Minor Project- Report

Aug-2021-2022

Course Faculty: Prof. Ramya K M Course Name & code: 19CS5DLCNL

Semester: 5 Date:16/12/2021

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| TITLE OF THE PROJECT | School Network Design | | | |
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| INDIVIDUAL  CONTRIBUTION | Implementation of RIP. Dynamic Routing Protocol | Configuring FTP, EMAIL, DNS, WEB servers.  Firewall Encryption for Web, DNS, FTP Server | Designing Of the topology. Configuring IP’s Of PC’s |  |
| GUIDE | Prof Deepak G, Prof Sunanda | | | |
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| PROJECT ABSTRACT: | This project helps to create a network for a small school campus. This will have a total of 6 separate networks  Individual networks will be set up for several departments. There will be an email, web and an FTP server connected to one of the networks. All the networks in the school will be connected through routers and will be using a routing protocol for smooth flow of data | | | |
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| INTRODUCTION | The main aim of this project is to create a network for a school campus.  The main network will have 6 networks in it namely   * IT Department Network * Principle’s Room Network * Library Network * Other Department’s Network * Server Room Network * Computer Lab Network   Each network will use PC’s and packet tracer to represent the entire network  There will be an Email, Web, FTP, DNS server connected to the Server Room network. The user can view the website of the school using this network. We’ll also make sure that each PC in the network can reach the web server and will edit the web server to display the name of the school.  First, we add 6 switches in the packet tracer. We connect necessary PCs to each of them using an ethernet cable and we assign the individual PC’s and the networks with the following IP addresses.   * IT Department Network-192.168.1.0/24 * Library Network-192.168.2.0/24 * Computer Lab Network-128.168.0.0/24 * Server Room Network-1.0.0.0/24 * Other Department’s Network-192.168.3.0/24 * Principle’s Room Network-192.168.4.0/24   We then create basic Switch configuration to each of the switches present in each of the networks.  The next step is to connect all the switches with the help of 3 routers. In this case we use a PT-Router to connect the switches. There are more ethernet ports to be added. We add that and connect all the switches using an ethernet connection. After all the connections we have to configure the router.  We add all the IP addresses and the Subnet masks of the switches for establishing a connection between the router and the switches. After this we also need to configure the switches with the IP addresses. We set up Gateways as well and add them to all the PC’s connected.  In this topology we have used a routing protocol for dynamic routing namely Routing Information Protocol (RIP). We have to give additional IP addresses for Serial ports that help in routing and connecting all the routers. (Shown in the figure below)  The next step is creating a web and a DNS server. We drag and drop a Server in the Server Room network and assign an IP address for it and we go to services in the server settings and edit the website of the school that’ll be displayed in PC once it pulls the request. The next step is adding a DNS server to display the URL of the school website.  We add the DNS IPV4 Address to all the PC’s as they’ll be displaying the website of the school.  We now create an email Server. We also set up an email system by adding all the necessary PCs in the Email Services and giving them logon information such as password and username and the domain name as well. We then configure each PC’s mail settings by giving then user, server, logon information.  We also have added an FTP server. FTP stands for file transfer Protocol. It helps in sending files to all the PC’s connected in the network. First, we have to setup the server by assigning a username and password. We can then proceed to upload and download files from the PC’s. We ping PC’s and in CMD we type FTP 1.0.0.4 to access the protocol and proceed to upload and download files from the server.  The last step is to ping every PC and check if the PC is sending messages.  For security we have added an IPV4 Firewall Service for FTP, WEB, DNS Server. With this feature the PC’s cant ping the server but can access the features of the server  We can then proceed to view the school website from each PC and also be able to send Emails and Files using PC connected to the network. | | | |
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| DESIGN | **TOPOLOGY**    **Email Settings:**    Sender Email Receiver Email  **FTP Server Config:**    PUT Command IN FTP Get Command In FTP  Upload A File Download A File    Directory  **FIREWALL**    Firewall Settings | | | |
| PLATFORM USED  (H/W & S/W TOOLS TO BE USED | Cisco Packet Tracer | | | |
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| PROJECT SOURCE CODE LINK (GITHUB/ GOOGLE DRIVE) | <https://github.com/KP-017/School-Network-Design> | | | |
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| CONCLUSION /FUTURE ENHANCEMENT | **CONCLUSION**   * **FTP**- The File Transfer Protocol is a standard communication protocol used for the transfer of computer files from a server to a client on a computer network. FTP is built on a client–server model architecture using separate control and data connections between the client and the server. * **DNS**- The Domain Name System is the hierarchical and decentralized naming system used to identify computers, services, and other resources reachable through the Internet or other Internet Protocol networks. The resource records contained in the DNS associate domain names with other forms of information * **Firewall**- In computing, a firewall is a network security system that monitors and controls incoming and outgoing network traffic based on predetermined security rules. * **Routing Information Protocol** (RIP) - is a dynamic routing protocol that uses hop count as a routing metric to find the best path between the source and the destination network. It is a distance-vector routing protocol that has an AD value of 120 and works on the Network layer of the OSI model.   We conclude that we have successfully implemented DNS, FTP, Firewall in our Project and implemented RIP protocol as a routing method  **FUTURE ENCHANEMENTS**   * Implement ASA Firewall to add more Security * Add more Departments and Implement DHCP for automatically assigning IP addresses for PC’s * Include other Departments to increase the complexity. | | | |
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| UI SCREENSHOTS | RIP TABLE FOR ALL THE ROUTERS | | | |