Implementation Of Vlan Networks On The Website In The Polda Jabar Profession And Security Unit (Propam)

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Abstract: The use of computer network technology as a data communication medium is increasing. The need for simultaneous use of existing resources in the network both software and hardware has resulted in various technological developments on the network itself, Along with the increasing level number of network users who want to provide maximum results both in terms of efficiency and increased network security especially to support the staffing system of a company, based on these desires various parties continue to make improvements by utilizing various techniques, especially subnetting techniques and better use of hardware (including switches), so the concept of Virtual Local Area Network (VLAN) has emerged apply by IT(Information Tecnology) PROPAM POLDA of West Java to maintain its network system and to support its staffing system and official vehicle loan systems because VLAN provide management flexibility in making separate Virtual LANs into segments or subnets that can be used to define separate locations or networks network of departments in the PROPAM POLDA JABAR environment*.*

Keyword: LAN, VLAN, Vehicle Loan system, Website

1. Introduction

The development of information technology has developed very rapidly in the current era of globalization. What happens in one place can be quickly and easily identified in other places around the world. This condition certainly affects the behavior of every individual in the business world, the speed and ease of obtaining information has encouraged the business world to enter the era of global competition, which requires every business actor to move dynamically to be able to win the competition and survive. Indonesia is one of the developing countries covering various sectors, in every state and private company, official vehicle borrowing plays an important role in every activity that is carried out. The personnel information system and vehicle lending PROPAM is a system able to regulate for security activities and can be carried out quickly and in a coordinated manner. With the vehicle lending system, the police have more capabilities and an appropriate response in the event of an emergency in the security system which can be on a regional, city or state scale, with the system being able to directly see the readiness of the number of vehicles and their conditions, this process is useful the maintenance or maintenance process can be scheduled and whichever vehicle is in good condition and is included in the tactical and priority vehicle. The function of the VLAN network on this part of the website is to record and secure confidential data about the communication process between divisions in the West Java Police PROPAM, this VLAN network has a reliable data security and can't be penetrated by external networks so that information and communication about vehicle readiness can be maintained.

2. Studi literature

An Internet Protocol (IP) address is a numeric address assigned to a computer participating in a computer network that utilizes the Internet Protocol for communication between its nodes. Although IP addresses are stored as binary numbers, they are usually displayed to make it easier for humans to use notations, such as 208.77.188.166 (for IPv4), and 2001: db8: 0: 1234: 0: 567: 1: 1 (for IPv6). The role of an IP address is as follows: "A name shows what we are looking for. An address shows where it is located [1].

A route shows how to get there. " The early designers of TCP / IP assigned an IP address as a 32-bit number, and this system, which is now called Internet Protocol Version 4 (IPv4), is still in use today. However, due to the

massive growth of the Internet and the depletion of IP addresses, a new system (IPv6), using 128 bits for addresses, was developed in 1995 and most recently by the RFC 2460 standard in 1998 [2].

Internet Protocol also has the task of routing data packets between networks, IP addresses and determining the location of the source and destination nodes in the topology of the routing system. For this purpose, several bits of an IP address are used to designate a subnetwork. This number of bits is indicated in the CIDR notation, which is appended to the IP address, for example, 208.77.188.166/24. With the development of private networks, IPv4 addresses became a drawback, a group of private IP addresses designated by RFC 1918. These private IP addresses can be used by anyone on a private network. They are often used with Network Address Translation (NAT) to connect to the global public Internet. The Internet Assigned Numbers Authority (IANA) which manages the allocation of global IP addresses. The IANA works with five Regional Internet Registries (RIRs) to allocate local IP address blocks to Internet Registries (Internet service providers) and other agencies [3].

Virtual LAN (VLAN) provides a very flexible method for managing network segments using LAN switches. If using VLANs on networks that have interconnected switches, VLAN trunking between switches is required. VLANs provide management flexibility in creating separate Virtual LANs into segments or subnets that can be used to define separate locations or departmental networks. The use of Virtual LAN in a LAN network is optional and usually influenced by certain special needs such as security reasons and separation of departments [4].

Before understanding Virtual LAN a special understanding of the definition of a LAN is needed. A LAN includes all network devices that are in one broadcast domain. A broadcast domain includes a group of network devices connected to a LAN network that can send broadcast frames, and all other devices on the same LAN segment will receive a copy of the broadcast frame. So it can be said that a LAN network and a broadcast domain are in principle the same thing. Without a VLAN, a switch will treat all interfaces on the switch as being in the same broadcast domain - in other words, all devices connected to the switch are on one LAN network [5].

With a VLAN, a switch can group one or more interfaces (read ports) on a VLAN while other interfaces are on other VLANs. So basically, a Switch forms several broadcast domains. Each broadcast domain created by this switch is called a virtual LAN. One or more switches can form a virtual LAN which is called a broadcast domain. A Virtual LAN is created by entering several interfaces (ports) into a VLAN and several other ports are on other VLANs. So, instead of all the ports of a switch forming a single broadcast domain, a switch can split into several VLANs depending on needs and configurations. To help understand what a VLAN is, the two pictures below can be used to understand it [6].
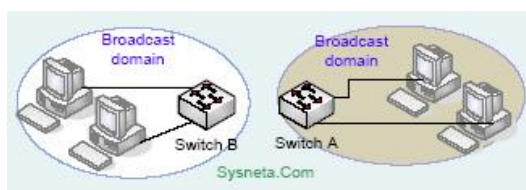

Figure 1.1 Broadcast Domain on VLAN

two switches form two distinct broadcast domains, without VLANs. Alternatively, multiple broadcast domains can be created using a single switch. Like the picture above, the image below shows two broadcast domains which are the same but implemented as two different VLANs on a single switch.
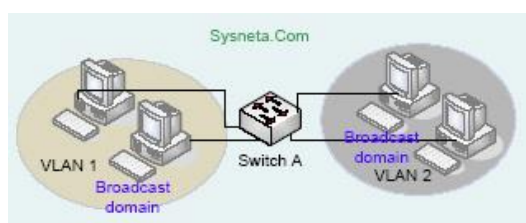

Figure 1.2 VLAN connection management on the switch

Multiple broadcast domains can be created using a single switch. For a small LAN network, for example at home or in a small office, there is no reason to create a VLAN. However, there are several motivations for creating VLANs which include the following reasons:

- To group users by department, or group a group of collaborative workers, rather than by location.
- To reduce overhead by limiting the size of broadcast domains • To emphasize better security by keeping sensitive devices separate into a VLAN
- To separate specific traffic from main traffic - eg separate IP telephony into special VLANs separate from user traffic
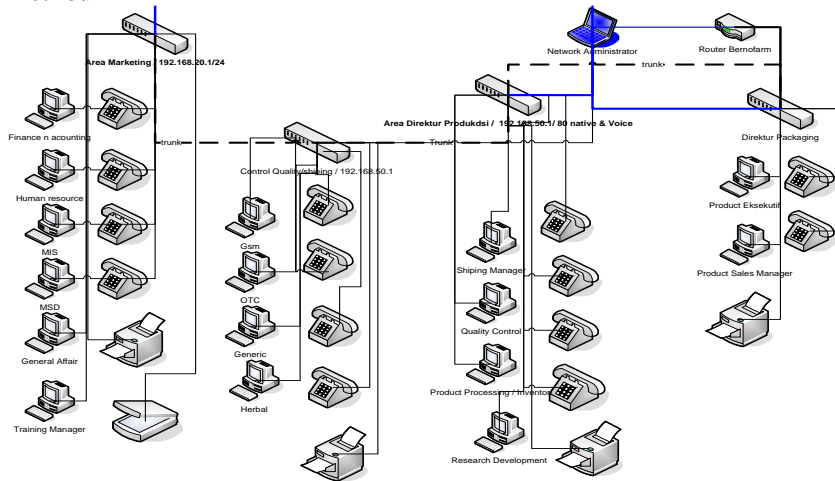
3. Research method

**Figure 1.3 Design of PROPAM Computer network VLAN.**

In the picture above is a VLAN configuration design in PROPAM West Java POLDA which consists of 4 departments divided into 3 vlan configurations. Using a switch type that has 24 ports and 40 iPhones configured using VOIP to facilitate communication between departments in the work environment of each PROPAM POLDA JABAR division with the concept of sharing VLAN configurations as follows:

Table 1.1 Division of VLANs

Vlan	Departement
Vlan DATA	Provost
VLAN DEFAULT	Website Propam
VLAN TELEPOHONE	PROPAM Complaints
VLAN Native	Society service
Vlan Management /	Network Administrator

4. System implementation

Web application the web application display that will be made. Designing web applications is in the form of designs for building web displays and programs and files associated with this web application. The design of this web application is made to make it easier for users to operate the program while the hardware design describes the hardware specifications that will be used by the system to be built along with an explanation of the requirements for the system software specifications.
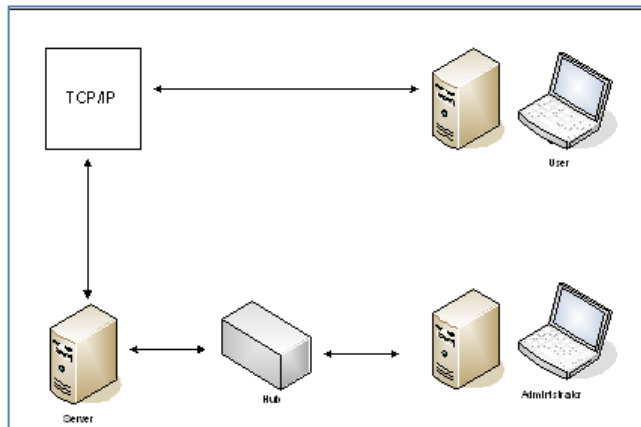
Figure 1.4 Hardware Configuration

The design of this system uses hardware specifications which are divided into three parts, namely Webserver Serves to store or provide and process client requests, if a client asks for information, the server sends it the information accessed can be in the form of text, images, and sound and video. And also a place to store applications needed by the system.

Hardware specifications for webserver:
• Pentium IV processor
• 40 GB hard drive
• Memory 256 MB or more
• 10/100 Mbps Network Interface card
• VGA Card 64 Mb or more

Database Sever
Is a place to store the database needed by system applications.
•   Hardware specification for the database server
•   Pentium IV processor
•   40 GB hard drive
•   Memory 256 MB or more
•   10/100 Mbps Network Interface card
•   VGA Card 64 Mb or more
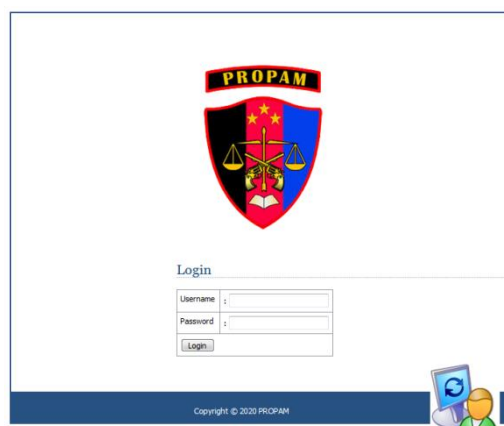
Figure 1.5 The front page of the PROPAM website

In Figure 1.5 is the main view of the PROPAM website page, on the web, able to the entry access menu in this section the access system is divided into several parts, namely for admin and users, admin access rights have the ability to change the web appearance, add modules and add users as needed while the user section has almost the

same function as the employee, which is to record the number of official vehicles and fill out the available vehicle requirements form.

Figure 1.6 The front page of the PROPAM website

In Figure 1.6 above is the main menu that functions to display available service vehicle data, the data is entered by the admin and user sections, the borrowing procedure is adjusted to the existing business processes at the PROPAM service, each use of an official vehicle will record who is borrowing and the purpose of borrowing and When the vehicle returns, in that system a user is given access to view detailed vehicle data that contains vehicle specifications and borrowings.

Figure 1.7 Display of the PROPAM Dinas vehicle rental page

In Figure 1.7 is the final view of a propam service vehicle that has been recorded by the user section, a vehicle submission form will appear complete with vehicle data borrowing data and the date of the vehicle's return, in detail the vehicle has two approval menus, namely the Approved and Rejected sections. , the condition depends on the party or a higher rank or the condition of the vehicle is still under repair.

5. **Conclusion**

This official vehicle lending information system is also very helpful for the police leadership, especially in making it easier for the personnel section to get the information they need as a consideration for granting vehicle use permits. With the employee recording menu, a database administrator can more easily input and update vehicle data. The recording menu is equipped with a user name and password and only interested people have different access to ensure data security. Every employee's data in each division can easily manage server access rights with VLAN management and all PROPAM employees can easily get information about their personal data as well as other data quickly, accurately and reliably. Only by accessing the system via the internet from their computer.

Administrators have the function to enter all master data or supporting data and manage the data from the system and then save it to the database. In order for the appearance of this system to be designed as attractive as possible, it is hoped that new employee data will be immediately updated and edited, it is necessary to add additional personnel or expert staff in charge of managing the database of official vehicle loan information systems. From this database, it can be used as a source of data in administrative implementation and recap data and outputs that can be used as information to help make policy on vehicle usage and information.

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