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BUILDING A LINUX-BASED VPN SERVER USING POINT TO POINT TUNNELING PROTOCOL (PPTP)

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ABSTRACT

Virtual Private Network (VPN) technology has an important role in today's world of communication, VPNs are able to create local networks using facilities. Because a corporate VPN can make connecting information easy and secure. But nowadays, VPNs are gaining popularity for personal use due to the increasing number of interactions that require users to surf the web. On a VPN system that uses the Point to Point Tunneling Tradition (PPTP) method that we created, we use a server from Linux that will connect to Windows as a user. So that clients or windows can connect to the web using a VPN server from linux.

Keywords: VPN, PPTP, Server, Linux.

1. INTRODUCTION

The development of technology provides facilities for us in all things, including things related to the work that is usually done by humans. The development of technology in the computer sector makes people realize that the facilities provided by this technology, especially in the field of work. With the progress of these times, an institution, both government and private, must be able to process information systems that are fast, precise and accurate.

In order to achieve this, support from the network infrastructure side of the information system from the relevant agencies is needed. By utilizing the use of the internet network, it can help in overcoming distance and time limitations. The method or system that can be used to do this is to use a Virtual Private Network (VPN). With a VPN, an agency can safely widen access to its internal network via the internet network at a relatively low cost. Therefore, our final project in the Operating System course helps make a VPN using the POINT TO POINT TUNNELING PROTOCOL (PPTP).

2. THEORETICAL BASIS

2.1. *Server*

Server in a computer system that has information storage services. The information stored through the server is in the form of complex information and various types of documents. These services cater specifically for clients who need to provide information to users or visitors.

2.2. *Linux*

Linux is an operating system like UNIX that uses the linux part as the core and includes applications and other supporting modules so that it functions and can be used as a whole like an operating system in general.

2.3. *Virtual Private Network*

Virtual Private Network (VPN) is a communication technology that allows connecting to public networks and joining local networks. VPN is a virtual private connection, because the network that is made physically invisible is only a virtual network, and not everyone can access the network so that it is private.

2.4. *Point To Point Tunneling Protocol(PPTP)*

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Point-to-Point Tunneling Protocol (PPTP) is a network protocol that allows sending data securely from remote clients to private corporate servers by creating a virtual private network (VPN) over a TCP /IP-based data network.

3. RESEARCH METHOD

VPN (Virtual Private Network) is a technology in computer networks that utilizes a public network as a transmission medium for data packets, so that two private networks that are far apart can be connected to each other like a local network. PPTP (Point-To-Point Tunneling Convention) is one of the protocols in a VPN (Virtual Private Network).Virtual Private Network (VPN) is a method used to add security and privacy to a private or public network, a process most often used by companies to protect sensitive data. But in this day and age, VPNs are increasingly popular for personal use because more interactions require users to face the internet.

VPNs develop when large companies expand their business networks, but they can still be connected to a local (private) network between branch offices and partner companies located in remote places. On a VPN system using the Point to Point Tunneling Protocol (PPTP) method, which we created, we used a server from Linux that would connect to Windows as the user. So that users or windows can connect to the internet by using a VPN server from Linux. In this VPN project, we use the Point to Point Tunneling Protocol (PPTP). The PPTP method is the way of the way of the PPP to IP datagram to be transmitted via the internet. PPTP can also be used on private LAN-to-LAN networks.

The main facility of using PPTP is the use of a public telephone network (PSTN) to build a VPN. PPTP development is also easy and inexpensive to use widely as a solution for long-distance users and cellular users, because PPTP provides security and communication via PSTN or the internet..

4. RESULT AND ANALYSIS

4.1 RESULT

1. The Benefits of PPTP
   Here are some of the advantages of PPTP:
   1) Remote Access: With a VPN we can access a computer or office network, from anywhere as long as we are connected to the internet.
   2) Security: With a VPN connection we can safely use public internet access such as hotspots or agency internet.
   3) Save on network setup costs: VPN can be used as an alternative technology to connect large local networks at a relatively small cost, because VPN technology data transmission uses existing public network media without the need to build a private network.
   4) Can be used on private LAN-to-LAN networks.

2. Making Process
   The stages of the manufacturing process are as follows:

1) First enter as super admin and install PPTP on the linux server that we have created.

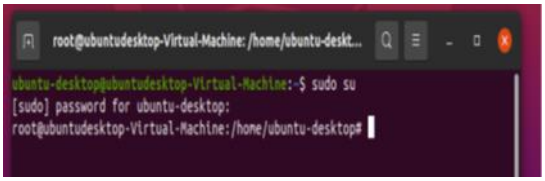


Figure 1. Enter As Super Admin

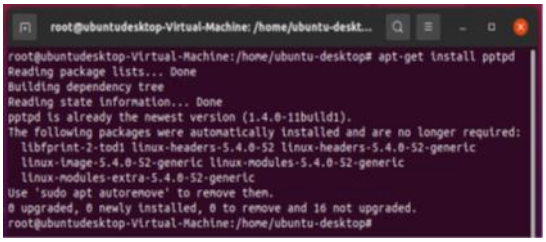


Figure 2. Install PPTP

2) After installing the PPTP, configure localip 10.10.10.1 and remoteip 10.10.10.2 in the pptp.conf file located in /etc/pptpd.conf.



Figure 3. Configure Localip

3) After completing the configuration of pptpd.conf, then we configure the username and password to enter the VPN in / etc / ppp / chap-secrets.

4) After configuring the username and password in chap-secrets, we will configure the DNS server in pptpd-options which is located in / etc / ppp / pptpd-options.

5) After completing all of the above configuration, we restart PPTPD.

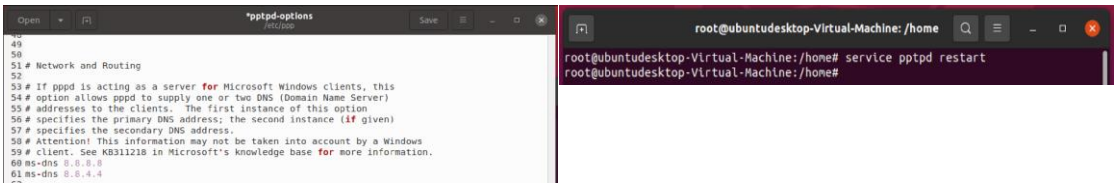


Figure 4. Restart PPTD

6) The next step is to continue the existing data packet on the VPN server computer to the local computer, because ours has been configured on the net.ipv4.ip_forward to be 1 so we just have to activate it.

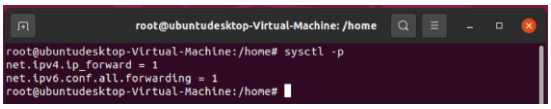


Figure 5. Existing Data Packet on VPN to Local

7) Once activated, we configure NAT in the following way:

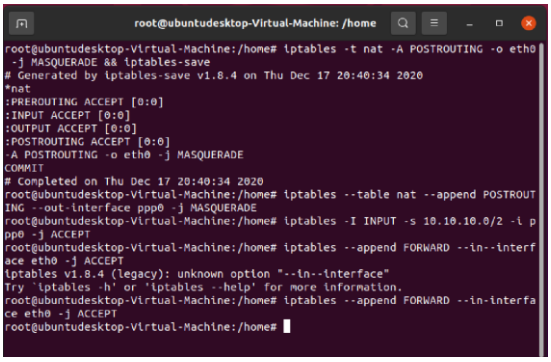


Figure 6. Configuration NAT

8) If all of the above steps are complete and successful, the VPN on the server has been formed and the next step is to setup the local computer that we want to connect to. in this group, we are using windows 7 so the setup is:

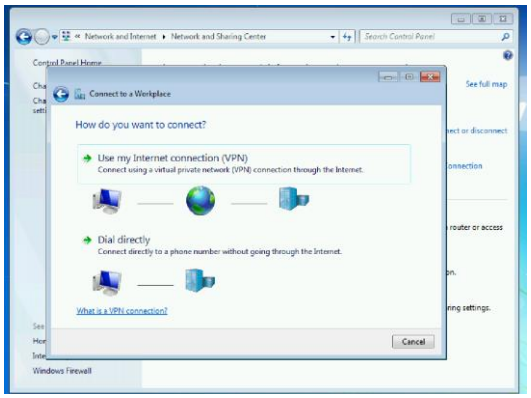


Figure 7. Setup Connection in Windows 7

In this section, choose an internet connection using a VPN, and a number of existing connection options or create a new connection will appear. Then, choose to create a new connection, as shown below.

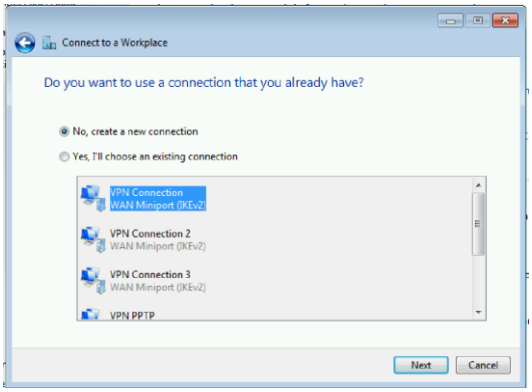


Figure 8. Create New Connection

After choosing to create a new connection, select the VPN connection and then click on the next button.

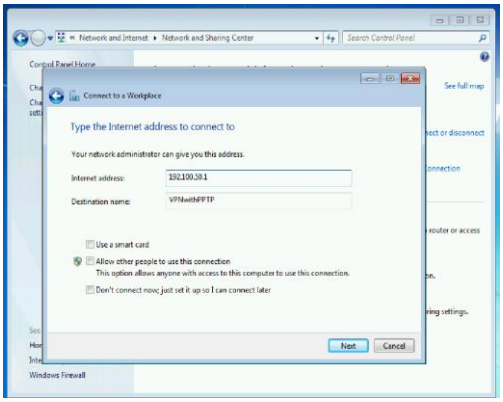


Figure 9. Type Internet Address to Connect

After that, a display will appear directing you to enter the address and destination name. And the click button next.

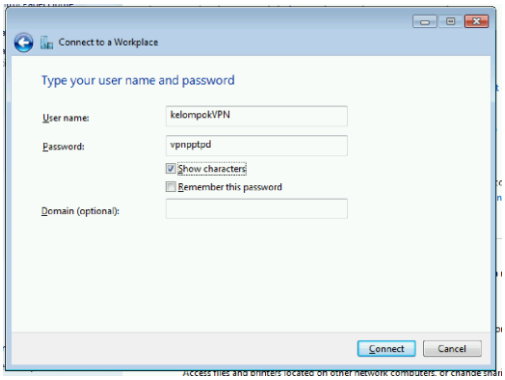


Figure 10. Type Username and Password

The last step is to enter the desired username and password. And the computer will be connected using a VPN connection, like the picture below.

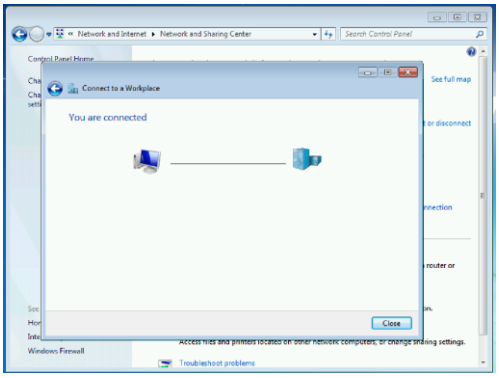


Figure 11. Success Connect

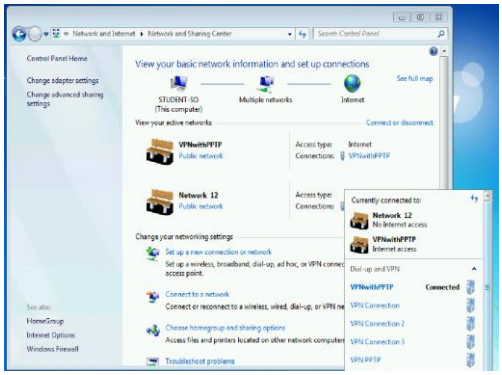


Figure 12. Connection is VPNWithPPTP

4.2 ANALYSIS

The Following is the Topology that we use and the appearance when then VPN is Connected:

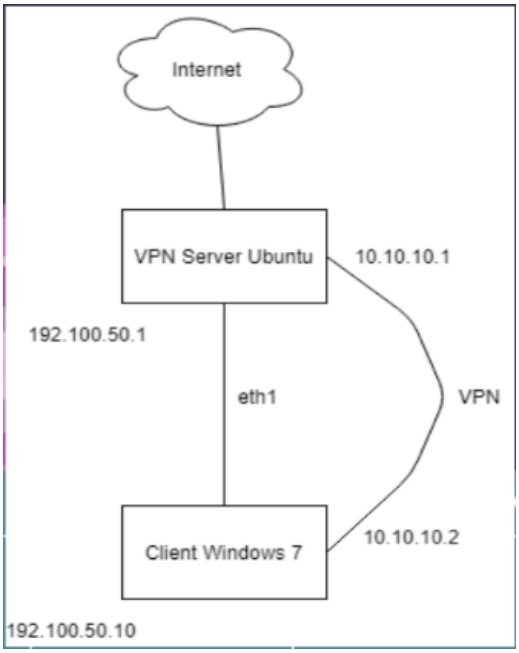


Figure 13. Topology VPN Connection

In all the previous processes, setup the image above, enter the control panel → network and internet → network sharing center and create a new connection, then select VPN, after that enter the ubuntu ip eth that is used, which is 192.100.50.1 (due to the eth1 ip we use on our ubuntu for the connection). Then, enter the destination name freely because this is only the name of the connection, after that enter the username and password used in the chap-secrets and connect, if successful, a connected notification will appear and we are connected to the VPN.

5. CLOSING STATEMENT

5.1. Conclusion

From the results of the process of building a Linux-based VPN server using POINT TO POINT TUNNELING PROTOCOL (PPTP), we can conclude that a VPN server using PPTP can connect to the local network of agencies with networks that are outside the agency, as well as assist agencies in sending data or data organization.

5.2. Suggestion

For servers that we have developed and tried to implement in a short time, we will also explore more to understand and be able to implement better.

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