COMPUTER NETWORKS LAB MINI PROJECT REPORT

COURSE CODE – CS3132

PROJECT TITLE

NETWORK DESIGN PROPOSAL FOR CASINO

BY -

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PROJECT SCOPE

The project aims to design a network for a casino. The casino has 10 floors including the ground floor. The ground floor has a lobby area. Each floor also has a lobby area. There are 40 rooms in each floor, each of which has a network point to which the guest PC is connected. The casino network has two servers which are used by the staff. A high-speed internet connection is available which is to be shared by the guest and staff network. There is a total of 25 staff in the casino based at the ground floor.

NETWORK REQUIREMENT

1. Network Topology diagram.
2. Identify the hardware required like routers, switches, access points (Cisco)
3. The network must be segregated into guest and staff
4. The guest network should not have access to the staff network.
5. TCP/IP Network design and IP address table.
6. Configurations and features which are required to be configured on the devices.

HARDWARE REQUIREMENT ANALYSIS

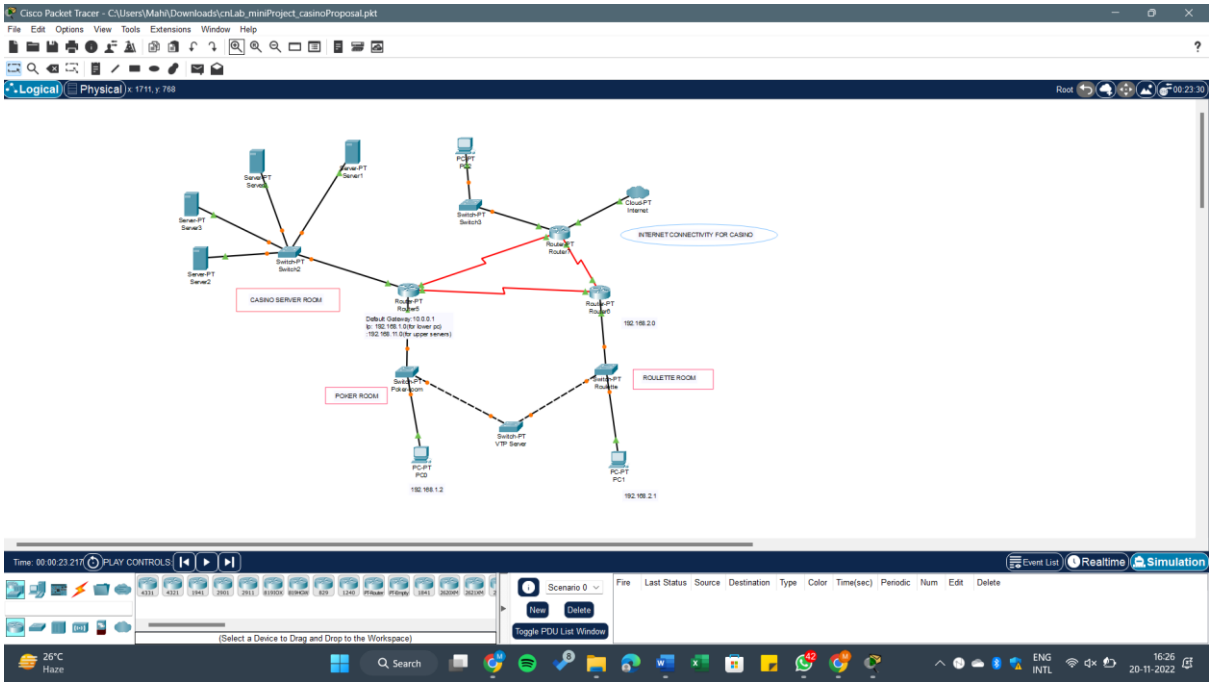
Devices	Model	Quantity
Router	Cisco 1841 ISR router	1
Switches	Cisco 2960-48	10
Access points	AIR-CAP1702I-x-K9	10

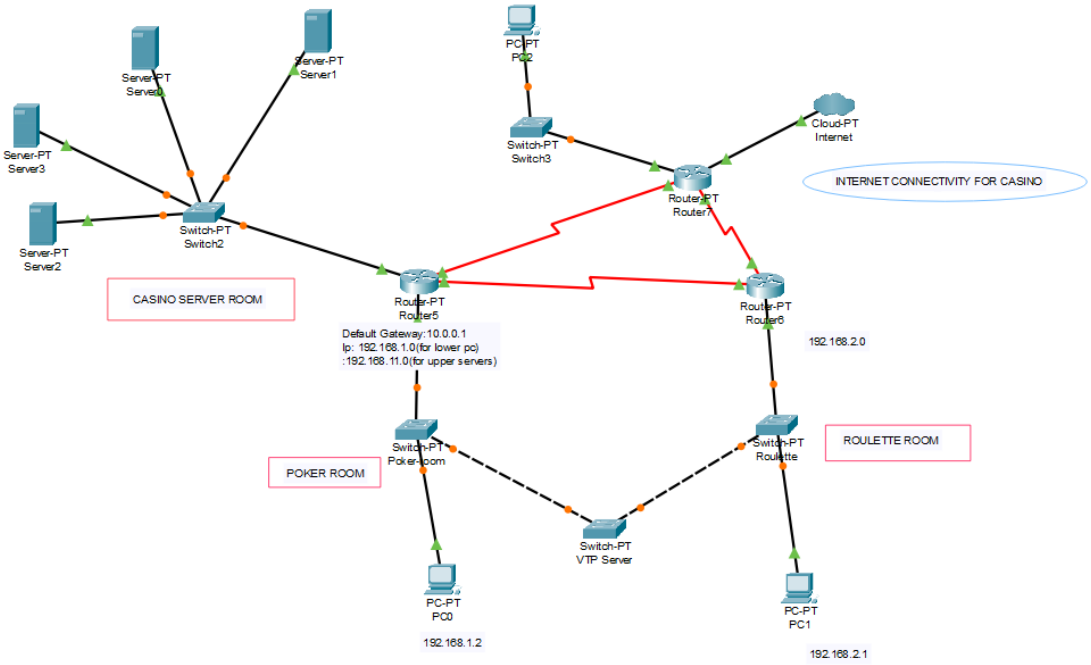
10 floors casino

- A router is required to allow internet sharing and manage the control features.
- Each level requires an installation of 48 port switch to support network in each room
- Every level had a lobby area, every lobby needs a wireless access point.

Total:
10 of 48 port switches
10 success points required
A router

TOPOLOGY DIAGRAM





NETWORK STRATEGY EXPLANATION

Ground Floor

- connected to switch, router, server1 and server2, wireless access point.

Switches

- installation of a 48-port switch on each level
- guest room's PCs &wireless access points connected

Segregation of staff and guest network

- Server 2 required a configuration as DHCP (Dynamic Host Configuration Protocol) server
- The purpose of this is to provide a dynamic IP addressing to users on both the staff and guest networks

TCP/IP NETWORK DESIGN

1. IP Address for Staff and Guests

Departments	Network address	Start IP address	End IP address
Staff	192.168.1.0/24	192.168.1.1	192.168.1.40
Guest	172.16.0.0/16	172.16.0.1	172.16.120.254

2. IP Address for LAN Configuration

Devices	IP address
Router	192.168.1.1
Server 1	192.168.1.2
Server 2 (DHCP)	192.168.1.3
Ground Floor (Staff)	192.168.1.0
Floor 1 – Floor 9	172.16.1.1 - 172.16.1.9

CONFIGURATION

1. Router

```
Router#config t
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#int s0/0
Router(config-if)#clock rate 64000
Router(config-if)#no shut
00:18:29: %LINK-3-UPDOWN: Interface Serial0/0, changed state to up
00:18:29: %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0, changed state to up
Router(config-if)#end
Router#sh ip int brief
Interface              IP-Address      OK? Method Status                Protocol
Serial0/0              192.168.1.1     YES unset  up                    up
Ethernet0/0            192.168.1.2     YES unset  up                    up
Ethernet0/1            unassigned      YES unset  administratively down down
```

2. Switch

```
Switch(config)#interface range fa1/0/1, fa1/0/2, fa1/0/3, fa1/0/4
Switch(config-if-range)#switchport mode access
Switch(config-if-range)#no shutdown
Switch(config-if-range)#exit
Switch(config)#interface range f1/0/2
Switch(config-if-range)#switchport access vlan 10
Switch(config-if-range)#interface range f1/0/3
Switch(config-if-range)#switchport access vlan 20
Switch(config-if-range)#exit
Switch(config-if-range)#interface range fa1/0/1
Switch(config-if-range)#switchport trunk encapsulation dot1q
Switch(config-if-range)#switchport trunk native vlan 99
Switch(config-if-range)#no shutdown
Switch(config-if-range)#end
Switch(config)#interface vlan 99
Switch(config-if)#ip address 172.16.99.11 255.255.255.0
Switch(config-if)#no shutdown
```

CONCLUSION

1. ADVANTAGES

- Reduced Congestion
  Improve performance because there are fewer host hence minimize traffic

- Improve Security
  Internal structure not visible from outside, effective control to limit movement across network, able to detect unauthorized access to network

- Control visitor access
  Implementing VLANs to segregate network

2. DISADVANTAGES

- Cyber Attack
  If basic network security is mismanaged, hackers are being allowed in the front door of the network undetected

3. CONCLUSION

- Achieve the requirement of the network has to be segregated into guest and staff
  - Control the network-limit the guest network access

- Installation the DHCP server on the server 2 provides a dynamic IP addressing
  - Enable a network sharing between guest and staff

- Significant benefits to the casino when implementing the network
  - Outweigh the disadvantages

- Network design provides high-speed internet connection to be shared by the guest and staff network as per requirement

REFERENCES

1. Fisher, T, “What is DHCP (Dynamic Host Configuration Protocol”, Lifewire, 2017. [online]. Available: https://www.lifewire.com/what-is-dhcp-2625848
2. James W. Kurose ad Keith W. Ross, Computer Networking : A Top-Down Approach, 7th Ed, 2016, Pearson, 2016
3. Rooney, T, “IP Address Management Principles and Practice.” Institute of Electrical and Electronics Engineers, Inc, 2011
4. H. K. Edwards and V. Sridhar, “Analysis of software requirements and engineering exercises in a global virtual team setup” Journal of Global Information Management, vol. 12 no. 2 p. 21+, April-June 2005. [Online]. Available: Academic OneFile, https://find.galegroup.com