Improvement of Oman Investment & Finance Co. SAOG (OIFC) Network Design

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Abstract

We are there introducing our project report with the title "Improvement of Oman Investment & Finance Co. SAOG (OIFC) Network Design".
We decided to have our project in this field because of the complaints we had heard from some users and trainees in this institution about their network services .We found out that they are facing problems in the difficult communication because of delay and slow computers which are affected by viruses, no secure connection to the Internet, more wires and cables which occupy more space.
In general, we aim to come up with an effective LAN design for the OIFC Company which will use Hierarchical Network Model as a network modular design to provide easy implementation, performance, management, and troubleshooting.
Also, our main goal is to implement some of the latest LAN technologies which are required to add reliability and efficiency in the current network of this institution, VOIP for making inexpensive calls over Internet, we kept all servers with sensitive data in a protected and managed access, and VLANS to create secure groups and prevent others outside from receiving sensitive data.
We concluded that, to undertake the responsibilities of this institution more successfully, there's a need for effective network with efficient and reliable network services.
Their current network lacks security mechanisms, enough bandwidth, and protection and Internet access for users.
For that, we recommend implementing those mentioned technologies to add reliability, performance, productivity, and cost reduction.

Introduction

A computer network, often simply referred to as a network, is a collection of computers and devices interconnected by communications channels that facilitate communications among users and allows users to share resources .Networks may be classified according to a wide variety of characteristics. A computer network allows sharing of resource and information among interconnected devices.

Figure 1

Figure 2 (Old Design)

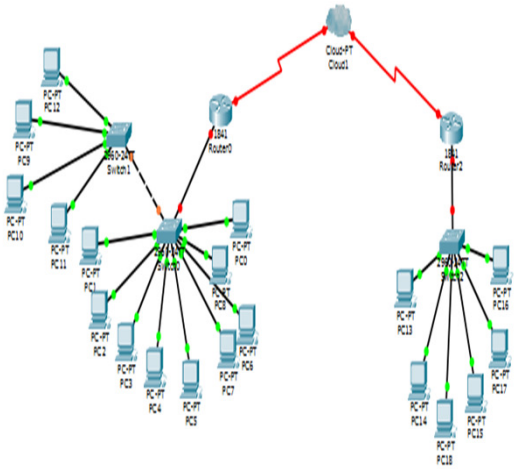


Figure 3

#	VLAN/Department Name	IP Address Range	Subnet Mask	Default Gateway	# of Hosts
10	manager	192.168.10.0-192.168.10.7	255.255.255.240/28	192.168.10.1	6
20	finance	192.168.10.8-192.168.10.23	255.255.255.224/27	192.168.10.9	9
30	staff	192.168.10.24-192.168.10.39	255.255.255.224/27	192.168.10.25	11
40	service	192.168.10.40-192.168.10.55	255.255.255.224/27	192.168.10.41	16
50	wireless	192.168.10.56-192.168.10.63	255.255.255.240/28	192.168.10.57	5

Figure 4 (New Design)

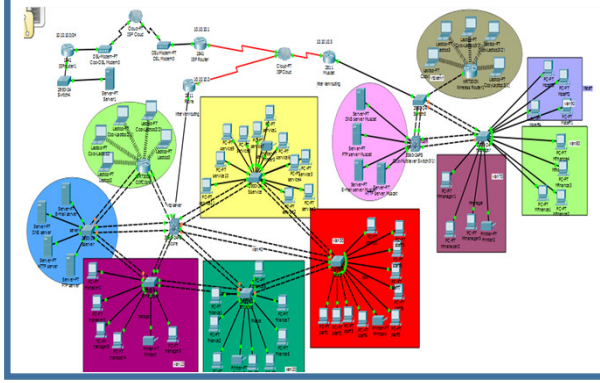
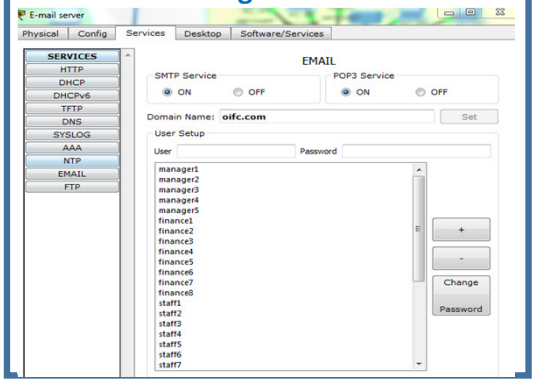


Figure 5



Conclusion

We found out that there are problems in lack of troubleshooting techniques, so we implemented Hierarchal Model.
As an illustration, the existing network design and infrastructure in OFIC does not support the company growth. Their current design can face problems as new components and users are added in response to immediate needs. Over the time, their network will become complex and expensive to manage. Since this company is a small-sized business. We chose a hierarchical network to divide the network into discrete layers. Each layer provides specific functions that define its role within the overall network. By separating the functions that exist on a network, the network design will facilitates scalability, and performance. It is broken up into 3layers; access, distribution, and core.
The users of this company are not supported with wireless. So, we added a wireless router to their network design in order to transmit a wireless signal over a range of several miles to mobile and handheld devices and because wireless is more users supported since cable device has limited slots but wireless doesn't.