

Implementation of online CCTV Design on ATM Machine Networks

Fadlyardi Yusuf¹, Muhammad Rifqi²

1(Informatics Engineering, MercuBuanaUniversity, Jakarta, Indonesia)

2 (Informatics Engineering, MercuBuana University, Jakarta, Indonesia)

Abstract:

CCTV (Closed Circuit Television) is a device that can transmit data in the form of video through the transmission of coaxial or UTP cables (Unshielded Twisted Pair) even without cables to certain locations by displaying images from cameras installed in rooms that have been determined to be monitored, recorded, or analyzed. CCTV ATM's that are currently installed on ATM machine networks are still analog systems without being connected at all to the ATM machine network. For this reason, this study was conducted to implement it on ATM machine networks by adding a Switch device as a bridge between the Router, ATM machine and CCTV device (Hikvision DVR), so that monitoring can be carried out in real time by the vendor and the bank using the CCTV software.

Keywords :CCTV, ATM, Switch, DVR, Hikvision.

I. INTRODUCTION

The development of the world is increasingly rapid, especially in the field of technology. Technology has made changes to human life, one of which is the existence of an Automatic Teller Machine (ATM). With the ATM, it is very easy to transact in the banking sector. Even so, there are always gaps in terms of security including transactions at ATMs.

All banks in the world including those in Indonesia will always try to maintain the security and comfort of their customers. However, the current problems faced by the Bank and Service Cash providers are that there is a lot of damage or commonly called vandalism on ATM machines which will certainly cause inconvenience to customers when making transactions. There are many examples of vandalism that occur such as closing the hole of the Card Reader with a matchstick, prying out the place of exit money (Exit Shutter), preventing internal cameras found on ATM machines, and others.

Overcoming this problem, a CCTV system is installed at an ATM so that the bank can back up the recorded data on the CCTV as evidence if there is a vandalism or an incident to the customer.

The main problem is that CCTV ATM's that have been installed on ATM sites still use analog CCTV cameras and are still offline, which of course has many weaknesses and vulnerabilities when faced with the problems mentioned earlier. Therefore, a network system will be added to be integrated into the DVR so that regular monitoring can be carried out.

II. DATA PROCESSING METHOD

The method used in conducting this research and making information that will be used to find out the problems faced.

A. Study of literature

At this stage the author in conducting research will make similar literature study material as a reference to find out the advantages and disadvantages of the system that has been made before.

B. Interview

Collect data by communicating verbally, either through direct meetings or by telephone with the relevant resource person.

C. Observation

Observe and practice directly about what things are related to this research.

The methodology used in this research is the Network Development Life Cycle (NDLC) method:

A. Analysis

Here will be a problem analysis on the current CCTV network and look for the most effective and efficient solutions to solve it. The literature study will be a source of information about the emulators that will be used, the system to be designed, the mechanism work of CCTV, IP and matters relating to the work of this research.

B. Design

Designing a network environment to be applied in a scenario that will be simulated on an emulator to assess performance using predetermined parameters.

C. Simulation Prototyping

The simulation of CCTV Online based on the analysis that has been carried out, and concluded the results obtained from the simulation to assess performance in improving network performance.

D. Implementation

The application of the Internet network to existing CCTV systems based on the results of design and simulation.

E. Monitoring

Observations on internet networks that have been implemented on CCTV systems, and concluded the results obtained from the implementation to assess performance in improving network performance.

F. Management

Policy making to regulate the system that has been built and running well can last a long time and the reliability element is maintained.

III. SYSTEM ANALYSIS AND DESIGN

A. Existing System

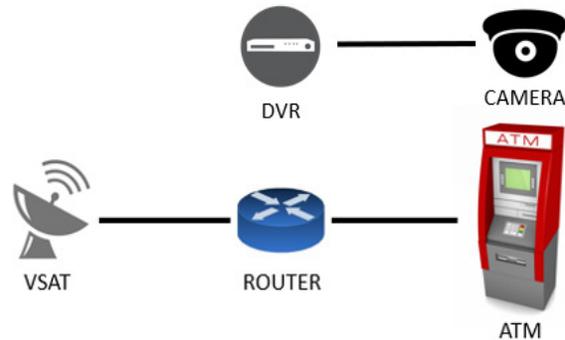


Fig. 1 ATM Networks Existing System

The current ATM machine network conditions can be seen in the fig. 1 where VSAT services are connected to routers and transmit them to ATM machines, while DVR's have an installation that is not connected to an ATM machine network. With the lack of optimal CCTV ATM devices at the ATM booth, causing a number of locations are vulnerable to vandalism to be less monitored so that ATM machines will only be detected vandalism has occurred when First Level Maintenance officers come to the location or there is a customer complaint on the bank.

Of course this becomes less effective considering the convenience of customers to be disturbed and doubt the security at the ATM location.

B. Proposed System

In functional requirements analysis, several problem solving solutions are offered as follows:

- Back Up less scheduled CCTV data.
The solution is to regularly backup CCTV record data at least once a week. Especially for areas that are suspected of being prone to vandalism, it would be better if backups were made every 3 days.

- Long duration of handling vandalism on ATM machines.

The solution is the implementation of CCTV Online monitoring systems on ATM machines that are prone to vandalism by adding Switch devices and configuring routers, switches and DVR's so that DVR's can be optimally utilized in their use. Because so far DVR on ATM machines is only used to record events that occur in the ATM machine area.

In the process of designing CCTV Online systems, network devices are added to existing networks. To build this system, the system requirements that must be fulfilled are as follows:

TABLE I

No	Hardware	Qty	Spec	Note
1	Switch	1	HP Procurve 2510-24G 24 10/100 or Gigabit Ethernet ports	To bridge between routers, ATM machines and DVR's

For software requirements, the following are needed:

TABLE II

No	Software	Version	Note
1	Windows	Win 10	Used as a PC operating system monitoring CCTV record results
2	iVMS-4200 Client	2.7.1	Used as a monitor of CCTV record results

The design of the CCTV ATM Online system to monitor locations prone to vandalism is as follows:

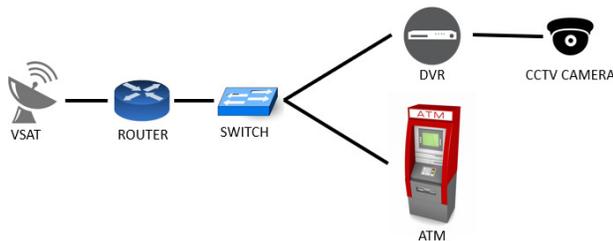


Fig. 2 ATM Networks Proposed System

The design of the CCTV Online system network in the fig. 2 uses 1 unit switch of the 2510-24G Mobile Phone brand with 24 10/100 or Gigabit Ethernet ports. The switch is used to bridge the network path from the router to the ATM machine

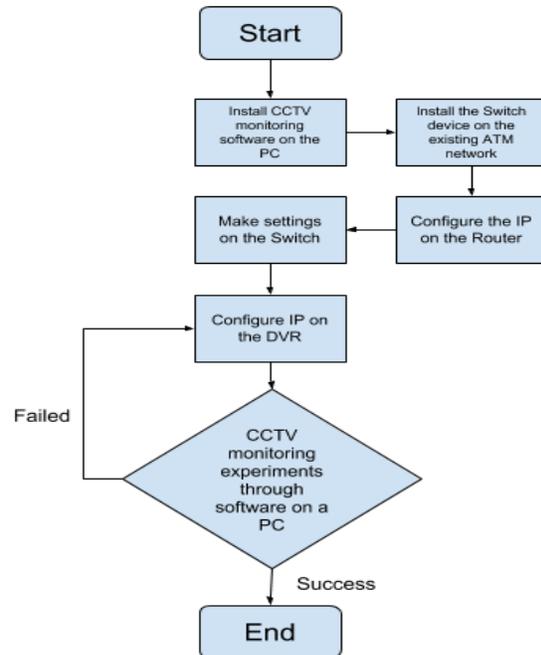
and also to the DVR, so that online CCTV monitoring can be done.

For the IP address on each device can be seen in the following table :

TABLE III

No	Device	IP Address	Bandwidth
1	Router	192.168.1.1/24	3 Mbps
2	Switch	-	3 Mbps
3	ATM	192.168.1.2/24	128 Kbps
4	DVR	192.168.1.101/24	2.5 Mbps

IV. DIAGRAM FOR IMPLEMENTATION PROCESS



V. CONCLUSION

At this time, with the rapid development of banking technology with the many locations that have been installed by ATM machines, it is also necessary to periodically monitor atm locations that have the potential for vandalism. Therefore, in this study proposed the design of an online ATM CCTV system to overcome this problem. It is also expected that there will be suggestions, so that this research can be further developed in the future.

ACKNOWLEDGMENT

The researcher would like to thank Mr. Muhammad Rifqi for his guidance in helping researchers in completing this journal. He also gave constructive suggestions and criticism for this research until the research went well.

REFERENCES

- [1] A. Mohammed, S. Babani, and Z. H. Abdullahi, "a Comparative Analysis of the Differences Between Fiber Optic and Copper Cables in Communication," no. July, pp. 41–43, 2015.
- [2] S. K. Opoku, M. Adams, and E. Akaadom, "Effect of Twisted Pair Cable Arrangement on Manual Termination with RJ 45 and the Quality of Communication in Auto-Sensing Port Devices," *Ijcsmc*, vol. 2, no. 3, pp. 26–34, 2013.
- [3] P. A. Jonathan, "Network Traffic Management, Quality of Services (QoS)," *Congest. Control dan Fram. Relay*, pp. 12–24, 2011.
- [4] M. A. S and M. V. V, "Video Surveillance System," *Int. J. Eng. Tech.*, vol. 3, no. 1, pp. 73–77, 2017.
- [5] A. Rohmadi, "Monitoring Cctv Digital Secara Online Melalui Internet & Mobile Phone Pada Jaringan Wireless Lan : Studi Kasus Pada PT. Tiga Sinar," *Tek. Inform.*, vol. 9, no. 1, pp. 21–28, 2016.
- [6] W. Pamungkas, A. A. Fauzi, and E. Wahyudi, "Analisis Kebutuhan Bandwidth Minimal Pada Automatic Teller Machine (ATM) Berbasis Very Small Apperture Terminal-Ip (Vsat-Ip)," pp. 311–316, 2015.
- [7] H. Nugroho and Anjiorjie, "Analisis commissioning vsat pada atm bank permata area carrefour lebak bulus," *J. ICT Vol 3, No. 5, Novemb. 2012*, 65-74, vol. 3, no. 5, pp. 65–74, 2012.
- [8] T. Sikandar and K. H. Ghazali, "A Review on Human Motion Detection Techniques for ATM-CCTV Surveillance System," *Int. J. Comput. Commun. Instrum. Engineering*, vol. 3, no. 2, pp. 213–217, 2016.
- [9] Y. Rashkevych, D. Peleshko, Y. Ivanov, I. Malets, and V. Voloshyn, "Tracking in the intersection areas of the cameras fields-of-view of CCTV monitoring distributed systems," *Proc. 2016 IEEE 1st Int. Conf. Data Stream Min. Process. DSMP 2016*, no. August, pp. 163–168, 2016.
- [10] T. D. Hakim and A. Dimiyati, "ANALISA PEFORMANSI JARINGAN VSAT BRISAT BERDASARKAN DELAY, PACKET LOSS & SERVICE LEVEL," *J. Ilm. Elektrokrisna Vol. 6 No.3 Juni 2018* 122, vol. 6, no. 3, pp. 122–130, 2018.
- [11] G. Mgaya, "Analysis Of Atm Premise Security Aspects On Preventing Cardholder ' s Pin Theft And Attack A Case Of Crdb Branches In Dar Es Salaam ," vol. 2, no. 8, pp. 2075–2082, 2015.