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Lan network analysis in tsanawiyah al-kahfi madrasah palembang

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A B S T R A C T

Advances in information technology are currently growing in line with human needs who want convenience, speed and accuracy in obtaining information. Therefore, the advancement of Information Technology must continue to be pursued and improved in quality and quantity. One of the advances in information technology in the field of transmission that is currently developing in addition to fiber optics is the use of Local Area Network (LAN) devices. This Local Area Network device allows for the relationship of information users even when they are mobile (moving), thus, providing convenience for information users in carrying out their activities. One example of its application is the use of mobile phones. The general network term heard today is LAN.

I. Introduction

Advances in information technology are currently growing in line with human needs who want convenience, speed and accuracy in obtaining information. Therefore, the advancement of Information Technology must continue to be pursued and improved in quality and quantity. One of the advances in information technology in the field of transmission that is currently developing in addition to fiber optics is the use of Local Area Network (LAN) devices. This Local Area Network device allows for the relationship of information users even when they are mobile (moving), thus, providing convenience for information users in carrying out their activities. One example of its application is the use of mobile phones. The general network term heard today is LAN. Local Area Network (LAN) is a network technology that uses wired devices as a medium of data delivery that is commonly found in a computer network today. This technology, as the name implies wireless, which means without cables, utilizes radio waves to interact or communicate between computer units with others. Basically, Local Area Network users on a network are no different using cable as their transmission medium, the installation costs will be relatively lighter, especially when the networks are quite far apart, so that, even though the device is relatively expensive compared to using cable, the ease and total cost of installation can be seen. network is cheaper especially if the distance is great and the terrain is difficult to use wired devices. A company generally has a large number of computers and the locations can be far apart, maybe even between continents. The hope for the management is to be able to supervise/monitor the company's performance. Just like the writer doing the analysis, the MTS Al-Kahfi Palembang is of the LAN (Local Area Network) type. In general, the availability of the network at MTS Al-Kahfi Palembang is quite good, it's just that you need to re-analyze the network used at the school. Based on this the author chose the title "LAN Network Analysis at MTS Al-Kahfi Palembang".

II. Method

2.1. Research methods

In this study, the authors used qualitative research, namely research in the form of written, spoken words and the behavior of the people studied. The method used in this paper is a descriptive method. Descriptive method, can be interpreted as a procedure or method of solving research problems by describing the state of the object under investigation (a person, institution, community,

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factory, etc.) as it is, based on actual facts at the present time. For more details, the author puts forward the notion of qualitative methods proposed by several experts, namely:

According to Bogdan and Taylor cited by Sugeng D. Triswanto, qualitative method is defined as a research procedure that produces descriptive data in the form of speech or writing and the behavior of the people being observed. Meanwhile, Kirk and Miller, as quoted by Lexy J. Moleong, define that qualitative research is a particular tradition in social science that fundamentally depends on observations of humans both in its area and in its terminology.

Apart from these definitions, several other definitions have been put forward. According to Strauss and Corbin as quoted by Sugeng D. Triswanto qualitative research is a type of research that produces findings that cannot be achieved (obtained) using statistical procedures or other means of quantification (measurement). Meanwhile, Denzin and Lincoln as quoted by Lexy J. Moleong stated that qualitative research is research that uses a natural setting with the intention of interpreting phenomena that occur and is carried out by involving existing methods such as interviews, observations, and use of documents.

2.2. Method of collecting data

In collecting data in the field the author uses data collection procedures through:

a) Observation, namely data collection techniques that use observations of research objects that can be carried out directly or indirectly. In this case, researchers need to visit the research location to observe various things or conditions that exist in the field. To prove the truth of science always begins with observation. In the observation the authors made direct observations to the research site.
b) Interview is the process of obtaining information for research purposes by means of question and answer, while face to face between the interviewer and the informant. Interviews are broadly divided into two, namely unstructured interviews and structured interviews. Unstructured interviews are also known as in-depth interviews. To obtain more valid data, the authors hold direct dialogues with informants such as the Lan network design officer at MTS Al-Kahfi Palembang.

2.3. Tools And Materials

The materials or devices used in this research location can be classified into two types, namely hardware and software. The specifications of the tools used in the research are as follows:

a. Hardware requirements: Acer Aspire One 722, Core AMD Dual Core Processor C-50 (1.0 GHz, Memory 2 GB DDR3 Memory, and Internet Connection.
b. Software Requirements: Wireshark application for testing Wireless LAN, Capsa Free for connecting to Mikrotik and bandwidth and LAN utilization.

2.4. Analysis Techniques

Data analysis technique is the middle stage of a series of stages in a research that has a very important function. The research results produced must go through a data analysis process first so that their validity can be accounted for. Data analysis is also a series of activities of reviewing, grouping, systematizing, interpreting, and verifying data so that a phenomenon has social, academic, and scientific value. data analysis is to summarize the data in a form that is easy to understand and easy to interpret, so that the relationship between research problems can be studied and tested. In discussing this project, the author uses descriptive analysis method, which is a method that focuses on solving problems that exist in the present and is carried out by a process of reviewing, sorting, and grouping data to draw conclusions.

III. Results and Discussion

After the authors observed at MTS Al-Kahfi Palembang, the authors got the results of the research. At Al-Kahfi Palembang it uses a Star Topology network. The following is an overview of the Star Topology in Al-Kahfi.

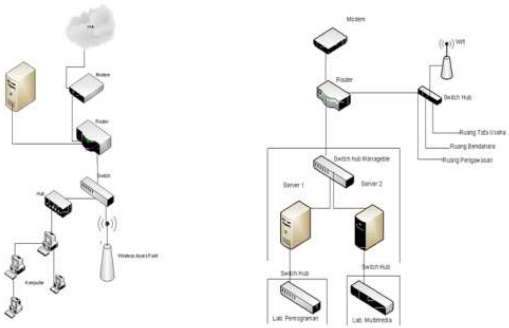

Figure 1. Topology Network

3.1. Internet Network Analysis Results

After the network has been built, the author continues this scientific work to the next stage, namely the analysis stage, the author performs a network analysis in stages starting from the computer unit used until the quality of the network produced in this analysis stage, can be described as a computer.

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Ping (Cmd)

Ping is a basic program that allows a user to verify that a certain internet protocol address exists and can accept requests. Ping is used to ensure that a computer being addressed is active and provides a response back. The function of Ping is to find out the Up/Down status of computers in the network. Then monitor the avalability status of computers in the network. And the last one knows the communication responsiveness of a network. network. Then monitor the avalability status of computers in the network. And the last one knows the communication responsiveness of a network.

Network Analysis QoS Parameters

a) Packet Lost

Packet Lost, is the number of packets that fail to reach the destination of the packet sent. When Packet Lost is large, it can be seen that the network is busy or overload occurs. Packet Lost affects network performance directly. When the Packet Lost value of a network is large, it can be said that the network performance is poor.

So, the packet loss value is 0. This is in the very good category by Typon standards.

b) Packet Delay

Delay is the time it takes to travel the distance from the origin to the destination. Delay can be affected by distance, physical media or also a long processing time.

c) Throughput

Throughput is the effective data transfer rate, which is measured in bps (bits per secomd). Throughput is the total number of successful packet arrivals observed at the destination during a given time interval divided by the duration of that time interval.

Capture Network Analysis Through Winbox

a) SNMP

Simple Network Management Protocol (SNMP) is a layer protocol used for network device management. Protocols can collect and manipulate valuable network information from switches, routers, servers, printers, and other network-connected devices. The network managed by SNMP consists of two components, namely:

1) Network Management Station (NMS) software that runs on administrative computers. This software collects SNMP data by asking devices on the network to reveal certain information.
2) Agent, software that runs on devices that runs on managed devices and reports information via SNMP to the NMS.

3.2. Discussion

From what has been analyzed, it can be explained that in a LAN and wifi network it can access the terms of time in the network, for example when we ping through a wifi network, if it is not used a lot, the network will be good. Likewise in the Lan network as the table above has described. And in the QoS parameter for Bandwidth and Delay, if there is 0%, it means it is very good in the network than there is 3% or 25%, it is in the very bad category as in the table described. For the Star Topology at MTS Al-Kahfi there is a plan to build every room in the school, for example in the Programming Laboratory, Multimedia Laboratory, treasurer's room, treasurer's room, and supervision room. So that every room that has a server and switch Hub can be connected safely. And at this school using Switch Hub Manageable.

IV. Conclusion

From the results of computer network analysis at MTS Al-Kahfi Palembang, I can conclude that:

1) The author gets a delay value of 0.468 ms, the download throughput is 9.16 mbps, and the upload is 0.071 mbps, while the lost packet value is 0% where the packet loss value is very good.
2) How to optimize the network so it doesn't interfere is by using Fiber Optic. so that the two networks can both be well connected, even though one of them has a slight bottleneck.

V. Suggestion

Based on the description of the conclusions above, the advantages and disadvantages above can be a lesson learned from references. Therefore, it can be obtained:

1) The need for further research on analyzing networks at MTS Al-Kahfi.
2) The need to set the networks to be more Optimal to be carried out further. And make the topology even better so that every room has a LAN network connection

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