

# BANK NETWORK DESIGN



COURT ROAD NETWORKZ SYSTEMS  
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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.

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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 sharing information. Resources such as a file, application, printer & software. The advantage of networking can be seen in the terms of security, efficiency, manageability and cost as it allows collaboration between user in a wide range. The switches and router this device that play an important role in data transfer from one place to another using different technology such as radio waves & wire.

### **Networking Requirement**

1. The active networking components (Routers, Switches, Wireless access points etc) with quantity.
2. The IP network design for each department.
3. Dynamic IP addressing design for all networks
4. Identify the configuration and features, wherever appropriate, which is required on the active components to setup the network.
5. Analysis, identification and explanation of methodologies to use for access restriction and internet sharing.
6. Creating and mapping IP networks with WAP

## **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**

1. The following use cisco packet tracer to design and implement the network solution
2. Use RIP and OSPF as the routing protocol
3. Configure SSH in HR department and IT department
4. Security room, Conference room, Floor 1 and Floor 5 required to have a Secure network for the users
5. Waiting hall and Conference hall should be in a Wireless Access Point
6. Class A type IP address used in every department
7. Device in Security room and Conference hall WAP Switch secure the network WEP password and SSID

are required to communicate with each other

8. Floor 1 and Floor 5 are Server to device allocated IP address Floor 1 is a wired server and Floor 5 is a wireless server
9. All Departments are allocated IP address dynamically
10. Test communication ensure everything configured is working as expected

## SOFTWARE REQUIREMENT

- CISCO Packet Tracer

## ROUTER CONFIGURATION

ROUTER 1

```
Router>en
```

```
Router#conf t
```

```
Enter configuration commands, one per line. End with CNTL/Z.
```

```
R1(config)#ip dhcp pool muthu
```

```
R1(config-dhcp)#network 60.0.0.0 255.0.0.0
```

```
R1(config)#default-router 60.0.0.1
```

```
interface GigabitEthernet0/0
```

```
ip address 60.0.0.1 255.0.0.0
```

```
no sh
```

```
ex
```

```
interface Serial0/1/0
```

```
ip address 8.0.0.1 255.0.0.0
```

```
clock rate 2000000
```

```
router rip
```

```
network 8.0.0.0
```

```
network 60.0.0.0
```

```
R1(config)#hostname R1
```

```
R1(config)#line vty 0 5
```

```
R1(config-line)#password 12345
```

```
R1(config-line)#transport input ssh
```

```
R1(config-line)#login local
```

```
R1(config-line)#exit
```

```
R1(config)#ip domain name muthu
```

```
R1(config)#crypto key generate rsa
```

The name for the keys will be: R1.12345

Choose the size of the key modulus in the range of 360 to 2048 for your General Purpose Keys. Choosing a key modulus greater than 512 may take a few minutes.

How many bits in the modulus [512]: 512

## ROUTER 2

```
Router>en
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
ip dhcp pool muthu
R2(config-dhcp)#network 70.0.0.0 255.0.0.0
R2(config)#default-router 60.0.0.1
no ip cef
no ipv6 cef
license udi pid CISCO1941/K9 sn FTX1524F7RT-
spanning-tree mode pvst
interface GigabitEthernet0/0
ip address 70.0.0.1 255.0.0.0
duplex auto
speed auto
interface GigabitEthernet0/1
no ip address
duplex auto
speed auto
shutdown
interface Serial0/0/0
ip address 9.0.0.1 255.0.0.0
interface Serial0/0/1
no ip address
clock rate 2000000
shutdown
interface Serial0/1/0
no ip address
clock rate 2000000
shutdown
interface Serial0/1/1
no ip address
clock rate 2000000
shutdown
interface Vlan1
no ip address
shutdown
router rip
network 9.0.0.0
network 70.0.0.0R2(config-router)#exit
R2(config)#enable password staffroom
R2(config)#enable secret room
R2(config)#username staff password staffroom
R2(config)#hostname R2
```



```
R2(config)#line vty 0 5
R2(config-line)#password staffroom
R2(config-line)#login local
R2(config-line)#exit
```

### Router 3

```
Router>en
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z. hostname HR
enable password 12345
ip dhcp pool muthu
network 80.0.0.0 255.0.0.0
default-router 80.0.0.1
no ip cef
no ipv6 cef
username HR password 0 12345
ip ssh version 1
ip domain-name k
spanning-tree mode pvst
interface GigabitEthernet0/0
ip address 80.0.0.1 255.0.0.0
duplex auto
speed aut
interface GigabitEthernet0/1
no ip address
duplex auto
speed auto
shutdown
interface Serial0/0/0
ip address 10.0.0.1 255.0.0.0
interface Serial0/0/1
no ip address
clock rate 2000000
shutdown
interface Serial0/1/0
no ip address
clock rate 2000000
shutdown
interface Serial0/1/1
no ip address
clock rate 2000000
shutdown
interface Vlan1
no ip address
shutdown
router rip
network 10.0.0.0
network 80.0.0.0
ip classless
ip flow-export version 9
line con 0
```

```
line aux 0
line vty 0 4
password 12345
login
transport input ssh
line vty 5 15
password 12345
login
transport input ssh

end
```

#### ROUTER 4

```
ip dhcp pool muthu
network 90.0.0.0 255.0.0.0
default-router 90.0.0.1
ip cef
no ipv6 cef
username IT password 0 12345
license udi pid CISCO1941/K9 sn FTX1524NHL4-
ip ssh version 1
ip domain-name k
spanning-tree mode pvst
interface GigabitEthernet0/0
ip address 90.0.0.1 255.0.0.0
duplex auto
speed auto
interface GigabitEthernet0/1
no ip address
duplex auto
speed auto
shutdown
interface Serial0/0/0
no ip address
clock rate 2000000
interface Serial0/0/1
no ip address
clock rate 2000000
interface Serial0/1/0
ip address 11.0.0.1 255.0.0.0
interface Serial0/1/1
no ip address
clock rate 2000000
interface Vlan1
no ip address
shutdown
router rip
network 11.0.0.0
network 90.0.0.0
ip classless
ip flow-export version 9
line con 0
line aux 0
```

```
line vty 0 4
password 12345
login
transport input ssh
line vty 5 15
password 12345
login
transport input ssh
end
```

#### ROUTER 5

```
Router>en
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
interface GigabitEthernet0/0
ip address 7.0.0.2 255.0.0.0
duplex auto
speed auto
interface GigabitEthernet0/1
no ip address
duplex auto
speed auto
shutdown
interface Serial0/0/0
ip address 9.0.0.2 255.0.0.0
clock rate 2000000
interface Serial0/0/1
ip address 8.0.0.2 255.0.0.0
interface Serial0/1/0
ip address 10.0.0.2 255.0.0.0
clock rate 2000000
interface Serial0/1/1
ip address 11.0.0.2 255.0.0.0
clock rate 2000000
interface Vlan1
no ip address
shutdown
router rip
network 7.0.0.0
network 8.0.0.0
network 9.0.0.0
network 10.0.0.0
network 11.0.0.0
```

#### ROUTER 6

```
Router>en
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
interface GigabitEthernet0/0
ip address 6.0.0.2 255.0.0.0
duplex auto
speed auto
```

```
interface GigabitEthernet0/1
ip address 7.0.0.1 255.0.0.0
duplex auto
speed auto
interface Serial0/0/0
ip address 2.0.0.2 255.0.0.0
interface Serial0/0/1
ip address 3.0.0.2 255.0.0.0
interface Serial0/1/0
ip address 4.0.0.2 255.0.0.0
interface Serial0/1/1
ip address 5.0.0.2 255.0.0.0
clock rate 2000000
interface Vlan1
no ip address
shutdown
router ospf 1
log-adjacency-changes
network 4.0.0.0 0.255.255.255 area 0
network 5.0.0.0 0.255.255.255 area 0
network 6.0.0.0 0.255.255.255 area 0
router rip
network 2.0.0.0
network 3.0.0.0
network 4.0.0.0
network 5.0.0.0
network 6.0.0.0
network 7.0.0.0
```

## ROUTER 7

Router>en

Router#conf t

Enter configuration commands, one per line. End with CNTL/Z.

```
ip dhcp pool muthu
network 30.0.0.0 255.0.0.0
default-router 30.0.0.1
spanning-tree mode pvst
interface GigabitEthernet0/0
ip address 40.0.0.1 255.0.0.0
duplex auto
speed auto
interface GigabitEthernet0/1
ip address 6.0.0.1 255.0.0.0
duplex auto
speed auto
interface Serial0/0/0
no ip address
clock rate 2000000
shutdown
interface Serial0/0/1
no ip address
clock rate 2000000
shutdown
interface Serial0/1/0
no ip address
clock rate 2000000
shutdown
interface Serial0/1/1
no ip address
clock rate 2000000
shutdown
interface Vlan1
no ip address
shutdown
router ospf 1
log-adjacency-changes
network 40.0.0.0 0.255.255.255 area 0
network 6.0.0.0 0.255.255.255 area 0
router rip
network 6.0.0.0
network 40.0.0.0
```

## ROUTER 8

Router>en

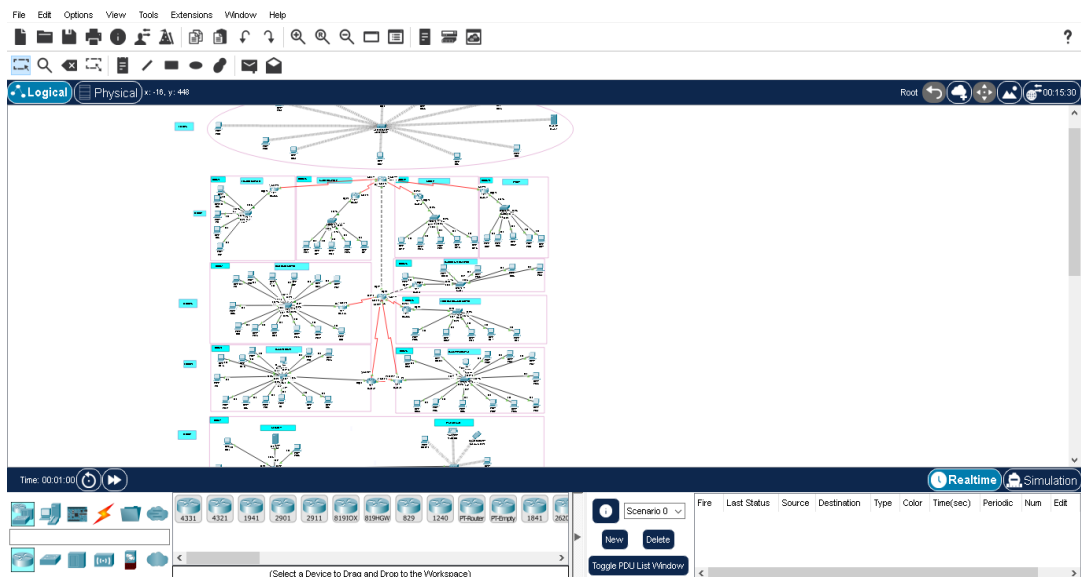
Router#conf t

Enter configuration commands, one per line. End with CNTL/Z.

```
ip dhcp pool muthu
```

```
network 30.0.0.0 255.0.0.0
default-router 30.0.0.1
interface GigabitEthernet0/0
ip address 30.0.0.1 255.0.0.0
duplex auto
speed auto
interface GigabitEthernet0/1
no ip address
duplex auto
speed auto
shutdown
interface Serial0/0/0
ip address 4.0.0.1 255.0.0.0
clock rate 2000000
interface Serial0/0/1
no ip address
clock rate 2000000
shutdown
interface Serial0/1/0
no ip address
clock rate 2000000
shutdown
interface Serial0/1/1
no ip address
clock rate 2000000
shutdown
interface Vlan1
no ip address
shutdown
router ospf 1
log-adjacency-changes
network 30.0.0.0 0.255.255.255 area 0
network 4.0.0.0 0.255.255.255 area 0
router rip
network 4.0.0.0
network 30.0.0.0
```

## **NETWORK TOPOLOGY**



## Wired server and Wireless PING

Physical Config Services Desktop Programming Attributes

Command Prompt

X

```
Cisco Packet Tracer SERVER Command Line 1.0
C:\>ping 10.0.0.5

Pinging 10.0.0.5 with 32 bytes of data:

Reply from 10.0.0.5: bytes=32 time<1ms TTL=128
Reply from 10.0.0.5: bytes=32 time=1ms TTL=128
Reply from 10.0.0.5: bytes=32 time<1ms TTL=128
Reply from 10.0.0.5: bytes=32 time=1ms TTL=128

Ping statistics for 10.0.0.5:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 1ms, Average = 0ms

C:\>tracert 10.0.0.5

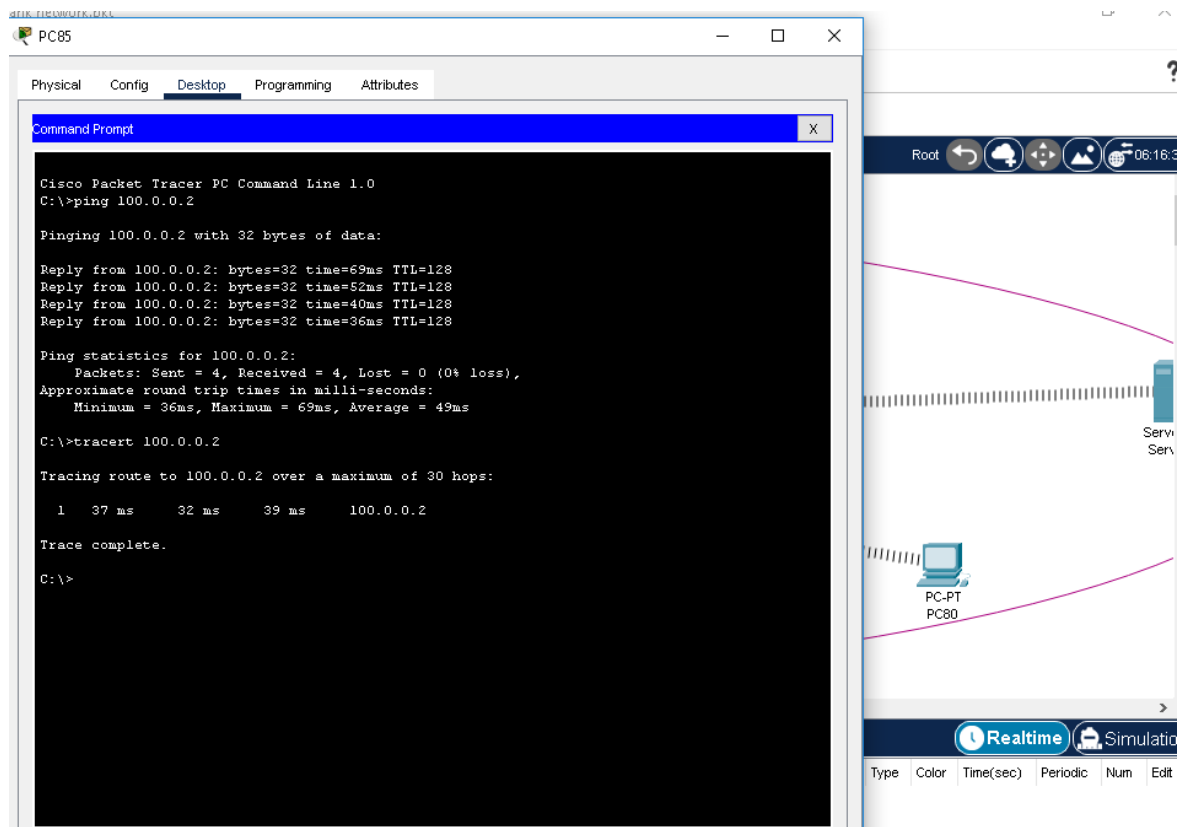
Tracing route to 10.0.0.5 over a maximum of 30 hops:

  1  0 ms      0 ms      0 ms      10.0.0.5

Trace complete.

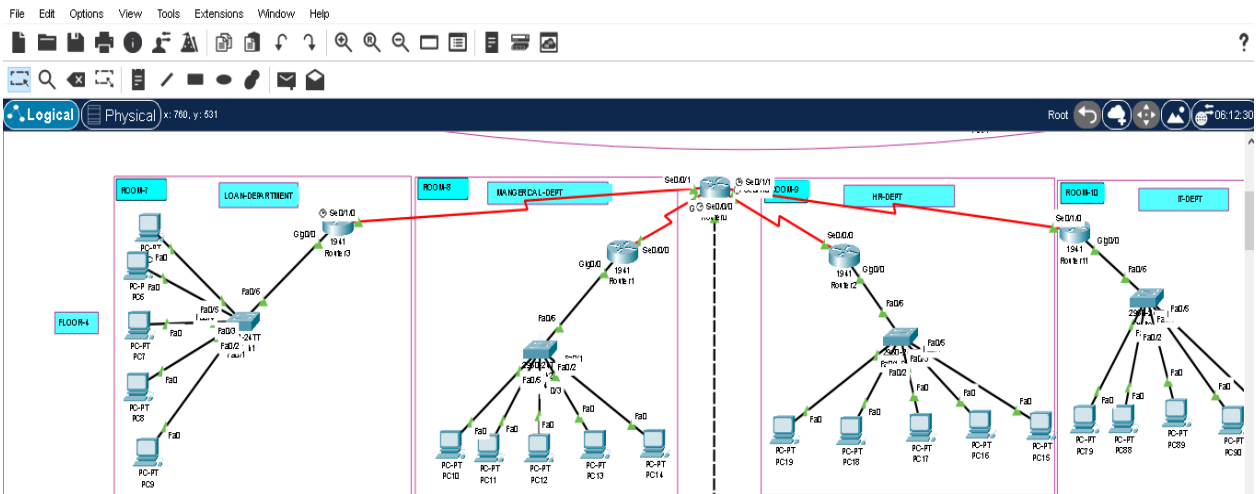
C:\>
```





**SSH**





The screenshot shows the Cisco Packet Tracer interface with a network diagram and a command prompt window for PC10. The network diagram displays a multi-department office network with various switches and PCs. The command prompt window shows the output of a ping command to 20.0.0.5.

```

Cisco Packet Tracer PC Command Line 1.0
C:\>ping 20.0.0.5

Pinging 20.0.0.5 with 32 bytes of data:
Request timed out.
Reply from 20.0.0.5: bytes=32 time=4ms TTL=124
Reply from 20.0.0.5: bytes=32 time=5ms TTL=124
Reply from 20.0.0.5: bytes=32 time=47ms TTL=124

Ping statistics for 20.0.0.5:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 4ms, Maximum = 47ms, Average = 18ms

C:\>ping 20.0.0.5

Pinging 20.0.0.5 with 32 bytes of data:
Reply from 20.0.0.5: bytes=32 time=2ms TTL=124
Reply from 20.0.0.5: bytes=32 time=19ms TTL=124
Reply from 20.0.0.5: bytes=32 time=12ms TTL=124
Reply from 20.0.0.5: bytes=32 time=2ms TTL=124

Ping statistics for 20.0.0.5:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 2ms, Maximum = 19ms, Average = 8ms

C:\>
  
```

The network diagram in the background shows a multi-department office network with various switches and PCs. The interface includes a menu bar (File, Edit, Options, View, Tools, Extensions, Window, Help) and a toolbar with various icons for network configuration.

# DHCP IN SERVER



# WIRELESS ACCESSPOINT

Smartphone0(1)

Physical

Config

Desktop

Programming

Attributes

GLOBAL

Settings

Algorithm Settings

INTERFACE

Wireless0

3G/4G Cell1

Bluetooth

Wireless0

Port Status ☒ On

Bandwidth 18 Mbps

MAC Address 0060.5C87.1459

SSID BANKING SYSTEM

Authentication

☐ Disabled

☒ WEP

☐ WPA-PSK

☐ WPA

☐ 802.1X

☐ WPA2-PSK

☐ WPA2

Method:

WEP Key 1234567890

PSK Pass Phrase

User ID

Password

User Name

Password

Encryption Type 40/64-Bits (10 Hex digits)

IP Configuration

☒ DHCP

☐ Static

IPv4 Address 169.254.20.90

Subnet Mask 255.255.0.0

IPv6 Configuration

☒ Automatic

☐ Static

IPv6 Address

Link Local Address: FE80::260:5CFF:FE87:1459

☐ Top

## **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.