Jurnal Ilmiah Komputer dan Informatika (KOMPUTA)
Edisi...Volume..., Bulan 20..ISSN :2089-9033

IMPLEMENTATION OF CLOUD MESSAGING, CLOUD NOTIFICATION, CLOUD SECURITY AND IMAGE COMPRESSION TECHNOLOGY ON SOLIDARE

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ABSTRAK

Solidare is a mobile application that has some important functionality in public usage. One of the problems that happen to Solidare is on the feature that is require the ability to upload image files to the system. the problem specifically happen to the large size of the image file to be transmitted into one benchmark and takes an implementation of the algorithm for compression of image files. Another issues appear on other requirements such as a notification to the user system directly and also user need a system that can perform short text communication becomes an additional problem contained in Solidare. Looking at some of requirements which is each of the technology that will be applied require a security to things that have a high risk such as user data and system data as well as the other security procedure then it need an implementation of cloud computing security system.

By adopted of some technologies such as cloud notification, messaging cloud, cloud security and compression algorithms to compressing image size on Solidare can maximize the usage of this application.

Based on the result of tests performed , it can be concluded that the implementation of cloud messaging, cloud notification, cloud security and image compression on Solidare are able to reach the goal as solution of the problems.

Keyword : *Solidare, Windows Phone, Cloud Computing*

1. INTRODUCTION

In this section will explain the background of the problem, aims and objectives.

1.1 Background of the problem

Solidare is a mobile application that has some important functionality in its use. One of the features provided by the application solidare is the ability for users to make donations towards foster children who need these donations. In addition to the donation features, applications solidare also has many features that suit the needs of users in facilitating the donation process such as payment confirmation feature donation, the donor consultation and features several other important features. Seeing the great need for some of the features contained in the application solidare it needed a technology that can further simplify all user activities at the application solidare.

At some of the features in the application Solidare particular feature that allows users to upload image files to the system have constraints in the size of the image file size will be sent. It takes a technology that can compress the image file so that it is possible that the same problems occur again.

Feature confirmation is one very important feature in applications Solidare because there are features that the payment transaction process is a process that is crucial for a donor. The confirmation process consists of several stages ranging from the delivery of transaction data that has been done donors until then the data is validated payment by the administration of a charity. Information on the validation of the payment can be directly received by the donor then created a new need to notify the information directly, quickly and flexibly to the donors. In this case it takes an additional technology to support the need for notification of information to the user.

Not only feature to confirm, additional technology is more qualified consultation is also needed on the features contained in the application Solidare. This feature allows donors to be able to communicate directly to the charity by providing contacts required by donors. Obstacles that then occurs when a donor wants to communicate the text on-time with the charity concerned. In previous versions of the application Solidare not provide facilities for users to communicate online text so that donors still have to contact the charity by using another contact who can be contacted.

On both issues that have been described previously needed a technology that can handle

multiple aspects of both of these features. Cloud Computing is a designation of a technology that can achieve things that are needed on the technology to be applied. Cloud Computing or commonly referred to as cloud computing itself is a combination use of computer technology in a network with Internet-based development that serves to run the program through computers connected at the same time. Behind it all, Cloud Computing also is very susceptible to Disrupt services, theft of information, lack of privacy and the destruction of information. Seeing some of the aspects that can happen then it takes a security of Cloud Computing that will be used in the application of technology to other features.

1.2 Aims And Objectives.

The intent of this study was to implement cloud messaging, notification cloud, cloud security and image compression in Solidare application. The aim of this study is:

1. Assist donors in order to obtain information on the validation of the confirmation of the payment made with a more flexible and faster.
2. Provide convenience to donors to be able to connect directly with the charity concerned.
3. Maintaining the security and vulnerability of any information held by the application Solidare.
4. Reduce the use of large data sizes in the process of sending the image file into the system.
5.

1.3 Cloud Computing

Cloud computing refers to applications and services running on the network using a distributed virtual resources and is accessed by a common internet protocols and network standards. It is distinguished by the idea that the resource is a virtual and infinite, and it is the details of the physical system in which software runs abstracted from the user.

In an effort to better describe cloud computing, a number of types of cloud have been defined. There are two different classes of cloud which are based on the deployment model, and based service models. Deployment models tell where the cloud is and for what purpose. Public, private, community, and hybrid clouds is the deployment models.

Service models describe the type of services providers offer. Service models of the most well known of which is the software as a service, platform as a service and infrastructure as a service known as SPI models. Service models are build on each other and determine what the vendor should be managed, and what is the responsibility of the client.

Cloud computing is a real paradigm shift in the way in which the system is deployed. Large-scale cloud computing system has been activated as the popularity of the internet, and the growth of some large service companies. Cloud computing makes dreams utility computing will become more likely, much more scalable and universally available system.

Not all applications benefit from the deployment in the cloud. Problems with latency, transaction control, and in particular security, as well as regulatory compliance should be of particular concern. [1]

1.4 Microsoft Azure

Microsoft Azure is Microsoft's cloud computing platform, which provides a wide range of services that can be used without purchasing. Azure enables the rapid development that delivers solutions, and provide the resources to accomplish the tasks that may not fit into the local environment. Computing, storage, network, and application services Azure focuses on building great solutions without the need to worry about how the installation of physical infrastructure.

Microsoft provides support for public, private, and hybrid cloud. Windows Azure Pack is a free add-on for Microsoft System Center that allows us to host many Azure core services in our own data center, and provides a self-service portal to users. We can integrate it all into a hybrid cloud through the use of virtual private network. [2]

1.5 Windows Phone

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1.6 Joint Photograpic Experts Algorthm

Joint Photograpic Experts (JPEG, pronounced jay-peg) is designed for compression of multiple full-color or gray-scale of an image of the original, such as native landscape in the world. JPEGs work well on continuous tone images are like photographs or all of the work of art that wants real; but not too good on the sharpness of the image and the art of coloring like writing, simple cartoon or drawing that uses a lot of lines. JPEG has support for 24-bit color depth or equal to 16.7 million colors (224 =

16,777,216 colors). Progressive JPEGs (p-JPEGs) is a type of a few percent smaller compared to baseline JPEGs: but the advantage of JPEG and tipetipenya seemingly the same steps as iinterlaced GIFs.

JPEG is a lossy compression algorithm. JPEG works by changing the spatial image and represent to the frequency mapping. Discrete Cosine Transform (DCT) to divide the information low and high frequencies of an image. High frequency information which will be selected to be eliminated are bound to penganturan quality used. Compression with better levels, comfortable levels of information are eliminated. Time Compression and decompression performed with symmetrical. [4]

1.7 Cloud Computing Security

API (Application Programming Interface) is a collection of functions or commands to replace the language used in the system call with language that is more structured and easy to understand.

Advantages programmed using API is:

1. Portability. Programmers who use the API can run the program in the operating system already installed anywhere as long as the API. While the system call differs across operating systems, with a note in its implementation may be different.
2. More Easily Understood. API uses language that is more structured and easier to understand than the language system call. It is very important in terms of editing and development.

System call interface serves as a liaison between the API and the system call are understood by the operating system. This system call interface translates commands in the API and then will call the system calls necessary.

To open a file the user is using a program that has been created with the help of the API, the command of the user translated the program into commands used by the open (). Command open () is the order of the API and not the direct command understood by the operating system kernel. Therefore, in order that the user desires can be understood by the operating system, then the command open () was translated into the form of a system call by the system call interface. Implementation of the order open () earlier can vary depending on the operating system that we use.[2]

2. CONTENT OF RESEARCH

2.1 System Analysis and Design

Here is an analysis of the design of the system built.

2.1.1 Problem Analysis

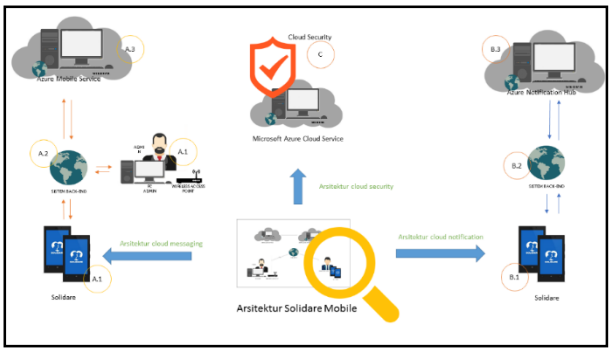
Analysis of the problem is a translation problem that existed prior to the implementation of the technology studied in this Solidare software. Analysis of the problem include the following:

a. Donors as users experience difficulty when getting information on validation has been done by the charity to the payment of donations that have been made.
b. Donors find it difficult to connect with the charitable agencies quickly and directly.
c. Solidare application system security is still vulnerable to threats that can occur in cloud computing.

Difficulty system for data transmission in the form of an image file due to the large size of the image file.

2.1.2 System Architecture Analysis

In the analysis of the architecture of the system is given an overview of the system built and implemented the technology. The description given is composed of data exchange process to how users, backend and cloud technology to communicate with each other. An overview of the implementation of technology in the system architecture of the software Solidare can be seen in the following figure.



Here is an explanation of the architecture of software systems Solidare and implementation of technologies that will be carried out:

1. Architecture cloud messaging

The following architecture describes the flow of data transmission as well as the processes that occur in the cloud messaging is implemented.

a. At points A.1 explained that both mobile and website system sends an identity as well as the channel leading to the back-end system to recognize.

b. Points A.2 shows the results of the introduction of the back-end system and then proceed with validating whether the identity and channel transmitted by the two devices is valid or not. If the validation results say no then do the next stage of A.3 whereas if valid then a direct message dikiriminkan towards the destination channel.

c. Point A.3 explained that Azure Mobile Service do a new generation of identity and sends it back to the back-end system for validation back.

2. The notification cloud architecture

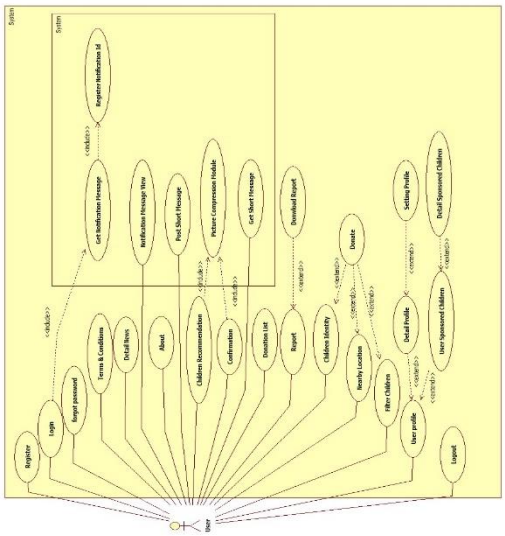
This architecture describes the data transfer process that occurs when a notification is sent via a back-end system.

a. Points B.1 shows that the mobile system sends an identity as well as the channel listed on a back-end.
b. On the next point, namely B.2 describes the introduction of identity sent by the mobile system and then validated by back-end systems to perform identity matching has been sent.

B.3 is the result of matching points coming from the back-end is then received by Azure Notification Hub.

2.1.3 Use Case Diagram

Here is a use case diagram on application development Solidare.



2.2 System Implementation and Testing

The following will be presented on the implementation and testing of the system.

2.2.1 Implementation Behaviour

mplementation environment describe the system implementation in the software environment and hardware environment. The following is an explanation of the application is done on both the environment.

1. Environment Software

Software specifications in the development of the system is as follows:

a. Operating system Windows 8.
b. C # programming language.
c. Microsoft Visual Studio 2013 Update 3 Community.

Implementation of the system is done with the specification that the mobile devices using Windows Phone operating system to version 8.0.

2. Environment Hardware

Hardware specifications in the development of the system is as follows:

a. Processor Intel Core i7-4510U CPU @ 2:00 GHz 2.60 GHz
b. 1 TB hard drive
c. Memory 4 GB
d. VGA 4 GB
e. Internet connection available
f. Windows Phone 8.0 1520 6-inch Lumia Phablet

In practice this system can be run on hardware with the following specifications:

a. Windows Mobile Phone
b. @ Dual-Core Processor 1 GB
c. SD Card 8 GB
d. Memory 512 GB
e. Internet connection available
f. Windows Phone version 8.0

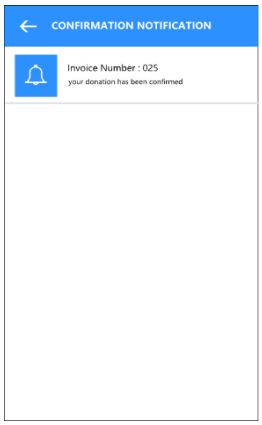
2.2.2 Interface Implementation

Section describes the interface implementation of interface implementation is based on the results of the design is done. Explanation on the implementation of the interface is done by depute each interface by name, class or file that can be represented. Here is an implementation of the interface on a mobile device shown in the following table.

No	Interface Name	File Name
	Daftar Notifikasi Konfirmasi	ListConfirmationPage.xaml
	Halaman Pesan Singkat	LiveChat.xaml
	Bar Pesan Notifikasi	HomePage.xaml

Following the implementation of the system.







2.2.3 Testing

System testing process aims to identify the completeness and quality of the system is built and developed. System testing is also done in order to know whether a system has been constructed in accordance with the objectives to be achieved.

Proccess Name	Testing Point	Type of Testing	Type of Testing Detail
Aktifasi Pesan Notifikasi	*Register Notification Id*	Black Box	Endurance Testing
	Get Notification Message	Black Box	Endurance Testing
Sistem *Cloud Messaging*	*Post Short Message*	Black Box	Endurance Testing
	Get Short Message	Black Box	Endurance Testing
Modul Kompresi Citra	*Picture Compression Module*	Black Box	Endurance Testing
Lihat Notifikasi Konfirmasi	*Notification Message View*	Black Box	Endurance Testing

Based on the results of tests that have been carried out and described in the previous section, the evaluation of testing to provide conclusions on the test results. Evaluation tests performed is based on the functionality testing that has been done and it can be concluded that the system developed in accordance with the purpose of research. It can be inferred as seen from the results of tests performed in terms of system validation and error handling.

5. CONCLUSION

Implementation of technologies such as cloud messaging, notification cloud, cloud security and image compression performed in this study needs to be carried out developments towards the better so as to meet the needs of users in the future. The use of image compression algorithms can be researched more about the algorithm that is appropriate for use in reducing the load capacity data transmission. Additionally done development on the messaging features and notification features.

6. REFERENCES

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