0 output errors, 0 collisions, 0 interface resets
0 unknown protocol drops
0 output buffer failures, 0 output buffers swapped out
kash#
kash#
kash#
kash#
Copy
Paste
Top

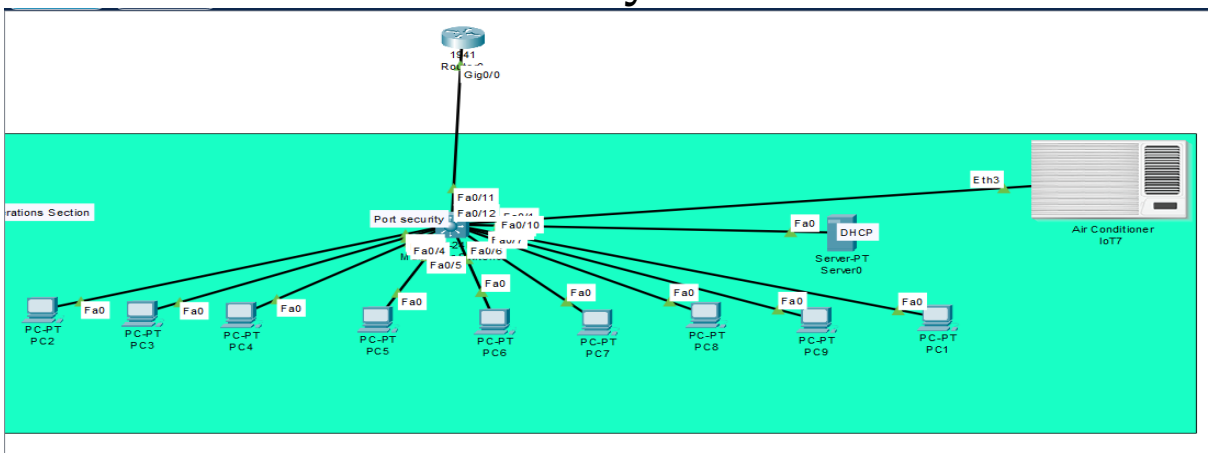
TELNET


Cisco Packet Tracer PC Command Line 1.0
C:\>telnet 11.1.1200
C:\>
C:\>telnet 11.1.1.200
Trying 11.1.1.200 ...Open
User Access Verification
Password:
kash>
kash>
kash>

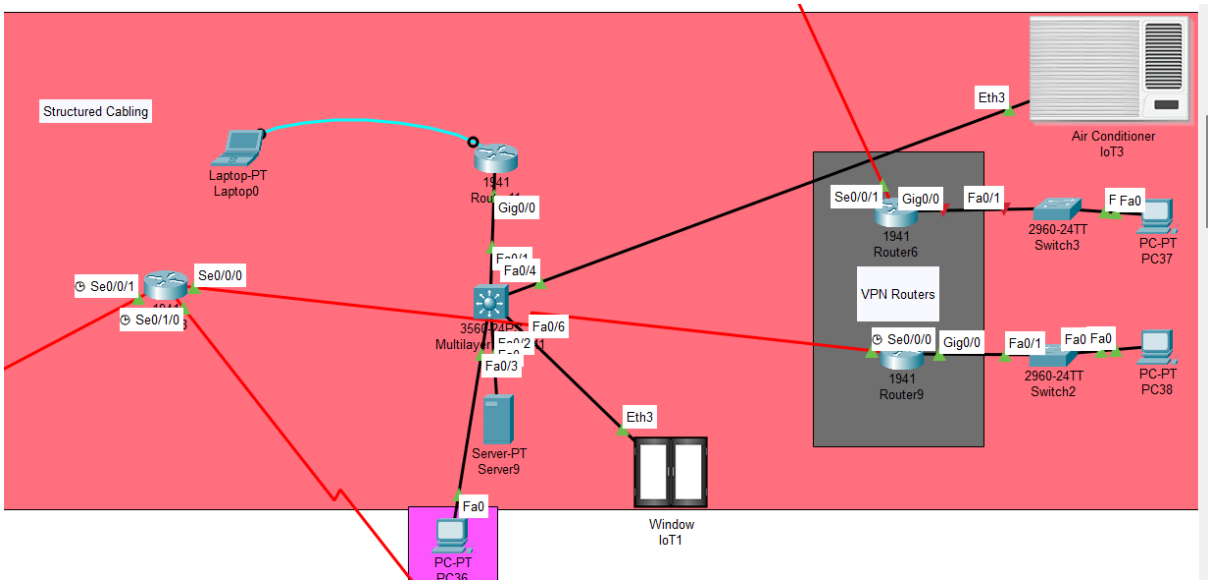
DHCP IN SERVER



DHCP Layout



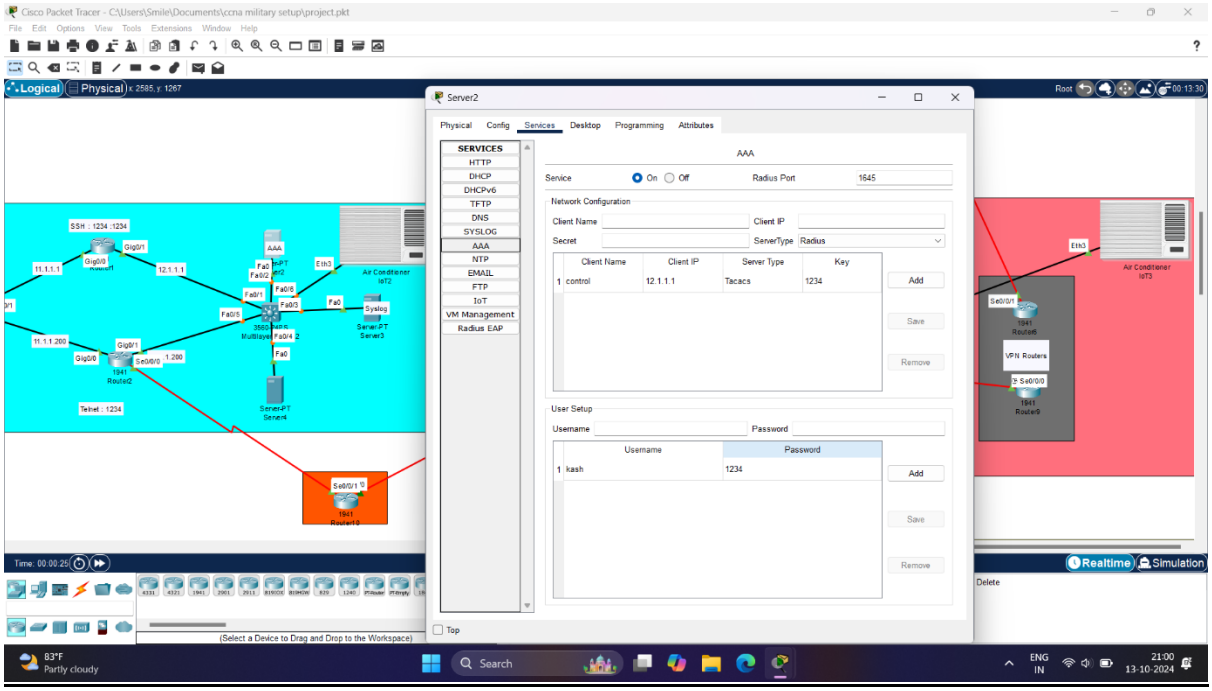
IOT DEVICES

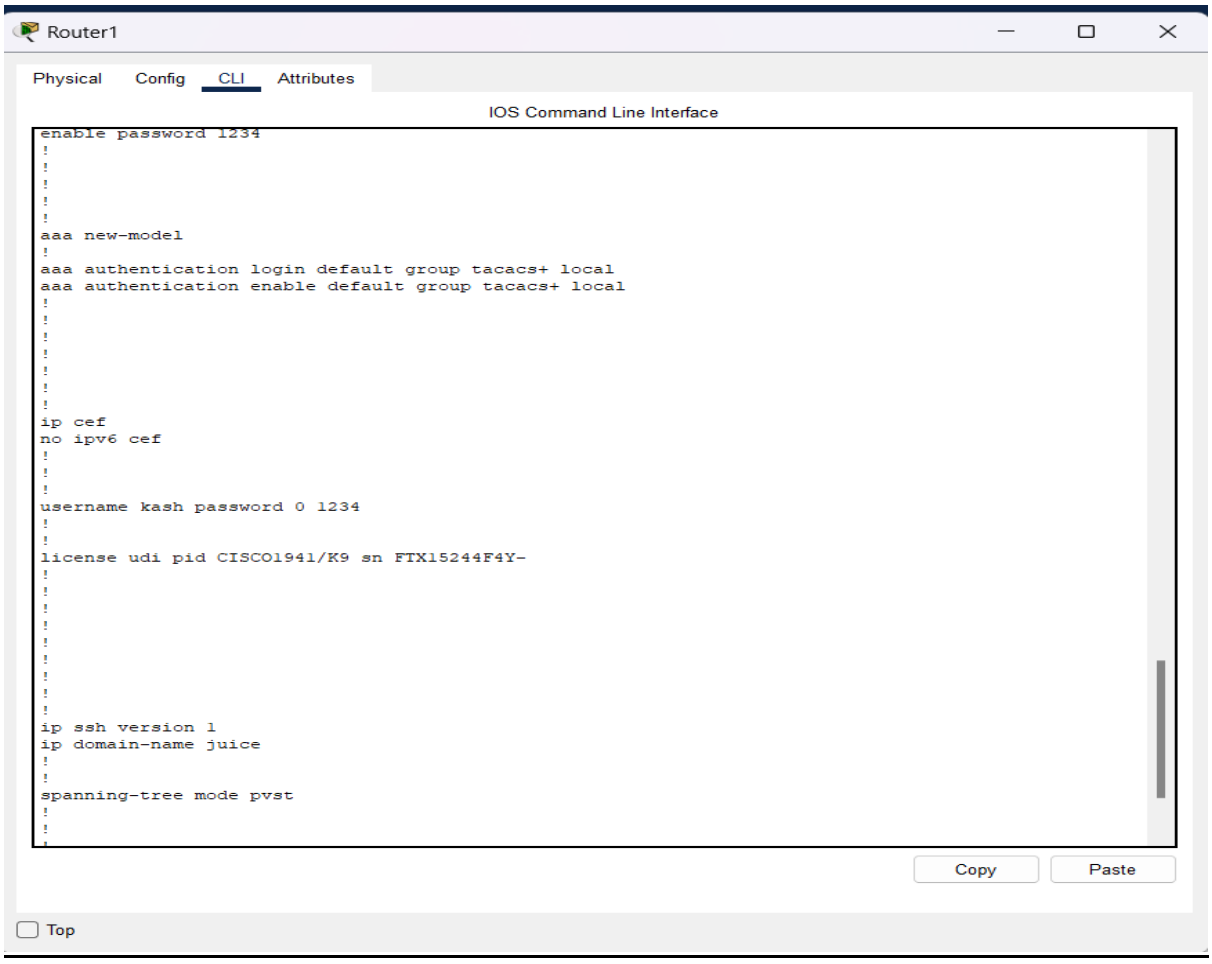


SSH

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ssh -l juice 10.0.0.100

Password:



kash>en
Password:
kash#
kash#
kash#en
kash#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
kash(config)#
```

AAA

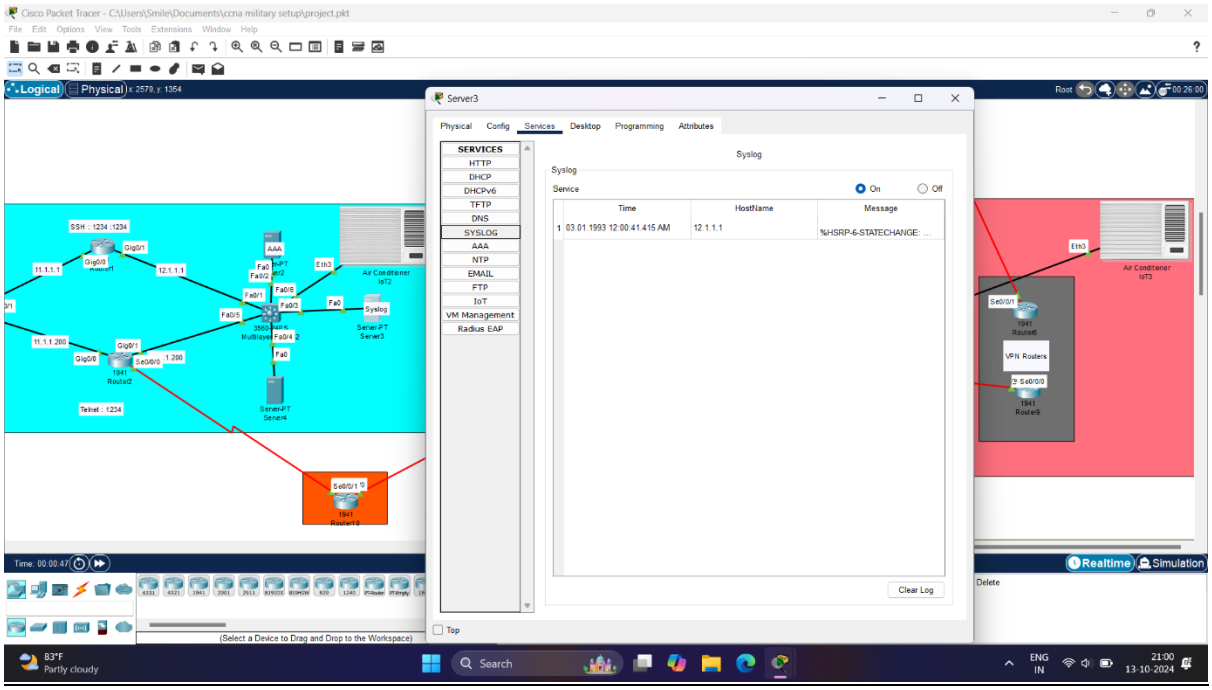

Server2
Physical
Config
Services
Desktop
Programming
Attributes
SERVICES
HTTP
DHCP
DHCPv6
TFTP
DNS
SYSLOG
AAA
NTP
EMAIL
FTP
IoT
VM Management
Radius EAP
AAA
Service
On
Off
Radius Port
1645
Network Configuration
Client Name
Client IP
Secret
ServerType
Radius
Client Name
Client IP
Server Type
Key
1 control
12.1.1.1
Tacacs
1234
Add
Save
Remove
User Setup
Username
Password
Username
Password
1 kash
1234
Add
Save
Remove
Top
Realtime
Simulation
Delete
(Select a Device to Drag and Drop to the Workspace)
Search
ENG
IN
21:00
13-10-2024


Router1
Physical
Config
CLI
Attributes
IOS Command Line Interface
enable password 1234
!
!
!
!
!
aaa new-model
!
aaa authentication login default group tacacs+ local
aaa authentication enable default group tacacs+ local
!
!
!
!
!
!
!
ip cef
no ipv6 cef
!
!
!
username kash password 0 1234
!
!
license udi pid CISCO1941/K9 sn FTX15244F4Y-
!
!
!
!
!
!
!
!
!
ip ssh version 1
ip domain-name juice
!
!
spanning-tree mode pvst
!
!
!
Copy
Paste
Top

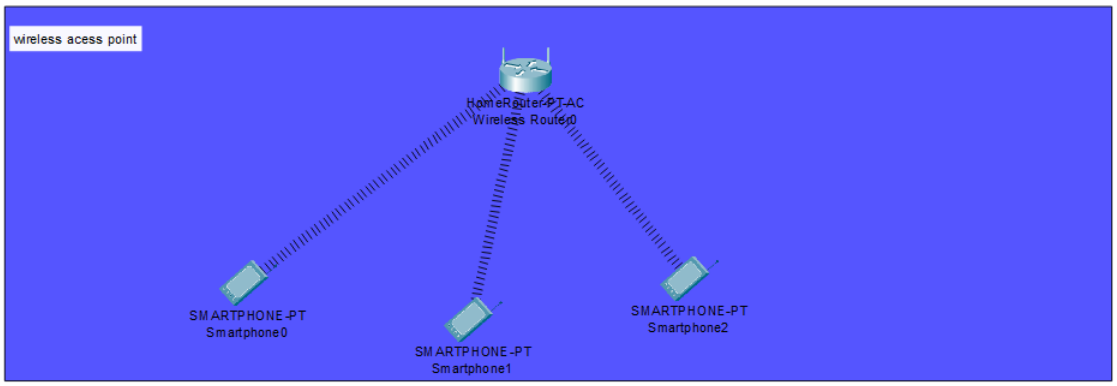
HSRP Routing Status in Router

```
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/1, changed state to up

%LINK-5-CHANGED: Interface Serial0/1/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/1/0, changed state to up

%HSRP-6-STATECHANGE: GigabitEthernet0/1 Grp 12 state Speak -> Standby

%HSRP-6-STATECHANGE: GigabitEthernet0/1 Grp 12 state Standby -> Active

%HSRP-6-STATECHANGE: GigabitEthernet0/0 Grp 11 state Speak -> Standby

%HSRP-6-STATECHANGE: GigabitEthernet0/1 Grp 12 state Speak -> Standby
```

SYS log



Wireless Acces Point



CONCLUSION

The whole network provide the convenient and secure way for the entire users of the bank and use better convenient way to access in order to get uninterrupted network, especially vlan & inter-vlan concept for the particular switches