SERVER ELECTRICITY AND TEMPERATURE MONITORING BY USING ACCESS POINT, LM 35 CENSOR AND JAVA PROGRAMMING LANGUAGE TO CHECK ELECTRICITY PARAMETER

Marliana Sari1, Nanang Sadikin2, Gunawan3, Muhammad Fauzan

1,3) Jurusan Teknik Komputer, Jalan Almamater No. 1 Kampus USU, Politeknik Negeri Medan
2) Jurusan Teknik Informatika, Jalan Kampung Melayu Kecil III No 15 Jakarta Selatan, Universitas Islam Atthahiyah

Email: marliana.sari@polmed.ac.id

Abstract. The server is a computer network that served as a servant. The server managing data traffic in a network and provide a resource that can be used by other computers connected in a network. Application monitoring system integrated with censor and using ping access points work as expected for censor continuously send server information. SMS gateway that can be attached to respond quickly in case of a problem on the server computer and the temperature exceed the limit or power supply status has changed so that an administrator can perform right action as fast as possible based on information provided. Server working continuously, with stable environment and without any interruption. It takes a special attention to maintain and monitoring so server will provide uninterrupted service. This application will play an important role to monitor servers that work continuously and assist Administrator and Operator Data Center. System Monitoring Application created based on the Java programming language.

Keywords - Electricity, Connected, Network, Application, SMS Gateway, Censor, Administrator, Data Center Operator, Java, Traffic, Monitoring, Server

1. Introduction
Researcher from previous studies write paper entitled “Web Based Server Monitoring System using Temperature Censor and SMS Gateway”. The system build using temperature censor embedded on server and SMS Gateway[3] to send the data to the web server. The temperature data save on MySQL database and processing it using web application to show the report to the administrator. In this research we improve the system, not only temperature monitoring but also electricity. Temperature and electricity maintain by manually in previous studies. In this research, maintenance process done automatically[4]. If there any abnormal state in server, application will send command to shutdown the server automatically. This will improve maintenance and performance of server, especially while the administrator or data center operator out of site.
2. Literature Review

Monitoring
Routine monitoring is the process of the collection of data and the measurement of progress on these programs and monitor change objective, focusing on the process and output.[2]

Temperature
Temperature is a physical quantity that expresses hot and cold.[7]

Server
In information technology, a server goes to as a servant in the network. Server regulate traffic data in a network and provide resource that can be use by another computer connected in network. Server is the in computer network a place for all node in network for resource sharing. Server servicing all of node, if need it. Some sort of servers are print server, file server, disk server, e-mail server, VPN server, DHCP server, DNS server, FTP server, WINS server, Proxy server, database server, etc. Server can is dedicated, and server can not be used as node for communication, while others is colocation, such as serves as server can also be used for for communicating at entry points in the network[2].

LM 35 Temperature Censor
LM35 Censor electronic components temperature is having functions to change the temperature be in the form of voltage electrical quantities. LM35 temperature censor electronic components used in this research is produced by national semiconductor. High accuracy and ease lm35 having design compared with sensors other temperatures, LM35 exodus impedance have lowest and high linieritas so as to be easily connected to the control and need special advanced setting.[5]

UPS
Uninterruptible power supply or known as UPS, for some people, the term this may sound familiar. But often the only know two types of UPS that is the most common in the market. Both types of UPS was online UPS and standby UPS. In fact, UPS still have some other types with superiority than the rest.[6]

Java
Java is a computer software technology in the world, which is a programming language, as well as a platform. As a programming language, Java known as a high-level programing language. Java easy to learn, especially for programmer who had come to know C or C++. Java is object oriented programming that is future programming paradigm. Java programming designed to robust dan safe. Java also designed to run on all platform, and designed to produce application, as the application database that which equipped Oracle 8i / 9i built using Java programming. Java is architecture netral, and because Java compiler used to compile Java program code designed to produce architecture neutral over all the hardware.[1]

Access Point
In a computer network, wireless access points is device, that connect wireless devices to network by the use wi-fi, bluetooth, or another. Wireless access point usually connected to a router so that it may forwards the data between different wireless devices with wired network devices. Wireless standard set by IEEE known as IEEE 802.11 standard[2].

3. Methodology
Design system is a stage conducted after an analysis from the system cycle, definition of functional needs, preparation designed made implementation of describes how a system is build. A system formed can be draw of, design, and in the preparation of schema or setting of several separate elements into one box, including related to the configuration of software and hardware components of a system. Figure 1 show existing temperature monitoring system design.
Figure 1. Existing Temperature Monitoring System Design

Figure 2. Monitoring System Temperature And Electricity Server Hardware Design

Hardware design include design of heat censor, design of access point and UPS backup the electricity to the server. Access point will inform application about the status of electricity, and concurrently UPS will provide backup electricity when there were failed, and access point as parameter for electricity run or die. A measuring instrument which will be in embed in server as reader the heat rising and as system will send notification by using SMS gateway to inform administrator or data center operator with the evidence that system out of work. As an application monitoring integrate with hardware, so below are design of MSLS hardware and software before and after development. Figure 3 below shows hardware design for existing server temperature monitoring systems:

Figure 3. Existing Application Monitoring Temperature Hardware Design

Figure 4 below show the design of the addition of hadware and Java based application monitoring system. With the additional monitoring in the detection of electricity by this application, hence writers design hardware from which information in real time about the blackout on servers that in monitoring by the application of these monitoring.

Figure 4. MSLS Application Hardware Design

Figure 5. Electric Detection System Hardware Design
Figure 6 below display steps of this research:

![Figure 6. Research Steps](image)

4. Results and Discussions
The application of monitoring system developed based on Java programming language. This system monitor the temperature and electricity server on data center. Server temperature monitor by use DS1621 censor. This application monitor electricity problem using ping to the access point. UPS provided for backup power in case of electricity problem. Using this application, administrator could perform monitoring server performance. Data gathered by this application used for build daily, weekly and monthly server temperature report. This application also knows electricity issue by using ping to access point for parameter status. User of this system restricted only for administrator and data center operator due to security reason. Black-box is testing software method that test your attitude and see the requested functionality software that they are in conflict with the internal structure or the working software. Special knowledge coding or both internal structure and level knowledge of programming no need longer. Black-box testing focus on the requirements for certification of their functional software. Testing would also make it possible system barrier analyst by doing this they receive a collection of the condition of the input which will do the the whole of the functional purposes related to the development of the program.

1. Administrator run monitoring-mls.exe and overview page displayed on Figure 7 below

![Figure 7. Overview Page](image)

2. Login page displayed on figure 8 below, fill user name and password and click Login button from this page to continue.

![Figure 8. Login Page](image)
3. There are six links in Main page: Monitoring, server, connect, alarm, administrator, SMS gateway. This page only contain tutorial about server monitoring application. Submenu performance, temperature server, and electricity server will displayed if mouse cursor placed in monitoring links in main page.

![Figure 9. MSLS Application Performance](image)

Performance page will display temperature and electricity data taken from censor in form of table and chart. Last of ten realtime data will be displayed in this page. Graphics button will display graph data for temperature and electricity. If temperature choose, page below displayed:

![Figure 10. Temperature Graph Server Monitoring](image)

4. Figure 11 below display realtime data for server temperature taken every three seconds in form of table.

![Figure 11. Realtime Server Temperature Data](image)

5. Figure 12 below display alarm page which can be edit by administrator or data center operator if any information will be added.

![Figure 12. Alarm](image)

6. Figure 13 below show Report page from Server Monitoring Application.
7. Figure 14 below displayed SMS gateway page from Server Monitoring Application

Page 14. SMS gateway

Figure 15 below display SMS Data from Server Monitoring Application. This data become proof of evidence given by administrator or data center operator to management if there are incident of server shutdown.

5. Conclusions
1. Driver reading censor port that is attached to the server work, drivers will gather the data in censor and sent it every second to the database and MSLS processing this data.
2. MSLS perform ping access point continuously for electricity state so application would detect real time status and executes command to shutdown automatically.
3. Access of MSLS Application Monitoring System only from Local Area Network (LAN).
4. Command issue by administrator or data center operator depend on SMS gateway report.
5. Realtime graphics provide information about monitoring.

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