IMPLEMENTATION OF LOCAL AREA NETWORK FOR OPTIMIZATION OF DATA PROCESSING

(Study at Bank of East Java Small Medium Enterprise in Surabaya)

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Abstract

The objectives in this research are to describe implementation of LAN (Local Area Network) for optimization of data processing and To know the LAN (Local Area Network) be used optimally in data processing.

The research used descriptive qualitative research approach to the analysis developed by Miles and Huberman data collection, data reduction, and conclusion. Collecting data using observation, interview employee Bank UMKM Jatim Surabaya.

The results of this research are according to sources, the use of LAN in the processing of customer data is said to be optimal. However, the observation that researchers do, there are some shortcomings and problems that led to the conclusion that the use of the LAN for the processing of customer data Bank of East Java Small Medium Enterprise in Surabaya used LAN with IP and router in each computer, used of LAN is optimal, but still has some problem that occur, and the weakness is data leakage often occurs.

Keywoard: computer network, local area network, optimization, data processing.

Background

Computer network is a set of tools that can be used to store, manipulate electronic data and messages, interlinked with each other where the user can store, explore and share the available information. Computer networks are nothing new today. Almost every company or agency use computer network to facilitate the flow of information. These companies has been growing rapidly and along with this growth they have to make innovations in the application of computer technology as information producer known as Information Technology (IT). Because of the innovation of IT experts, it creates a computer networksa that allows the distribution of information becomes faster and relatively safe.

This networks are LAN (Local Area Network), MAN (Metropolitan Area Network), WAN (Wide Area Network), or Internet. LAN is typically used for the company or agency that is located not far apart, still in one building or area. Utilization of LAN enables easier communication without being influenced by location so employees can work more effectively. Besides using LAN, the operational activities are not only made with one computer, but can be mutually shared between one computer with other in one network, make it easier for users to process data any time.

Along with the development of telecommunication networks, current network technology has entered into all fields. In banking sector, computer network has become one of the contributing factors in data processing. Such is the case with Bank of East Java Small Medium Enterprise in Surabaya.

By using LAN, data processing is expected to be optimal and be able to produce accurate information and easily provided. In addition, by using LAN, error and fraud or abuse possibility can be immediately identified and resolved. Even more specifically, LAN applications by banks in serving customers will provide added value and competitive excellent for the bank. However, as the network system, LAN in the application to optimize processing of data cannot be separated from some problems. In the implementation of network systems used to support operations office, required consideration in some ways, such as network model, network topology, and so forth. The network system is expected to provide ease of data communication and information so it can run faster, precise, and accurate by not reducing the quality of information,

and can provide more effective and efficient information presentation.

Based on the description above, it can be seen the importance of using computer network, including to improve competitive advantages. So the writer comes up to write scientific study with the title of "The Implementation of LAN (Local Area Network) For Optimization of Data Processing".

Literature Review

1. Computer Network

Developments of information technology are so rapid has allowed users to get information with quickly and accurately. Need technology very quickly and the results are very accurate. Cimoputer network is a system consisting of a combination of several computer devices that are designed to be able to share resources, communicate and access information from various places between one computer to another computer. "Computer network itself like group of autonomous computer that interconnected with each other using communication protocol by transmission or communication media, can share information data, programs, sharing use of hardware such us printer, harddisk etc" (Oetomo, 2002:63).

2. a. Local Area Network

Development in computer technology area happened so fast. One area growing rapidly is area of the implementation of local computer network or often referred to as Local Area Network (LAN). "Local Area Network (LAN), or connected the network with local, the network that connects various computers in a room or across the room" (Sukirno, 2004:285). Other opinion say "LAN is a telecommunications network need require a seperate channel, and includes a limited range, usually includes one building or several buildings in close proximity" (Laudon & Laudon, 2005:364).

"LAN often used for connected personal computer and workstation in office or factory for resources using (ex: printer) and change the information" (Tanenbaeum, 2000:8). LAN can connect with several computers, minicomputer, microcomputer, or in general is the PC. The relationship between PC aims to access and communicate with each other. It could be concluded LAN is one of a network that covers a certain area or limited, which is used to connect multiple computers in a single building complex to exchange information without the use of telecommunication media such as telephone, etc.

b. Basic Components of LAN

Some of basic component that usually creating of LAN according to Kurniadi (2000:76) :

1) Workstation

Workstation is a node or host in the form of a computer system. This computer system can be a PC or may be a large computer such a minicomputers system, even a mainframe. Workstations can work on its own (stand-alone) can also use the network to exchange data with other users or workstations.

2) Server

Hardware that functions to serve the network and workstation that is connected on the network. In general resources such as printers, disks, and so on to be used jointly by the users on the workstation reside and work on server. Based on the type of service called a disc server, a file server, print server, and a server may also have a number of service functions at once.

Workstations and servers may not work if the equipment physically is not connected. The relationships in the LAN are known as the transmission medium is generally in the form of cable. As for some examples of the links is: (a) Twisted Cord, the cable is split in two, namely Shielded Twisted Pair and Unshielded Twisted Pair (UTP). More widely known as a telephone cable are relatively inexpensive. A short distance is easily affected by the disorder. Data speed that can be supported is limited, 10-16 Mbps. (b) Coaxial Cable, commonly used at television. Relative distances further. Speed data transmission higher twisted, in an appeal 30 mbps. The price is relatively not expensive. Larger size than twisted. (c) Fiber Optic Cable, have a long distance. The high data speeds, 100 Mbps. Sizes are relatively small. Difficult influenced disorders. The relative price is still expensive. The installation is relatively difficult. (d) Network Interface Card (NIC), a workstation is not connected directly with a network cable or cable transceiver, but through a series of electronics designed specifically for handling network protocol known as a Network Interface Card (NIC). (e) Network Software, in the absence of the network then the network software will not work as desired. The Software also enables the computer system to communicate with another computer system.

c. LAN Topology

Star topology, consists of host computer that connected to seveal component of computer or smaller terminal. This topology is useful for applications where multiple processors should be centralized and perform the processor with local. In

star topology, a central terminal acts as a regulator and controller of all data communications. Other terminals connected to it and sending data from one terminal to another by central hub. Terminal center will provide specialized communication lines for two terminals will communicate.

Bus topology, connecting several computer by channel made of twisted wire, coaxial cable, or fiber-optic cable. All these signals radiated both directions to the entire network, with special software to identify which components receive each message (no central host computer to control network). All terminals connected to the communication lines. The information sent will be pass by all the stations on the route. If the address listed in the data or information transmitted in accordance with the address of the terminal is passed, then the data or information will be accepted or processed. If the address does not match, then the information will be ignored by the terminal that is passed.

Ring topology, ring network not dependent on the host computer and do not need to be saturated if one component fails to function. LAN with this topology similiar with bus topology, but both terminals that are at the end connected to each other, so that resembles a circle. Every information obtained inspected by terminal address in its path. If not, information passed to find the correct address. Every terminal in LAN are dependent, so that if there is damage in one terminal, then the whole LAN will be disturbed.

Tree topology is a combination of characteristics between Star Topology and Topology BUS. This topology consists of a collection of star topology are connected in a bus topology as the spine or backbone lines. Computers connected to the hub, while another HUB as a line connecting the backbone.

Mesh topology has multiple paths of each device in the network. More number of computers on the network, installing the cable network become more difficult because amount of cables to be installed into double. Therefore a pure mesh network in which each network equipment connected to each other rarely used.

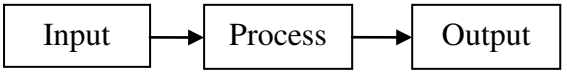
3. a. Data Processing

Data is any collection of facts. Example: sales report, an overview of the inventory, test scores, name and customer tools, weather reports, photographs, drawings, maps. According Lipschuts & Lipschuts (1989: "Data processing is the manipulation of data into a more useful form. Data processing includes not only numerical calculations but also operations such as the classification of data and the transmission of data from one place to another". "Series of activities using computer for change the information still raw (data) become useful information calle electronic data" (Basalamah, 1995:2).

Data processing is the manipulation of data in order to be a more useful form. Data processing is not only a numerical calculation but also operations such as data classification and transfer of data from one place to another. In general, we assume that the operations are carried out by several types of machines or computers, although some of them can also be done manually. Data processing using computers called Electronic Data Processing (EDP). With the use of electronic data processing, the benefits that can be obtained is to minimize the need for human labor, it is because some of the work is done automatically by the computer equipment such assistance. Another advantage is the ability of a computer to process more data, greater accuracy, greater speed, automatic control and processing facilities simultaneously. With the use of electronic data processing , the benefits that can be obtained is to minimize the need for human labor , it is because some of the work is done automatically by the computer equipment such assistance . Another advantage is the ability of a computer to process more data , greater accuracy , greater speed , automatic control and processing facilities simultaneously .

b. Data Processing Cycle

According Lipschutz & Lipschutz (1989:1), these three steps realted with data processing cycle :



Input, in this step the initial data, or input data, are prepared in some convenient form for processing. The form will depend on the processing machine. For example, when electromechnical devices are used, the input data are punched on cards; but if electronic computers are used, the input data could be recorded on any one of several types of input medium, such as cards, tapes, and so on.

Processing, in this step the input data are changed,and usually combined with other information, to produce data in more useful form.

Output, here the results of the preceding processing step are collected. The particular form of the output data dependson the use of the data.

Research Methode

Based on the purpose of the research this is a type of descriptive research. "Descriptive research aims to illustrate or describe a phenomenon by describing systematically related to research an issue that will be examined" (Moleong, 2004:4). A research must have a research focus that aims to limit the scope of the object to be studied. The research focused on: (1) Implementation of LAN (Local Area Network) for optimization of data processing (2) The weakness using local area network (3) Explain the optimization of local area network. Plot of activity in kualtitatif analysis according Miles and Huberman (1992:19) performed in this study are Reduction data, field report in the form of reduced description, disaggreted basic things, and focus on the important things and dispose of unneeded. Reduction data happen with continously during research focus. Display data, make easier researcher to look at the overall picture or certain part from research, and served in narative form. Conclusion, researcher trying to describe from the data collected and written in conclusion that temporary.

Discussion

1. Implementation Data Processing Using Local Area Network (LAN)

At this time implementation of LAN already used in input-output data. Internet there only in server computer, not connected to client computer. The topolgy that used in Bank of East Java Small Medium Enterprise In Surabaya is star topology. Server computer saving all data that used in Bank of East Java Small Medium EnterpriseIn Surabaya. With using LAN, every data can be accessed in each client computer. Structure of LAN in Bank of East Java Small Medium Enterprise In Surabaya, described. In second floor there are computer, printer and hub. Because in second floor is part of the teller and customer service. Use of computer can saving the data used customer saving book with file named saving master Which is conducted by customer service. The data can be access by other division that connected with customer service computer use file sharing. The using of LAN on third floor, there are client computer and laser jet printer that connected to hub On the third floor is also located the main hub, the hub that connects the entire existing hubs on each floor. The process of sharing data dong with their individual needs. In fourth, fiveth, and sixth there are also hub and computer.

2. LAN (Local Area Network) Supporting Facility includes:

a. Hardware include :

1) Specification of server computer : Intel Xeon , Memory 32 GB, Hardisk 500 GB, there are 8 slot.
2) Spesification of client computer : Intel Core i3, Memory 6 G, Hardisk 1 Tera.
3) Network devices : UTP cable, Hub, Router
4) Supporting Devices:Work desk, UPS 250 VA, HP Jet Laser Printer with seri 10.50 dan 11.05

b. Software include :

1) Banking transaction data: Aplikasi AS 400 (Aplikasi Satu)
2) Internal data: Microsoft word, Microsoft excel

3. Problem Identification

Local Area Networks (LAN) have become an integral part of communication in today's world. “Term of LAN (Local Area Network) A computer network used to connect computers which is not too far maximum of 10 kilometers” (Wahana komputer, 9:2003). Jaringan LAN biasanya digunakan di lingkup kantor yang berskala kecil. Other opinion say "LAN is a telecommunications network need require a seperate channel, and includes a limited range, usually includes one building or several buildings in close proximity" (Laudon & Laudon, 2005:364). According Hasyim (2008:174), “LAN (*Local Area Network*), is number of computers that are connected together in a certain area that is not so widely through media wires or radio waves (wireless), for example, in an office or building”.

In Bank of East Java Small Medium Enterprise In Surabaya also using LAN, for optimize the customer data processing. With using LAN (Local Area Network) still have problem, such as trouble networking. LAN connecting cable disconnected, cable and conector are connecting media between computer with other computer or other devices which used for create the network. Can be caused some factor, such as mouse. Lack of cleanliness less guarded.

The addition of cable does not neatly, this occurs due to the addition of new employees. The addition of new employees table are not comparable with the existing LAN cable arrangement in office.The network devices damaged can cause disconnecting of LAN network, such as hub. If hub had damaged that mean all network can not function for communicating between workstation or workstation computer with server.

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Network virus infection, if one of computer infected virus, so possibility other computer infected virus too. The use of anti virus very needed to overcome the damage sofware and hadrwere computer. Data leakage often occurs.

4. Alternative Solution Problem Solving

Based on the problem formulation described above, researchers provide an alternative solution as follows: If damage in cable caused something, we will se if the cable still good or necessary to be replaced. Hygience for cable storage must be maintained. So that durability of cable survive in long time.

The arrangement of room for additional cable, so neatly organized. If damage occurs in hub then first to do is checking whether hub used indeed been damaged or just distruption course. But if hub is damage we need to change HUB with new or repaired in service place. Periodic maintenanced will be neede for devive from distrubance.

Having antivirus is very help. One of this program is can identified bad program and crippling. If virus that infected in machine not detection, many antivirus vendor which offers services for deleting malware with paid and always updating the antivirus with routine. Needed period evaluation related the problem that occur in LAN so that can minimalize the problem.

5. LAN For Optimization Data Processing

Optimal have mean make better. Optimization derived from optimal word that mean the best, highest. By using LAN, can reduced cost. Customer no need to use paper to input the customer data, costumer service use computer that connected to teller computer. Does not need to be done manually thus saving time and speeding up the process of processing and delivery of saving acount from customer service to teller. With the existance of local area network work finished with timely.

Explanation of the LAN network system in customer service Bank of East Java Small Medium Enterprise in Surabaya can be seen as follows: (a) Customer comes to service Bank of East Java Small Medium Enterprise to make saving account. (b) Customer comes to customer service to register as a customer at East Java Small Medium Enterprise after that the customer service stores data on a computer. (c) Customer service explain saving requirments to customer. (d) Customer service save the data for open saving account with the name master of saving. The data can be access other division that connected with computer in customer service using file sharing. (e) Customer come to teller for verification the data. (f) Teller make saving book with approval from director. (g) Teller give the saving book to the customer.

LAN performance optimization in terms of speed, using appropriate network settings. with the correct settings, there is a division of IP accessed by a local network, created a static IP with a certain range and the user already set. There IP Administrator, which will provide IP to all users. LAN for optimization data processing can be seen from the determination of the IP to be precise, because with different IP segments user can not process the data. LAN performance optimization in terms of security by router settings, determine spesific IP for acces the data. With an example of employees have applications to work together, or special application for certain division. Applications can only be accessed by certain levels it can be set in the router, through the definition of IP. And also for security, IT division use firewall can controls and watched the data package running on the network. Use of mac address, if IP already given to a computer, can not be opened in other places. Now LAN in Bank of East Java Small Medium Enterprise In Surabaya for optimization data processing can not replace with new one yet. Can acces the data more effective and efficient, unlimited place but still in the same building. From discusion about LAN, implementation LAN bringing positive impact for user such as : (a) File sharing, data processing using file sharing can make easy for user in data sharing. This system can use if the computers connected to LAN. Data processing with file sharing can save the time. For user of LAN, it is easy to used. Using otomatic setting, user can use the file sharing. However, still have problem occur like leakage of data. (b) Easy in use, files stored on a computer does not need special channel to run the application. For example, use Microsoft Word file that is commonly used applications so that users are already familiar the application in use.Client server database application. (c) Can be use together, this system can be used together in different computer. Example of application that can be developed is database base client server that used esspecially for customer data.

Conclusion and Suggestions

According to sources, the use of LANs in the processing of customer data is optimal. However, the observation that researchers do, there are some problems that led to the conclusion that the use of the LAN for the data processing: Bank of East Java Small Medium Enterprise in Surabaya used LAN

with IP and router for optimization data processing. Used of LAN is optimal, but still has some problem that occur. The weakness is data leakage often occurs.

Sugesstion for implementation LAN for optimization data processing as: Needed newest development, like the used of internet. Needed period evaluation related the problem that occur in LAN so that can minimalize the problem. Based on the interview about the leakage the data, needed the used of specific IP for specific user so that not involve manipulation of data.

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