Network Design For School

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Abstract :

A network has to be designed for a school. There are a total of 230 computers in the school computer lab. The users in the lab should belong to a single domain and receive IP address dynamically from a central server with the ability to share files on a central location. Some of the users have laptops with wireless cards for which wireless access is required. The total size of the lab is 1000 sq ft. Identify appropriate solution with the detailed services, hardware and software requirements to design the appropriate network for the school.

Introduction :

A network has to be designed for total of 230 computers in a school computer lab. The users in the lab should belong to a single domain and receive IP address dynamically from a a central server.

We setup a network with a DHCP server, a switch, and 230 PCs. location. We have also included a wireless system for the users having laptops with wireless cards for the wireless access of the network.

Literature Survey :

- All the network work upon the protocols (which are the set of rules made for the network) Jennifer Yick, Biswanath Mukherjee, Dipak Ghosal “Wireless Network Survey”. This paper was published in 2008. This paper gives an overview of several new applications and then reviews the literature on various aspects of WSNs. This paper classifies the problems into three different categories:

S No.	CATEGORIES
1	Internal platform and underlying operating system
2	Communication protocol stack
3	Network services, provisioning, and deployment

Wired Technology

F. Yan, Y. Jian-Wen and C. Lin, "Computer Network Security and Technology Research," 2015

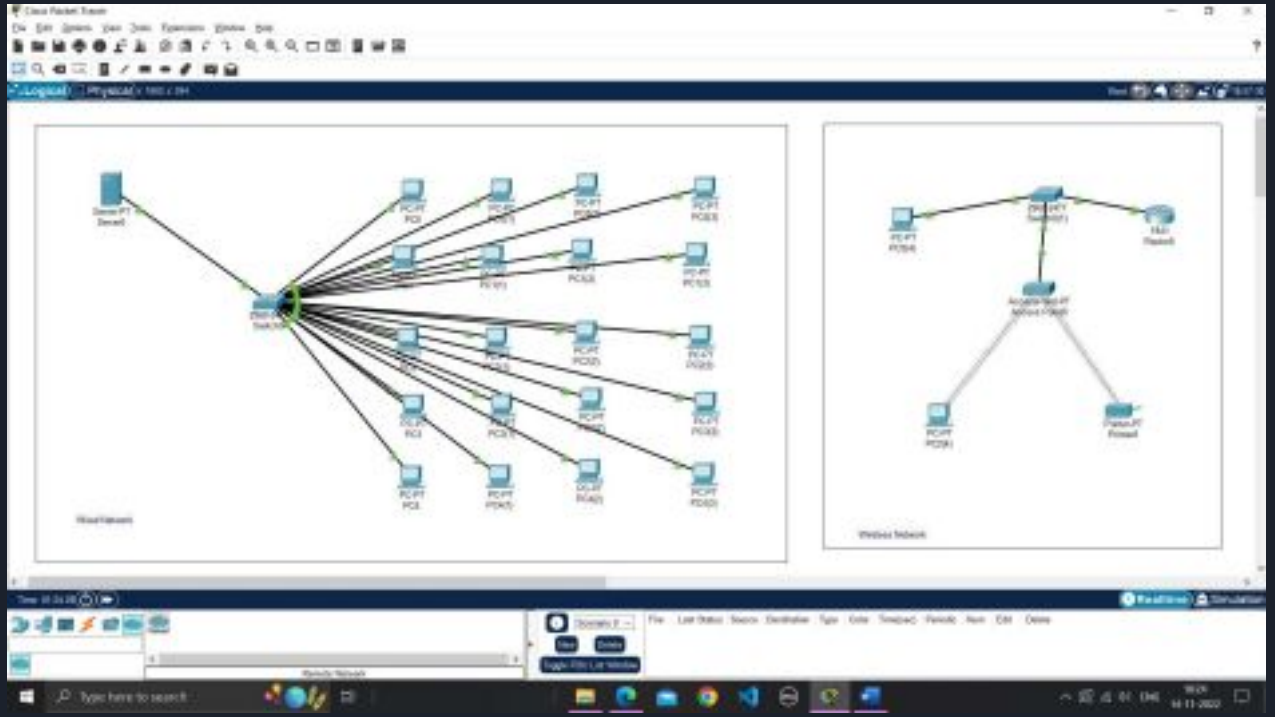
Seventh International Conference on Measuring Technology and Mechatronics Automation,

Nanchang, 2015.

Evolution of Networks

YEAR OF DISCOVERY	DEVELOPMENT IN NETWORK
1876	The invention of the telephone started a revolution towards wired communications.
1964	The potential of wired networks skyrocketed.
2000	Broadband technology became available to consumers.
1880	It all started with the discovery of radio waves.
1901	A brief letter between Britain and Canada was the first wireless Transatlantic message.
1922	Discovery of FM frequencies

Architecture Diagram and Implementation :



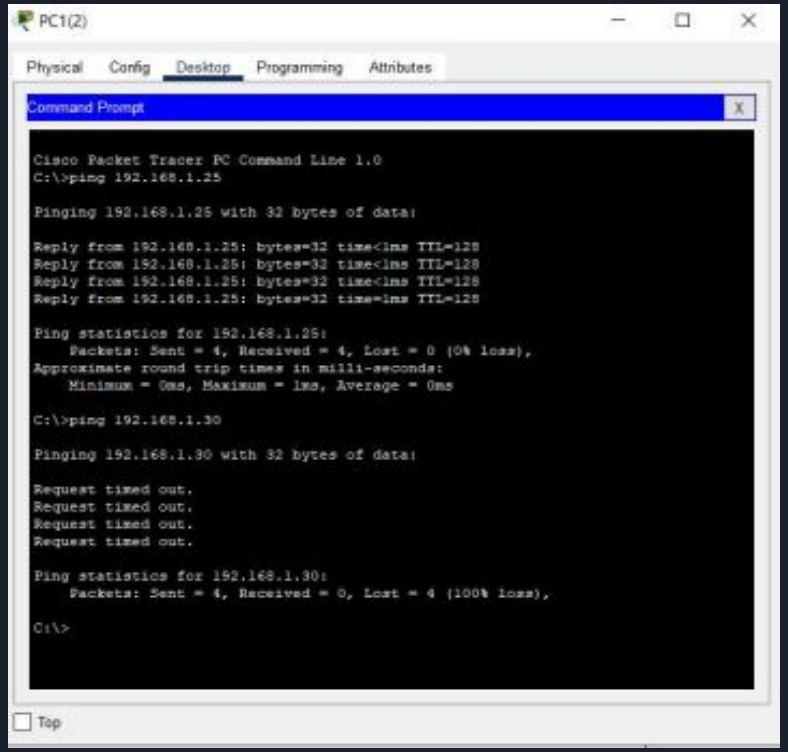
The address table for wired is as follows:

Device	Interface	Address
Server	Fa0	192.168.1.1
	Default Gateway	192.168.1.254
PCs	Fa 0/0	192.168.1.10 to 192.168.1.30

The Address table for wireless is as follows:

Device	Interface	Address
Router	Fa0/0	192.168.1.1
PC	Fa 0/0	192.168.1.3
	Default Gateway	192.168.1.1
Printer		192.168.1.4
Access Pass	Passcode: 1234567890	

Output :


PC1(2)
Physical
Config
Desktop
Programming
Attributes
Command Prompt
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.1.25
Pinging 192.168.1.25 with 32 bytes of data:
Reply from 192.168.1.25: bytes=32 time<1ms TTL=128
Reply from 192.168.1.25: bytes=32 time<1ms TTL=128
Reply from 192.168.1.25: bytes=32 time<1ms TTL=128
Reply from 192.168.1.25: bytes=32 time=1ms TTL=128
Ping statistics for 192.168.1.25:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 1ms, Average = 0ms
C:\>ping 192.168.1.30
Pinging 192.168.1.30 with 32 bytes of data:
Request timed out.
Request timed out.
Request timed out.
Request timed out.
Ping statistics for 192.168.1.30:
Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
C:\>
Top


Fire
Last Status
Source
Destination
Type
Color
Time(sec)
Period
Successful
PC0
PC1
IC...
0.000
N
Successful
PC0
Printer0
IC...
0.000
N

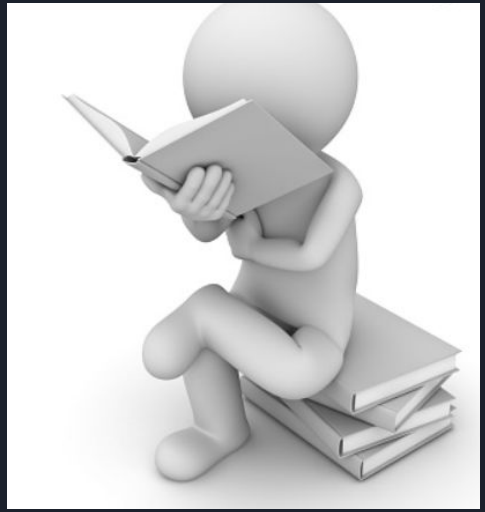
Conclusion :

- In conclusion, wireless communications globally are something that people can expect as technology advances. Wireless communications have a lot of benefits and can make the world a lot more efficient.
- The issues with security regarding access to a person personal information or the negative impact that it may seem to have on society are a few things that are holding back the progress that wireless technology could be making.
- With more research and experiments conducted, the problems associated with wireless communications can be reduced and make it a more significant part of the world.
- Wireless technology will be very important in the near future where the need for wires connecting individual devices seems to be coming to an end.
- Since we are moving forward with continuously evolving technologies, we need an efficient, cost effective and highly secure network to support our smart devices.
- As one of the efficient technologies in wireless communication, Wi-Fi can be used for future technological advancements like IoT, 5G and beyond. In future we could expect a free wireless network almost everywhere.
- It does have concerns though as with every other new advancement that is made in today's world.

References :

1. https://www.youtube.com/watch?v=UFy0icmOI0k

2. Literature review on network security in Wireless Mobile Ad-hoc Network for IoT applications: network attacks and detection mechanisms | Emerald Insight



THANK YOU!!!