

Network Design proposal for 3-star hotel

A Course project report

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ABSTRACT

This network design proposal outlines a comprehensive plan for implementing a robust and reliable network infrastructure for a three-star hotel. The proposed network design incorporates both wired and wireless technologies to provide seamless connectivity to guests, staff, and management across the hotel's various departments.

The design includes the deployment of high-speed internet connectivity, network switches, routers, access points, and firewalls to ensure secure and reliable connectivity. The network infrastructure will be segmented to provide dedicated networks for guest rooms, back-office operations, and management. The proposal also includes a plan for network management, monitoring, and maintenance to ensure optimal performance and uptime.

Overall, the proposed network design aims to provide guests with a seamless and reliable internet experience while ensuring that the hotel's staff can perform their duties efficiently and effectively. The proposed design is scalable, and it can be expanded to accommodate future growth and technology advancements.

INTRODUCTION

The hospitality industry is highly dependent on technology, and the availability of a reliable network infrastructure is critical to the success of any hotel. This network design proposal aims to provide a comprehensive plan for implementing a robust and secure network infrastructure for a three-star hotel.

The proposed network design will ensure that the hotel's guests, staff, and management can access high-speed internet connectivity throughout the hotel's premises. The network infrastructure will also be designed to support back-office operations, management, and other critical services required to ensure that the hotel runs smoothly.

The proposed design will include both wired and wireless technologies to provide seamless connectivity across the hotel's various departments. The network infrastructure will be segmented to provide dedicated networks for guest rooms, back-office operations, and management. The design will also include security measures to protect the hotel's network and data from cyber threats.

Overall, this network design proposal aims to provide a reliable and efficient network infrastructure that will meet the hotel's current and future technology requirements while enhancing the guest experience and improving operational efficiency.

REQUIREMENTS

- ✓ High-speed internet connectivity: The network infrastructure must provide high-speed internet connectivity to guests, staff, and management across the hotel's premises.
- ✓ Wired and wireless connectivity: The proposed design must incorporate both wired and wireless technologies to provide seamless connectivity across the hotel's various departments.
- ✓ Network segmentation: The network infrastructure must be segmented to provide dedicated networks for guest rooms, back-office operations, and management to ensure security and efficient network management.
- ✓ Security measures: The design must incorporate security measures such as firewalls, intrusion detection and prevention systems,

Hardware Requirement:

1x Router (For address 10.0.2.1): 1841 Router

1x Switches

3x End Devices

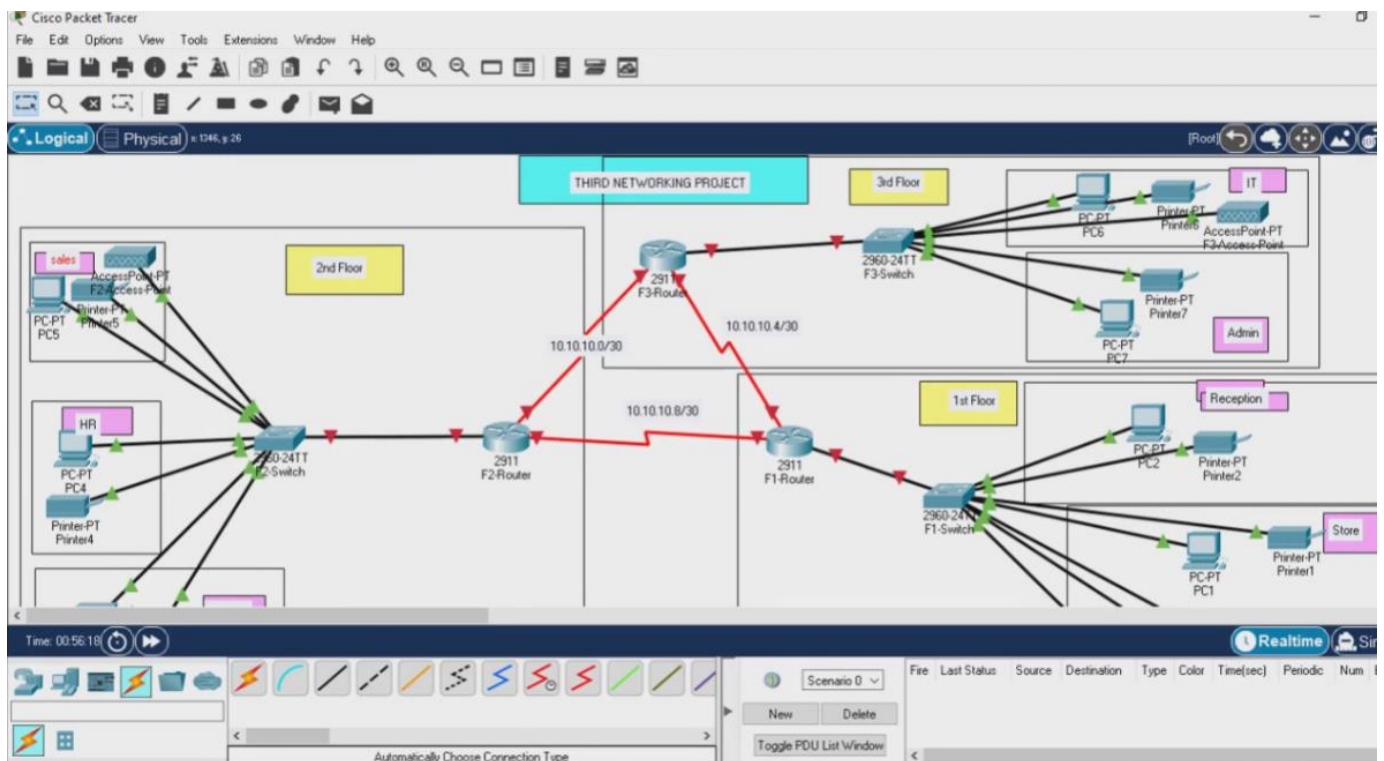
1x Access Device 2950-24 Switch

1x PCs for Connection Representation

1x PCs for Connectionless Representation

1x Access Point PT

ARCHITECTURE AND DESIGN



The architecture consists of two major networks:

- Router 2911
- Printer
- DHCP Server
- ISP Router 2911
- DNS/Web Server
- PCs

IMPLEMENTATION

Address Table :

The address table is as follows:

MAC Address	IP Address	Device Name	VLAN
00:11:22:33:44:55	192.168.1.2	Front Desk Computer	Management VLAN
00:AA:BB:CC:DD:EE	192.168.1.3	Hotel Server	Management VLAN
11:22:33:44:55:66	192.168.2.2	Guest Room 101 Computer	Guest VLAN
22:33:44:55:66:77	192.168.2.3	Guest Room 102 Computer	Guest VLAN
33:44:55:66:77:88	192.168.2.4	Guest Room 103 Computer	Guest VLAN
44:55:66:77:88:99	192.168.3.2		

PC	IP ADDRESS	SWITCH	IP ADDRESS
PC-0	192.168.1.8	SWITCH-0	192.168.1.1
PC-1	192.168.1.10	SWITCH-1	192.168.1.6
PC-2	192.168.1.15	SWITCH-2	192.168.1.3
PC-3	192.168.1.11	SWITCH-3	192.168.1.9
PC-4	192.168.2.15	SWITCH-4	192.168.2.2
PC-5	192.168.2.10	SWITCH-5	192.168.2.3
PC-6	192.168.2.9	SWITCH-6	192.168.2.4
PC-7	192.168.2.6	SWITCH-7	192.168.2.5
PC-8	192.168.1.7	SWITCH-8	192.168.1.20
PC-9	192.168.1.14	SWITCH-9	192.168.1.25
PC-10	192.168.2.14	SWITCH-10	192.168.2.18
PC-11	192.168.2.7	SWITCH-11	192.168.2.28
PC-12	192.168.1.19	SWITCH-13	192.168.1.51
PC-13	192.168.1.18	SWITCH-14	192.168.1.50
PC-14	192.168.1.23		
PC-15	192.168.1.22		

RESULTS AND DISCUSSION

The screenshot displays a network simulation environment. On the left, a portion of a network map is visible, showing a '2nd Floor' area with various devices connected to a central switch labeled 'F2-SW'. On the right, a detailed network topology diagram is shown, featuring a central router labeled '[Root]'. The topology includes several VLANs: VLAN 10 (192.168.1) with an 'IT' department, VLAN 20 (192.168.1) with an 'Admin' department, and a 'Reception' department. Devices connected include PC-PT PC6, Printer-PT Printer6, PC-PT PC7, Printer-PT Printer7, AccessPoint-PT F3-Access-Point, PC-PT PC2, Printer-PT Printer2, PC-PT PC1, and Printer-PT Printer1. A 'Realtime' clock is visible at the bottom right of the topology diagram.

The central window shows the 'IOS Command Line Interface' for the F3-Router. The configuration commands entered are as follows:

```
F3-Router(config)#username gtech password getech
F3-Router(config)#
F3-Router(config)#
F3-Router(config)#crypt
F3-Router(config)#crypto key
F3-Router(config)#crypto key gen
F3-Router(config)#crypto key generate rsa
F3-Router(config)#crypto key generate rsa 1024

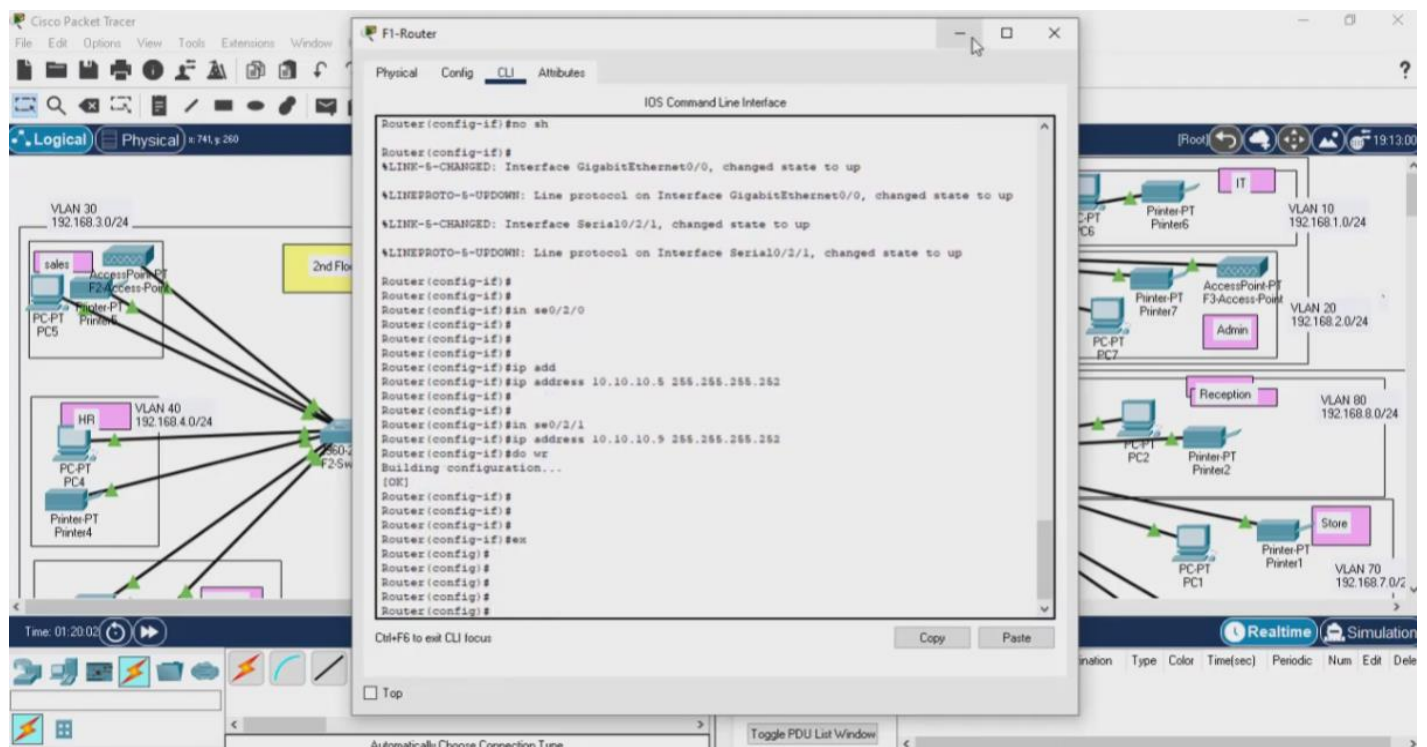
% Invalid input detected at '^' marker.

F3-Router(config)#crypto key generate rsa
The name for the keys will be: F3-Router.gtech
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]: 1024
% Generating 1024 bit RSA keys, keys will be non-exportable...[OK]

F3-Router(config)#
*Mar 1 1:16:30.469: %SSH-5-ENABLED: SSH 1.99 has been enabled
F3-Router(config)#
F3-Router(config)#
F3-Router(config)#
F3-Router(config)#
F3-Router(config)#line vty 0 15
F3-Router(config-line)#logi
F3-Router(config-line)#login loac
F3-Router(config-line)#login loca
F3-Router(config-line)#login local
F3-Router(config-line)#tran
F3-Router(config-line)#transport in
F3-Router(config-line)#transport input ss
F3-Router(config-line)#transport input ssh
```

At the bottom of the CLI window, there are 'Copy' and 'Paste' buttons, and a status bar indicating 'Ctrl+F6 to exit CLI focus'.



2nd Floor

360-2
F2-Sw

Command Prompt

```
Request timed out.
Reply from 192.168.2.2: bytes=32 time<1ms TTL=127
Reply from 192.168.2.2: bytes=32 time=21ms TTL=127
Reply from 192.168.2.2: bytes=32 time<1ms TTL=127

Ping statistics for 192.168.2.2:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 21ms, Average = 7ms

C:\>ping 192.168.6.2

Pinging 192.168.6.2 with 32 bytes of data:

Reply from 192.168.1.1: Destination host unreachable.
Reply from 192.168.1.1: Destination host unreachable.
Reply from 192.168.1.1: Destination host unreachable.
Reply from 192.168.1.1: Destination host unreachable.

Ping statistics for 192.168.6.2:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\>ping 192.168.6.2

Pinging 192.168.6.2 with 32 bytes of data:

Request timed out.
Reply from 192.168.6.2: bytes=32 time=10ms TTL=126
Reply from 192.168.6.2: bytes=32 time=1ms TTL=126
Reply from 192.168.6.2: bytes=32 time=1ms TTL=126

Ping statistics for 192.168.6.2:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 1ms, Maximum = 10ms, Average = 4ms

C:\>
```

[Root]

IT

PC-PT PC6

Printer-PT Printer6

PC-PT PC7

Printer-PT Printer7

AccessPoint-PT F3-Access-Point

Admin

PC-PT PC2

Printer-PT Printer2

Reception

PC-PT PC1

Printer-PT Printer

Realtime

ination Type Color Time(sec) Perio

2nd Floor

360-2
F2-Sw

```
switchport mode access
switchport port-security
switchport port-security mac-address sticky
!
interface FastEthernet0/3
switchport access vlan 10
switchport mode access
!
interface FastEthernet0/4
switchport access vlan 20
switchport mode access
!
interface FastEthernet0/5
switchport access vlan 20
switchport mode access
!
interface FastEthernet0/6

Switch(config-if)#ex
Switch(config)#
Switch(config)#
Switch(config)#sh port
Switch(config)#sh port-security
^
% Invalid input detected at '^' marker.

Switch(config)#
```

Ctrl+F6 to exit CLI focus

CopyPaste

CONCLUSION

Based on the proposed network design for the hotel, it can be concluded that the network will provide reliable and secure connectivity to all the guests and staff members. The design includes a combination of wired and wireless technologies that will offer high-speed internet access and seamless communication among various devices.

The network will be designed with scalability and flexibility in mind, ensuring that it can accommodate future growth and technological advancements. The proposed design also includes various security measures to protect the network from cyber-attacks, ensuring that sensitive guest data and confidential business information are kept safe.

Overall, the proposed network design will enhance the guest experience by providing fast and reliable internet access, facilitating communication, and enabling various smart hotel applications. It will also help the hotel staff in managing their operations more efficiently and effectively.

REFERENCES

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