

Transformation of Kebun Kelapa Village Administration with Platform as a Service (PaaS) Cloud Computing

Fachrid Wadly¹, Akhyar Lubis², Nova Mayasari³, Ricky Fernando Ginting⁴


^{1,2}Computer Engineering Studies Program, Faculty of Science and Technology, University Pembangunan Panca Budi, Medan, Indonesia

^{3,4}Computer System Studies Program, Faculty of Science and Technology, University Pembangunan Panca Budi, Medan, Indonesia

ABSTRACT

Villages, as the smallest part of the government administration system in Indonesia, are required to be able to follow technological developments and continue to improve their ability to manage village population administration data. Currently, the village is in the administrative service system. The villagers are still conventional; this affects village devices and villagers, where human error is common, as well as waste of time and costs. So it takes the use of the right technology to overcome this. Cloud computing is a paradigm that allows users to access information electronically using fixed devices or mobile devices connected to the internet network. Cloud computing offers PaaS (Platform as a Service) collaboration, on-demand services, and anytime, anywhere access capabilities. With cloud computing, digital village systems can be built. To be able to use the service, the village government must first subscribe to a cloud service provider. Based on the test results, it can be concluded that the implementation of Kebun Kelapa Village administration provides convenience in processing village population data, reduces village operational costs, and can provide more optimal administrative services to villagers, especially Kebun Kelapa.

Keyword : Platform as a Service; Cloud Computing; Village Administration; Applications; Kebun Kelapa.

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Corresponding Author:

Fachrid Wadly,
Computer Engineering Studies Program, Faculty of Science and Technology,
University Pembangunan Panca Budi, Medan, Indonesia.
Email: fadwa2020@pancabudi.ac.id

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1. INTRODUCTION

Currently, in Kebun Kelapa Village, located in Secanggang District, Langkat Regency, the village population administration service system is still conventional, such as: (a) recording village population data in books; (b) preparing application papers that still use typewriters. This affects village officials and villagers, where human error is common, as well as wasting time and money. Therefore, a system is needed to overcome existing problems. Cloud computing is a paradigm that allows users to access information electronically using fixed devices or mobile devices connected to the internet network. Cloud computing offers Platform as a Service (SaaS) service collaboration, on-demand services, and anytime, anywhere access capabilities. With cloud computing, administration applications can be built for Coconut Garden Villages. One of the existing features is the population administration data processing service of Kebun Kelapa Village. To be able to use the service, the village government must first subscribe through a cloud provider. Thus, it is hoped that this technology can reduce the occurrence of human error, optimize time empowerment, and reduce village operational costs.

2. RESEARCH METHOD

The research methodology used in this study is as follows:

1. Data collection stage
 - a. Literature Study
Data collection by collecting literature, journals, papers, and readings related to the research title
 - b. Field Studies
 1. Observation

Data collection techniques include conducting research and a direct review of the problems taken.

2. Interview

Data collection techniques with live questions and answers that have to do with the theme taken.

2. Software development model

The development model used in making this software uses the waterfall model.

3. RESULTS AND DISCUSSIONS

The first step that must be taken at this stage is to identify in advance the problem that has occurred. Some of the problems faced are as follows: 1. The difficulty of village officials in managing village population data 2. Slow village apparatus in carrying out administrative services to villagers 3. Based on observations and interviews with villagers, it was concluded that the current village system is still problematic. This issue includes procedures for making: family card (SKK), identity card (SKTP), invalid registration (SKTM), death certificate (SKKM), birth certificate (SKKL), universal behavior certificate (SKSG), migration certificate, marriage certificate, business certificate, and good conduct certificate. (SKKB)

System architectures that implement cloud computing have a front-end side and a back-end side. Both are connected through the network (internet) with a cloud system. The front end is located on the side of the user, for example, the government and its population. The front end includes the user's computer (or computer network), the web browser needed to access CMS services for the village government, and the village website that has been processed for visitors. Meanwhile, at the back of the system is a cloud server that acts as a Platform as a Service (PaaS) application that can be used by villages. In the use of village equipment, villagers need to have a network connected to the internet. In addition, village equipment that will carry out services must be rented; this is more profitable than having to buy it. An overview of the village government application as a Platform as a Service can be seen in the picture.

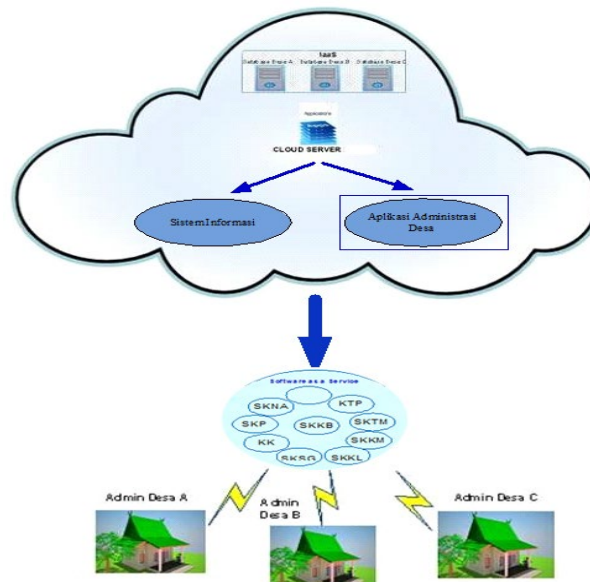


Figure 1. PaaS System in Village Administration Application

The hardware and software, as well as cloud systems and computing, used to implement and test applications are as follows:

1. Deploy cloud computing.

The implementation used in cloud computing is divided into two parts, namely the front end and the back end. The front end is located on the user or client side. While the back end is the "cloud"

part of the system (in internet network diagrams, it is often depicted as the cloud), the front end includes the user's computer and the applications needed to access the cloud computing system. Meanwhile, at the back of the cloud computing system, there are various computers, servers, and data storage systems, all of which create a "cloud" for computing services. The implementation of the Village Administration Front End Cloud Computing application is divided into two parts, namely:

a. Hardware Implementation

The specifications of the hardware used can be seen in the table.

Table 1. Hardware Implementation

Hardware	Hardware Specifications
Processor	Intel Core i3 2.4 Ghz
Memory	2 GB
Monitor	17 inches
Sail	Resolution: 1024 x 768 pixels
Hard drive	320 GB
Keyboard and Mouse	USB/USB

b. Software Implementation

The specifications of the software used can be seen in the table.

Table 2. Software Implementation

Software	Software Specifications
OS	Windows 7
Programming	PHP, Javascript, HTML, CSS, Ajax
Code Editor	Notepad++, Macromedia
Server	XAMPP 2.5
Database	MySql 5.1.33
Web browser	Firefox, Chrome, IE7, Opera, Safari

c. Cloud Computing Implementation from Back End

The implementation of cloud computing is part of the back end of the Village Administration application using VPS.

Table 3. Back End Cloud Computing Implementation

Tool	Specifications
OS	Linux Debian 64 bit
IP	76.72.169.146
Disk	20 GB
RAM	512 MB
RAM Exploded	192 MB

d. Database Implementation

Some tables are the result of database creation.

Table 4. Database Implementation

Village Admin Table	Village Apparatus Table
<pre>CREATE A TABLE IF THERE IS NO 'admin_desa' ('pw' varchar(50) default NULL, default varchar(50) 'name' is NULL, varchar(50) 'email' NOT NULL, 'status' enum('active', 'inactive') default null, 'idVillage' int(11) IS NOT NULL,</pre>	<pre>CREATE A TABLE IF THERE IS NO 'aparatus_desa' (varchar(17) 'nip' NOT NULL, varchar(50) 'name' NOT NULL, varchar(50) 'password' NOT NULL, varchar(30) 'email' NOT NULL, NULL default date 'mulai_kerja', 'foto_aparatus_desa' varchar(45) NULL,</pre>

```
varchar(70) default 'birthplace' is
NULL,
'date of birth' default date is NULL,
tinytext 'address' i,
varchar(15) default 'phone' is NULL,
default varchar(20) 'noktp' is NULL,
varchar(100) 'photo' defaults to NULL,
default 'type' enum('admin','user')
defaults NULL, KEY
'fk_admin_desa_desa1'('idVillage')
) ENGINE = InnoDB;
```

```
'status_hapus' enum('Yes', 'No') NOT
NULL,
'intitle's id(2) IS NOT NULL,
'idVillage' int(11) IS NOT NULL,
'idrt' varchar(3) default is NULL,
'idrw' varchar(3) default NULL,
PRIMARY KEY('nip'),
'idrtw' KEY ('idrt'), 'idrt' KEY ('idrt'),
KEY 'idVillage' ('idVillage'), KEY
'intitle' ('intitle')
) ENGINE = InnoDB;
```

District/City Table

```
CREATE A TABLE IF THERE IS NO
'kabkota' (
'idkabkota' varchar(3) NOT NULL,
'kabkota' varchar(40) NOT NULL,
'idprovincial' varchar(3) NOT NULL,
PRIMARY KEY('idkabkota'), KEY
'idprovincial'('idprovincial')
) ENGINE = InnoDB;
```

Village Table

```
CREATE A TABLE IF THERE IS NO
'village' (
'idVillage' int(11) IS NOT NULL,
'VillageName' varchar(50) default is
NULL,
varchar(200) default 'Officeaddress' is
NULL,
'telpOffice' varchar(15) default is
NULL,
'villageemail' varchar(100) default is
NULL,
default 'statusPay'
enum('paid','pending') defaults NULL,
'enable' enum('on', 'disabled') default
NULL,
default 'idPackage' int(11) is NULL,
'nama_kdesa' varchar(45) default
NULL,
'idkecamatan' varchar(3) default
NULL,
PRIMARY KEY ('idVillage'),
KEY 'idkecamatan' ('idkecamatan')
) ENGINE = InnoDB;
```

RT table

```
CREATE A TABLE IF THERE IS NO 'rt' (
'idrt' varchar(3) IS NOT NULL,
'rt' varchar(40) NOT NULL,
'idrw' varchar(3) IS NOT NULL,
'nama_krt' varchar(40) IS NOT ZERO,
PRIMARY KEY ('idrt'),
```

District Table

```
CREATE A TABLE IF THERE IS NO
'kecamatan' (
'idkecamatan' varchar(3) NOT
default NULL ",
varchar 'subdistrict'(40) NOT NIL,
'idkabkota' varchar(3) NOT NULL,
PRIMARY KEY ('idkecamatan'), KEY
'idkabkota' ('idkabkota')
) ENGINE = InnoDB;
```

RW Table

```
CREATE TABLE IF THERE IS NO 'rw'
(
'idrw' varchar(3) IS NOT NULL,
'rw' varchar(40) NOT NULL,
'idVillage' int(11) IS NOT NULL,
varchar(40) 'nama_krw' IS NOT
NULL, PRIMARY KEY ('idrw'),
KEY 'idVillage' ('idVillage')
) ENGINE = InnoDB;
```

Table Module

```
CREATE A TABLE IF THERE IS NO
'module' (
'idmodule' int(2) IS NOT A NULL
auto_increment,
'nama_modul' varchar(50) IS NOT
ZERO,
```

<pre>KEY 'idrw' ('idrw')) ENGINE = InnoDB;</pre>	<pre>varchar(50) 'link' NOT NULL, 'status' enum('Active', 'Inactive') NOT NULL, 'intitle's id(2) IS NOT NULL, 'type' enum('Main','Sub') NOT NULL, PRIMARY KEY('idmodule'), KEY 'job id' ('incumbency')) ENGINE = InnoDB;</pre>
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Procedural design is a design to determine the details of the algorithm to be queried in a program. The procedural design is depicted in the form of a flow chart. The procedural design of the village government application consists of flowhart login, data addition, data change, data deletion, and data display. Here's an example of a service registration flowchart.

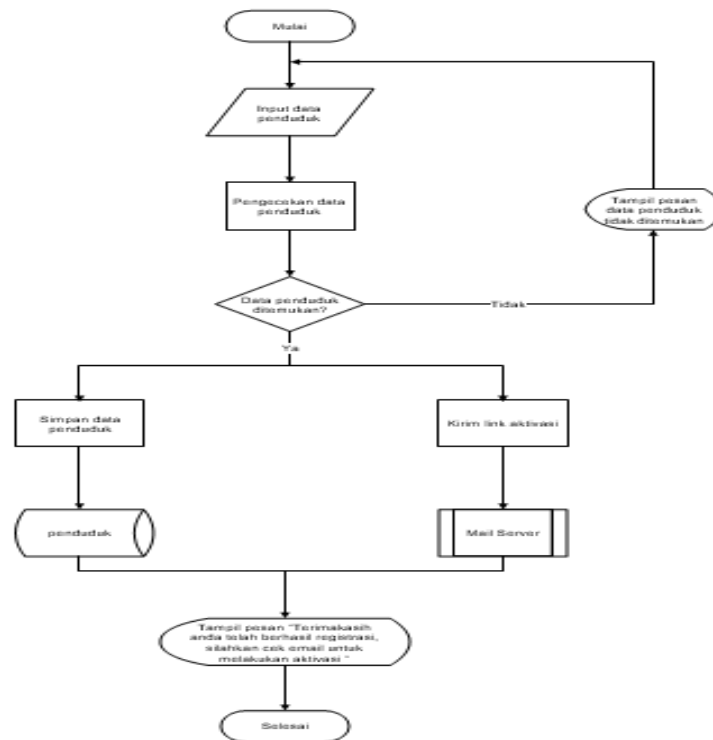


Figure 2. Flowchat Signup

Here are some interfaces that can be used by users of application administration systems.

LOGO

Desa Kebun Kelapa
Kecamatan.Secanggang
Kabupaten Langkat, Sumatera Utara

Tampilkan Kata Sandi
[Lupa Kata Sandi?](#)

Figure 3. Login Page

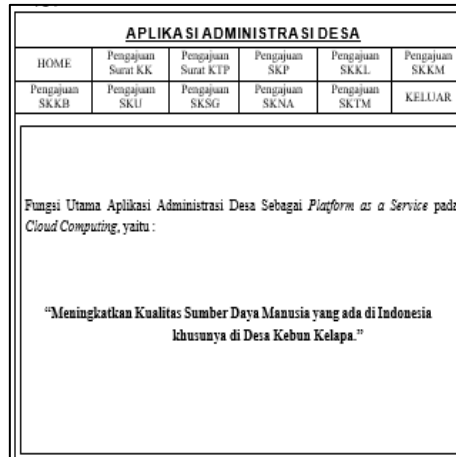


Figure 4. Home Page



Figure 5. Mail Page

The registration process for residents who want to use this administrative application service is as follows:

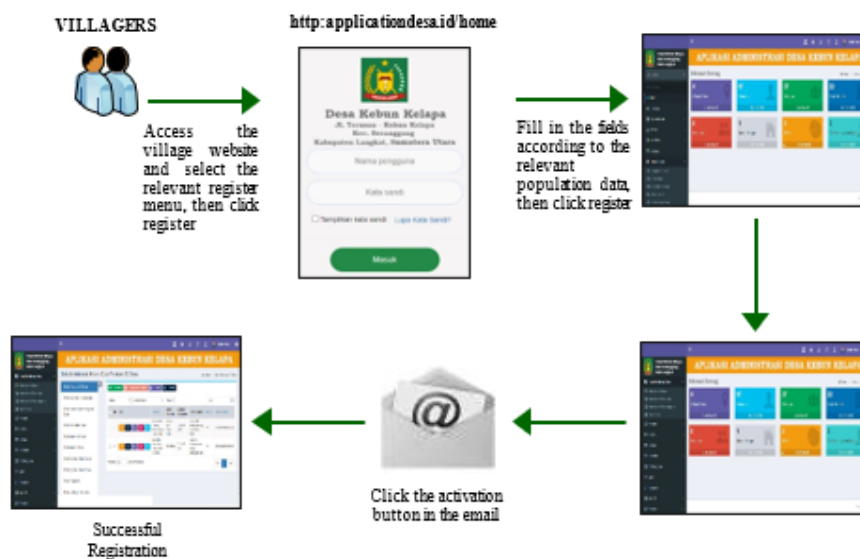


Figure 6. Registration Flow

Provide a statement that what is expected, as stated in the "Introduction" chapter can ultimately result in "Results and Discussion" chapter, so there is compatibility. Moreover, it can also be added the prospect of the development of research results and application prospects of further studies into the next (based on result and discussion).

Features within the app site that can be accessed by site visitors include:

- a. Access information related to Kebun Kelapa Village
- b. Latest news about Kebun Kelapa Village
- c. Download village documents and archives.
- d. Communication with village devices and between site visitors
- e. Kebun Kelapa Village administration application

4. CONCLUSION

The conclusion that can be drawn after going through the stages of preparing a hard c omputing application for village government is with this application:

1. Provide convenience to village officials in managing village population data.
2. Accelerate village equipment in village population administration services, thereby improving the quality of village administration services.
3. Provide convenience to villagers in the process of submitting application letters.

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