Using OwnCloud and LibreOffice in supporting the making of DAPODIC REPORT books

Andi Nugroho, Sarwati Rahayu

Abstract—**Technological developments from time to time have rapidly increased. Progress is like cloud technology, originally people can only do install computers from home and have to store documents on storage media called hard drives, but the current storages media are online applications. So in this research aims to create an open-source service from the collaboration application Owncloud and Libreoffice to solve problems in making a DAPODIC REPORT book. In this research, a server with Linux operating system, Owncloud and Libreoffice applications will be created to solve the problem of late charging the DAPODIK report book. In the end Primary School student grades can be stored in the cloud and can be accessed by elementary school teachers and elementary school parents, parents no longer need to wait for the distribution of DAPODIK report books at the end of school and no longer need to be late to find out grades their children. Student guardians also no longer need to wait for the filling in scores derived from other teachers to be able to report DAPODIK, because with the owncloud and libreoffice applications teachers can collaborate on filling in grades in real time without having to wait.**

Keyword—**Owncloud, Server, Libreoffice, Collabora, DAPODIK**

I. INTRODUCTION

In times like today where technology has been very advanced, all human needs have gradually been transferred to computers. In the past computers were used as calculating devices when computers were embedded in a device called a smartphone, iPad, and tab, and there were many more devices used to solve problems faced by humans. With more and more users of cloud applications to store data, share data, and even some that are used for collaborative projects, it is likely that cloud storage technology will grow in the coming years. Information communication technology (ICT) in this case can be used in providing management to solve existing problems by applying cloud technology [1]. By looking at the capabilities possessed by the cloud and with its superiority, this study will discuss the use of OwnCloud to create DAPODIK reports with the LibreOffice application as a third party application in editing DAPODIK documents. The OwnCloud application can be installed on a linux server in this case is a primary school that will make a report on the Basic Education Data (DAPODIK) book. Teachers in elementary schools no longer have to worry about giving grades to each other waiting for each other. the secrecy of filling in DAPODIK grades is also maintained because each student's parents can only see the value of their children who have been granted access rights. Parents of students cannot see the value of other children. The word processing application commonly used is Microsoft Word, most of the document formats used in this application are MS Word (DOC, DOCX). Microsoft Word can only be installed on Windows and Mac operating systems. On the Linux operating system, there are word processing applications similar to Microsoft Office, namely OpenOffice.org and LibreOffice. The application also has features such as word processing documents in MS Word, MS PowerPoint and MS Excel [2]. LibreOffice can also be used to read, edit, and export to pdf, pptx, and xlsx formats [3]. Thus OwnCloud and LibreOffice applications can be integrated in meeting the needs of teachers in making online storage media on OwnCloud, in addition the teachers can provide documents with parents of students. Parents can view DAPODIK data directly by entering the user and password provided by the school.

II. STUDY LITERATURE

The costs required to create a cloud are quite cheap, and flexible, and in implementing cloud computing today it is quite easy to understand because now every company has implemented it [4]. However, to take advantage of all cloud technology features such as Facebook, Google + and Twitter, we need more up-to-date knowledge about cloud technology, because along with the development of the era cloud is not only used as file sharing but also used on social media, like players who have to think fast is to make decisions from the limited capabilities possessed by the player. The concept of cloud has existed since 50 years ago, it has been known since the beginning of the Internet was discovered. John McCarthy has designed an idea in dividing computer needs in a smaller work process since 1957. Since then, the concept he has had has undergone some very significant changes such as : From service bureaus to application service providers, the Internet to serve user needs, to cloud services, and in data center services determined by software. Although the concept has changed far but basically the concept remains the same, namely: providing Internet-based Information Technology (cloud) services. The definition of cloud is most often used by US National Institute of Standards and Technology (NIST): Cloud computing is a model that allows access from networks wherever you are, convenience, network access according to requests to share data such as (internet network, server, storage space, applications, and services related to data storage) that can quickly set and released only with simple network management or with similar service provider interactions [5].
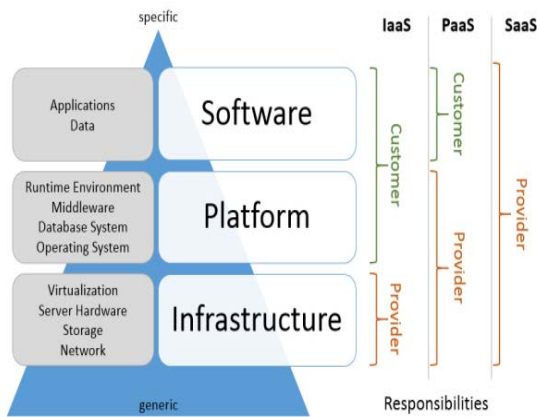
Fig.1. Layer in Cloud technology services [6]

The following is an overview of the IT hardware architecture in cloud technology that is applied in Taiwan Manufacture.
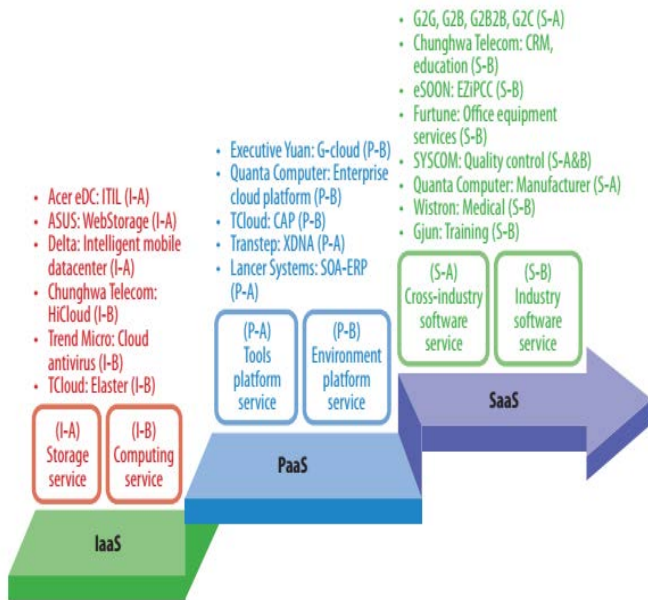

Fig.2. Taiwan IT Hardware manufacturing capacity [7]

Cloud 2.0 is an approach from a combination of cloud space availability, flexibility, and scalability of edge devices with considerable computing capabilities such as cloud in offering cloud services that are more efficient, scalable, and resilient cloud services [8].
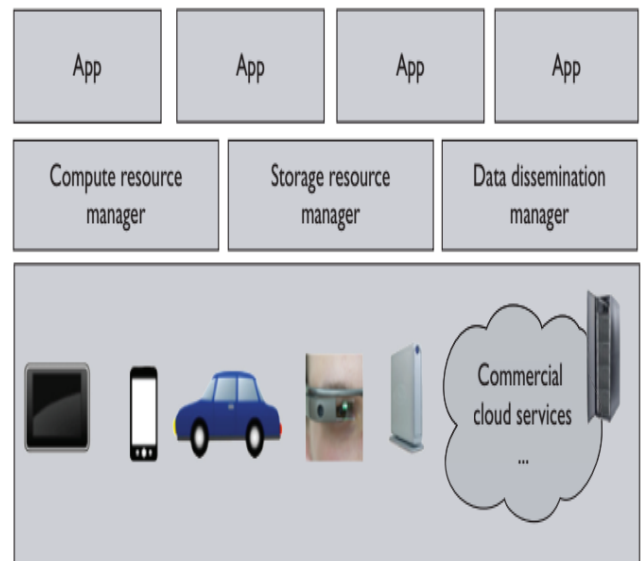

Fig.3. Cloud 2.0 from functional requirements [8]

Efforts are made to design calculation modules, storage media and share data. To calculate the complexity and dynamics of the underlying heterogeneous ecosystem ecosystem. The cloud platform can provide an effective platform from the classes that have been determined by CDS & E applications such as HTC applications, some of the latest projects have been reported successfully built using the HTC Cloud application. With the implementation of applications that include the use of commodity-based virtualization on hardware, which is provisioned according to user requests that require cloud service providers such as the Amazone Elastic Computer Cloud (EC2) or Microsoft Azure [9]. Extension files that can be opened in the cloud include Microsoft Office, but in the cloud, not only that, but also some features such as tracking events, selective folder syncing, version history, simultaneous document editing, commenting on files, sharing permission settings, and an online document editor. [10]. In Cloud computing, there are users who can access data that is on the cloud. By configuration it has been determined who can access the cloud. Apart from registered users, no one can enter the cloud without user authentication. The cloud security system is a system that is outside of the cloud application and stands alone outside the application and cloud network [11]. In this study, for security systems that are used in OwnCloud applications, the attribute of the ciphertext policy of CP-ADVS security technology for security technology is to encrypt the text that has been created in the file, then the encrypted file can only be decrypted by users who are granted access rights to open file [12]. OwnCloud is an application for file and storage server management. Various companies both in manufacturing, and in the non-manufacturing sector, have implemented OwnCloud in exchanging data between staff and other corporate branches, not only that OwnCloud is also used by researchers in collaborating for their research. The existence of Internet technology makes this can be accommodated by OwnCloud [13]. The OwnCloud application from version 5 can run on PHP frameworks such as LAMPP, and XAMPP and Apache

Linux where desktop applications are implemented in C ++ languages with Qt Graphict User Interface (GUI) [14].

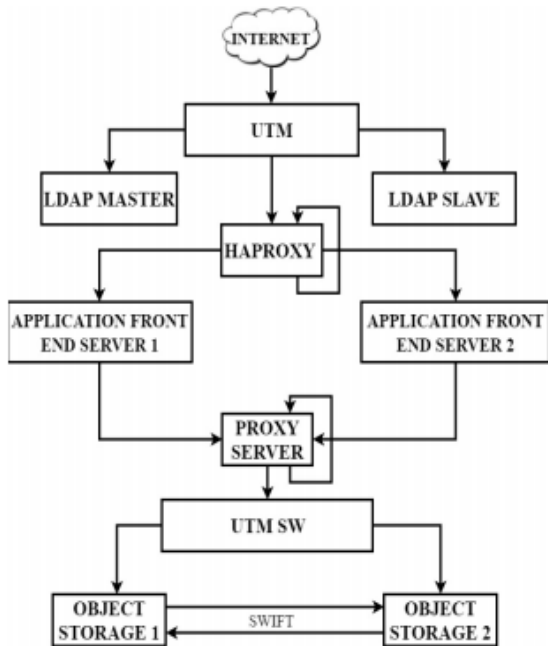OwnCloud architecture using several components as shown in Figure 4.

Fig.4. System architecture [15]

Where Unified Threat Management (UTM) is a firewall that is placed at the beginning of the architecture to protect something that cannot be skipped in the cloud. Lightwieght Directory Access Protocol (LDAP) is used as a centralized storage medium and stores users for OwnCloud. Haproxy is used to ensure the service to the OwnCloud server is not interrupted if it is disconnected, it will be directed to another route.

III. RESULT

OwnCloud and LibreOffice applications are applications that are currently being discussed. OwnCloud is a cloud application that can be used to store files and this application can also be used as a collaboration application to fill in the grades of an elementary school report. Not only that, the OwnCloud application can also be used to edit files that have docx, doc, xls, xlsx, odt, and other office applications. This is because there is a third application, namely collabora which is used as a bridge to connect the OwnCloud and LibreOffice applications that already exist in the Linux operating system. The following is an overview of the OwnCloud, LibreOffice and Collabora application infrastructure.
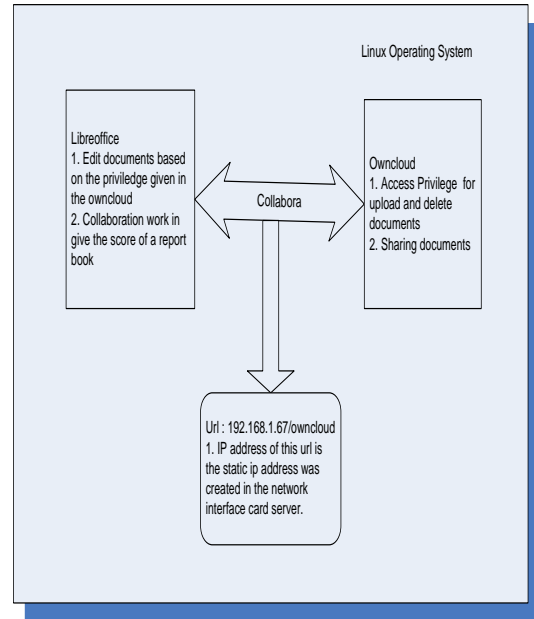

Fig.5. Architecture Collabora, LibreOffice and OwnCloud

From Figure 5 it can be seen that the OwnCloud application cannot stand alone, but must be assisted with other applications such as LibreOffice and Collabora. The LibreOffce application is used to assist in editing documents such as, doc, docx, xls, xlsx, ppt, pptx, odt and others. Then the Collabora application has a role to connect OwnCloud applications with LibreOffice so that the editing process of office files owned by LibreOffice can be done on the OwnCloud application without having to be downloaded first to the hard disk. This process can also be used to carry out collaborative projects in terms of filling out scores on elementary school student report books. Teachers who have teacher or admin access rights can change or even delete files directly from the access rights granted by the OwnCloud administrator. From the OwnCloud application, access rights will be made to restrict users from making data changes, deleting data. The following is an example of a login page display on the OwnCloud application.
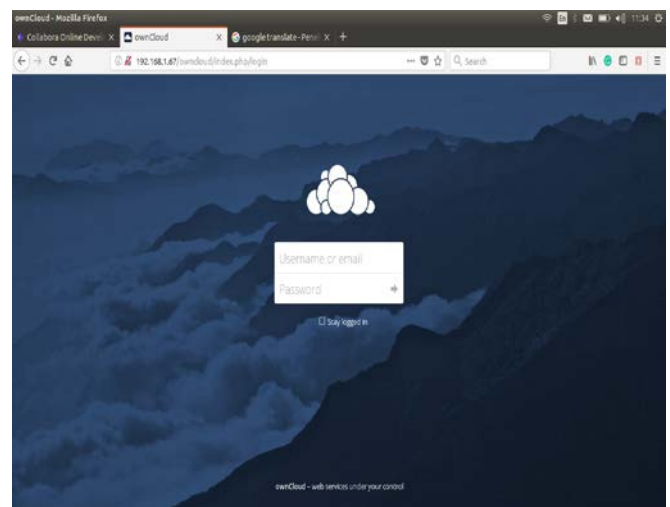

Fig.6. Login page OwnCloud

This login page will verify user priviledge data who can make changes to the data, and anyone who can only view files such as parent users is only given access rights to see report card data that has been filled in by the teachers. Parents of students will be given access based on file names of students in their class. All parents of students cannot change files, can't even see other student report book. But parents can only see students report book which are their priviledge access. Parents of students are also given access privileges in editing student profiles on the user profile menu. Files that can be seen by parents are as shown in figure 7
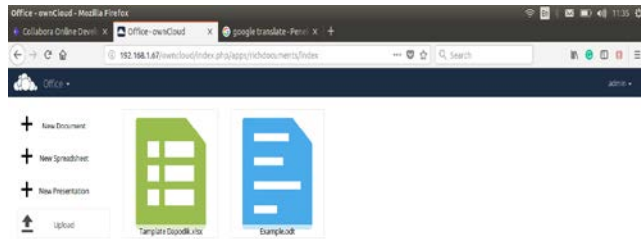

Fig.7. Template Dapodik

Dapodik Template is a student report book that can be seen by parents of students but parents are given a limit that is only able to see DAPODIK files of students who have been given priviledge access to each parent of the student. For OwnCloud pages with the user previledge the teacher will display the DAPODIK files of students who have been taught by the teacher. So the teacher who does not teach in the class is determined so the teacher cannot fill the student's tamplate DAPODIK. Then for how it works the teacher simply fills in the subject fields that are taught then press the save button then the file will save the document. Filling out the report book can be done simultaneously does not depend on the presence of someone who accesses so there is no need to take turns to access and store it simultaneously or usually often referred to as collaboration files. To be able to fill in the scores the teachers are given previledge access to edit the students' DAPODIK. The DAPODIK file that has been shared by the administrator can be opened by the teacher and parents of students according to the privileged access provided. Administrastor can also see changes made by teachers who have edited in realtime. In addition there is a feature in the OwnCloud application that stores office documents automatically without the teacher pressing the save button, the OwnCloud application will save files after changes to documents or files . So the teachers don't need to worry if the file changes have not been saved. Please note that OwnCloud and LibreOffice applications are used in elementary schools to deal with filling out report books from grade 1 to grade 6 of elementary school. For each class the

average number of students consists of 35 students, and currently there are 30 teachers who teach subjects in elementary school. Each teacher must fill in the student report value with the time limit made by the principal. Thus the teachers do not need to worry about filling the grades too late in the student report book because with this application there is no need for the teacher to wait for the report book that has not been filled in by other subject teachers because the OwnCloud application is charging simultaneously, then the principal can supervise the teacher in filling out the student report value. In addition, the principal can also reprimand the teacher who has not filled out the report report by looking at the vacancy in the document that has not been filled. To fill in the value of the teacher, just fill it in as shown in figure 8.
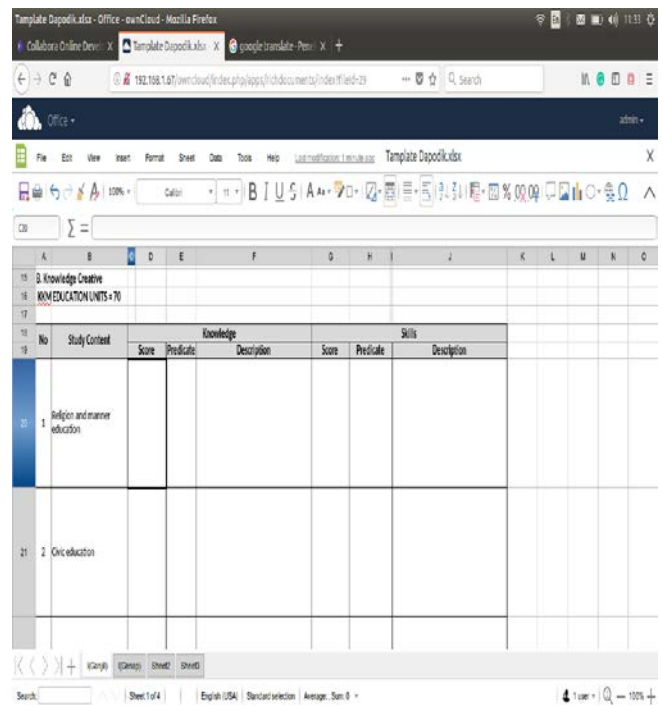

Fig8. Fill the score of each students

On the fill the score page of elementary school teachers collaborating in giving their values, the teachers will fill in the values according to the subjects taught by the teacher to students. in the Owncloud application there is a DAPODIK tamplate that must be filled out by every elementary school teacher. Each tamplate has been shared with which teachers can fill in grades for students. Each teacher can fill in grades simultaneously without having to wait for each other to be able to fill in grades in the DAPODIK report book. At the end of filling out the DAPODIK report book grades the homeroom teacher can share the DAPODIK report book by distributing it to all parents of students by granting access rights to access the DAPODIK report book. Parents of students can see the value of the DAPODIK report book by entering the user and password then selecting Office, after that the student's parents can see a file that has been given by the homeroom teacher that contains his DAPODIK report book. Parents of students are only given access rights to view the DAPODIK report books owned by their children,

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so parents cannot see other DAPODIK report books because the homeroom teacher has given access rights only to each parent. Besides, parents of students can also see directly without having to come to school to pick up the DAPODIK report book.

IV. CONCLUSIONS

At present the teachers have used the OwnCloud and LibreOffice applications to fill out their report books, from the results of this study that the teachers in filling the grades of students in the books report that students do not need waiting time. Teachers can fill student grades simultaneously without having to worry about DAPODIK files being damaged. The OwnCloud application can accommodate this, besides that LibreOffice can already be used for Microsoft office files so that DAPODIK files created on OwnCloud and LibreOffice applications can also be opened on Microsoft office applications without worrying about not being able to open the application. In addition parents of students can also see the results of the report report students without having to go to school to take the book report first. Parents of students can also see the results from home using internet facilities and their computers or smartphones. This application can be managed by elementary schools without worrying about having to pay the annual fee for leasing online cloud services, and also do not have to worry about the DAPODIK value data being stolen or opened by irresponsible people, because the OwnCloud application has implemented a priviledge user on the operating system Linux.

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