

# **Title:** Corporate Office Network Infrastructure

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# Agenda

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# Introduction

- ▶ Project: Corporate Office Network Infrastructure
- ▶ Purpose: Design a structured and secure network
- ▶ Focus: Reliability • Security • Scalability
- ▶ Tool Used: Cisco Packet Tracer

# Motivation

## Why we developed this Project :

1. Need for a structured office network to avoid chaos
2. Manual IP setup causes errors and wasted time
3. Unsecured networks risk data breaches and misuse
4. Organizations demand scalable, reliable connectivity

# Problem Statement

- ▶ Unstructured office networks cause IP conflicts and poor resource management
- ▶ Manual configuration leads to errors, downtime, and inefficiency
- ▶ Lack of security controls exposes sensitive data to unauthorized access
- ▶ No scalability to support future growth or additional devices
- ▶ Inefficient communication between departments due to weak routing

# Objectives

- ▶ Design a structured office network with Access, Core, and Distribution layers
- ▶ Automate IP allocation using DHCP to avoid manual errors
- ▶ Ensure secure file sharing using ftp
- ▶ Implement dynamic routing for seamless inter-department connectivity
- ▶ Build a scalable network that supports future expansion
- ▶ Validate performance through simulation in Cisco Packet Tracer

Figure: 2

# Applications

- ▶ Corporate offices - secure and efficient internal communication
- ▶ Universities/colleges - structured networking for labs and admin blocks
- ▶ Banks and financial institutions - reliable and protected data flow
- ▶ Hospitals - seamless access to patient and departmental records
- ▶ Government offices - organized, scalable, and controlled connectivity

# Devices & Services Used

- ▶ Pc
- ▶ Router
- ▶ Switch
- ▶ Laptop
- ▶ Server
  
- ▶ Services:
- ▶ STATIC ROUTING
- ▶ DYNAMIC
- ▶ DHCP
- ▶ FTP[Admin Full access, But another client are read, write access]
- ▶ EMAIL



# Implementation Workflow

```
Command Prompt
[passive mode On]
ftp>dir

Listing /ftp directory from 192.168.5.2:
 0 : asa842-k9.bin                5571584
 1 : c1841-advipservicesk9-mz.124-15.T1.bin  33591768
 2 : c1841-ipbase-mz.123-14.T7.bin  13832032
 3 : c1841-ipbasek9-mz.124-12.bin  16599160
 4 : c2600-advipservicesk9-mz.124-15.T1.bin  33591768
 5 : c2600-i-mz.122-28.bin         5571584
 6 : c2600-ipbasek9-mz.124-8.bin   13169700
 7 : c2800nm-advipservicesk9-mz.124-15.T1.bin  50938004
 8 : c2800nm-advipservicesk9-mz.151-4.M4.bin  33591768
 9 : c2800nm-ipbase-mz.123-14.T7.bin  5571584
10 : c2800nm-ipbasek9-mz.124-8.bin  15522644
11 : c2950-16q412-mz.121-22.EA4.bin  3058048
12 : c2950-16q412-mz.121-22.EA0.bin  3117390
13 : c3960-lanbase-mz.122-25.TX.bin  4414921
14 : c3960-lanbase-mz.122-25.SE11.bin  4670455
15 : c3960-lanbasek9-mz.150-2.SE4.bin  4670455
16 : c3960-advipservicesk9-mz.122-37.SE11.bin  8662192
17 : pt1000-i-mz.122-28.bin        5571584
18 : pt3000-16q412-mz.121-22.EA4.bin  3117390

ftp>
ftp>exit
Invalid or non supported command.
ftp>quit

221- Service closing control connection.
C:\>ping 192.168.23.2

Pinging 192.168.23.2 with 32 bytes of data:

Reply from 192.168.23.2: bytes=32 time=55ms TTL=124
Reply from 192.168.23.2: bytes=32 time=6ms TTL=124
Reply from 192.168.23.2: bytes=32 time=5ms TTL=124
Reply from 192.168.23.2: bytes=32 time=4ms TTL=124

Ping statistics for 192.168.23.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 4ms, Maximum = 55ms, Average = 17ms

C:\>
```

Router0

Physical Config CLI Attributes

Static Routes

GLOBAL

Settings

Algorithm Settings

ROUTING

Static

RIP

SWITCHING

VLAN Database

INTERFACE

FastEthernet0/0

FastEthernet0/1

Serial0/0/0

Serial0/1/0

Serial0/2/0

Serial0/3/0

Network

Mask

Next Hop

Network Address

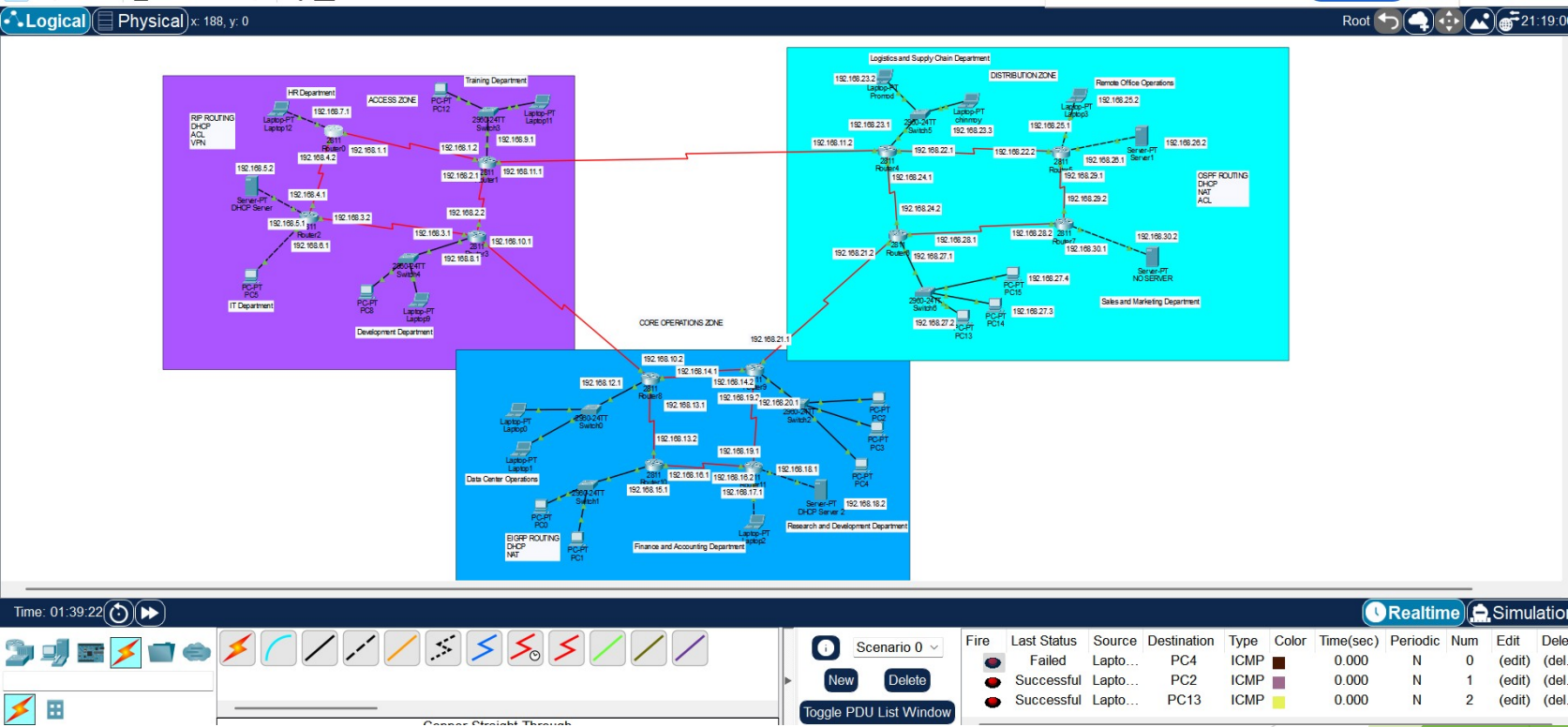
192.168.9.0/24 via 192.168.1.2

192.168.8.0/24 via 192.168.2.2

192.168.6.0/24 via 192.168.4.1

192.168.10.0/24 via 192.168.3.1

# Results



# Limitations

- ▶ Simulation only - not tested on real hardware
- ▶ IPv4 only - no IPv6 implementation
- ▶ No advanced security tools like firewalls or IDS/IPS
- ▶ No wireless integration in the current design
- ▶ Bandwidth and latency not measured or optimized

# Future Work

- ▶ Implement IPv6 for next-generation addressing
- ▶ Add wireless networking for mobility and flexibility
- ▶ Integrate advanced security (firewalls, IDS/IPS)
- ▶ Expand to hybrid/cloud networks for remote offices

# Conclusion

- ▶ Successfully designed and implemented a corporate office network infrastructure
- ▶ Network divided into Access, Core, and Distribution Zones for structured communication
- ▶ DHCP ensured automatic IP allocation and avoided conflicts
- ▶ Dynamic routing enabled efficient inter-zone communication and scalability
- ▶ NAT provided secure external connectivity while protecting internal addresses
- ▶ ACLs enforced traffic control and security policies
- ▶ Simulation tests (Ping, Traceroute, Packet Flow) confirmed smooth communication & security
- ▶ Overall: Project demonstrates how a well-planned network improves productivity, security, and scalability

# Any Questions ?

