Abstract- In the recent years, there has been rapid growth in e-newspapers. Manually reading newspapers can help us pick the patch of paper we require and lets us jot down the information we mark. But today hardly few members are reckoning on them, by browsing of counts of them online. As a matter of fact, online browsing doesn’t cater us with the above observed advantages, but those may be possible through the present far-flung technology Cloud computing which is a general term for the delivery of hosted services over the Internet. While we have many websites for reading newspapers online, this paper discusses the mechanism to store the wanted news in to the cloud storage.

Keywords- cloud platform, cloud storage, E-newspaper, E-paper, E-news storage.

I. INTRODUCTION

Internet and Web-based services have grown rapidly and has been used by many companies from the past two decades. However, the cost of data storage and the power consumption by the hardware is increased. So major companies started extensive studies to reduce costs, better utilizing of existing resources and also to support their own business. In these studies, they found a new solution to answer their challenges, to use and to get maximum benefit from the resources and it was nothing but cloud computing.

The idea of e-newspapers first appeared in 1970s, online delivery of news emerged in the 1990s. A newspaper plays an important role in disseminating current information and events that keeps its readers up-to-date. An electronic newspaper is a self-contained, reusable, and refreshable version of a traditional newspaper that acquires and holds information electronically. Going online created more opportunities for newspapers, such as competing with broadcast journalism in presenting breaking news in a timelier manner. Many newspapers around the world launched online editions in an attempt to follow or stay ahead of their audience. However, in the rest of the world, cheaper printing and distribution, increased literacy, the growing middle class and other factors have more than compensated for the emergence of electronic media and newspapers continue to grow. Moreover the introduction of online editions of newspapers has considerably affected the circulation of newspapers in their hand forms.

Every day the expansion and complexity of e-news has been observed. Thus, a suitable model for implementing e-newspaper is required to include readability, storage and user satisfaction. Due to the cloud computing novelty, in order to identify cloud computing benefits and weaknesses, it is necessary that this technology get completely identified for the development and use of it in e-news architecture.

II. CLOUD COMPUTING

Cloud computing encompasses a whole range of services and can be hosted in a variety of manners, depending on the nature of the service involved and the data/security needs of the contracting organization. It is a relatively a new technology which is the outcome of research in virtualization, utility computing, elasticity, distributed computing, grid computing, storage, content outsourcing, security. Cloud computing is fast creating a revolution in the way information technology is used and procured by organizations and by individuals.

![Figure1: NIST Cloud Definition](image-url)
According to the IEEE Computer Society Cloud Computing is: “A paradigm in which information is permanently stored in servers on the Internet and cached temporarily on clients that include desktops, entertainment centers, table computers, notebooks, wall computers, handholds, etc.” The United States National Institute of Standards and Technology (NIST) described some other important aspects of cloud computing - “a model for enabling ubiquitous, convenient, on-demand network access to a shared pool of services (e.g., networks, servers, storage, applications and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction”. This cloud model promotes availability and consists of five essential characteristics, three delivery models and four deployment models.

Five characteristics of cloud computing are:

- **Service demand on self**: Using this feature when needed the customer can easily and automatically access to computing facilities like server, net, storage and soon from any provider.
- **Ubiquitous network access**: It implies that the facilities are accessible on the net and they can be used following standard methods. The methods which support weak and strong clients like laptop and mobile phones.
- **Location-independent resource pooling**: This features pools different customers needed resources in the same place dynamically by the providers. These resources can include the storage, memory, the bandwidth of net and virtual machines.
- **Rapid elasticity**: Using this feature, the facilities can be provided rapidly and with high elasticity and can be expanded or release fast. In other words the services can always be updated and improved and accessible for the users.
- **Measured service**: This feature enables monitoring, control and reporting of the resources, and can apparently control and report the amount and quantity of resource using for both customer and the provider of the infrastructure. In other words all these features cover the coherence and appearance of the clouds.

The three cloud delivery models are:

- **Cloud Software as a Service (SaaS)**: Cloud consumers use software applications, but do not control the operating system, hardware or network infrastructure on which they are running.
- **Cloud Platform as a Service (PaaS)**: Cloud consumers use the platform upon which applications can be developed and executed.
- **Cloud Infrastructure as a Service (IaaS)**: Cloud consumers use basic computing resources such as processing power, storage, networking components or middleware on demand.

Four cloud deployment models are:

- **Private**: Private Cloud is operated only for particular organization. It may be managed by the particular organization itself or third party cloud providers.
- **Community**: Community Cloud infrastructure is shared by several organizations and supports a specific community that has shared concerns (e.g. mission, security requirements, policy, and compliance consideration).
- **Public**: Cloud services are available to the public and owned by an organization selling cloud services, for example, Amazon.
- **Hybrid**: Hybrid cloud is a composition of two or more clouds (private, community or public).

While the all five basic and useful feature of almost all matters, the following benefits can also be added to the list.

- Lower costs
- Ease of Use
- Quality of Service
- Reliability
- Management of Information Technology
- Easier maintenance and improved facilities
- Low-cost technology

### III. E-NEWSPAPER

An e-newspaper is the online version of a newspaper, either as a stand-alone publication or as the online version of a printed periodical.

Going online created more opportunities for newspapers, such as competing with broadcast journalism in presenting breaking news in a timelier manner. The credibility and strong brand recognition of well-established newspapers, and the close relationships they have with advertisers, are also seen by many in the newspaper industry as strengthening their chances of survival. The movement away from the printing process can also help decrease costs. Online newspapers are much like hard-copy newspapers and have the same legal boundaries, such as laws regarding libel, privacy and copyright, also apply to online publications in most countries.

News reporters are being taught to write in the succinct manner necessary for the Internet news pages. Some newspapers have attempted to integrate the internet into every aspect of their operations, i.e., reporters writing stories for both print and online, and classified advertisements appearing in both media; others operate websites that are more distinct from the printed newspaper.
A Short History of E-Newspapers

Although newspapers in electronic format first appeared in 1970s, online delivery of news emerged in the 1990s (Greer & Mensing, 2006). In these early versions, the content was text-based, and was delivered from online services such as America Online (Li, 2006). In 1994, less than 10 newspapers were available to the public through the World Wide Web. However, online newspapers demonstrated rapid growth by the end of 1990s and by mid 2001, more than 3,400 newspapers were online (Li, 2006).

The reason for this accelerated emergence of online newspapers was not only the potential offered by Internet. The profit of the newspaper industry was in decline since the end of 1980s, and the publishers were looking for new ways for their business (Bockowski, 2004). Ironically, online versions did not bring the quick profit publishers were looking for. Rather, the revenues showed a stable, but slow increase (Greer & Mensing, 2006). Nevertheless, the negative impact on the circulation of print newspapers has also been less than expected (Cao & Li, 2006).

During the first decade of online newspapers, they were seen mostly as complimentary to the print medium, often as an advertisement introducing the print newspaper as the main merchandise (Krumsvik, 2006). Gradually, as more and more newspapers appeared online, publishers felt pressured to have a web presence among their rivals (Cao & Li, 2006; Krumsvik, 2006). Today it is hard to find a newspaper in North America that does not have an online version. Additionally, an increasing number of newspapers are created online and have no print version available. Furthermore, a small number of newspapers have shifted from having both print and online versions to online-only (Li, 2006).

As a result, the status of online newspapers is much advanced than their early days. Online versions offer faster access and more updates compared to their print counterparts (Li, 2006). They make use of various technologies such as audio, animation, graphics and video, and increasingly offer interactive elements. For example, several newspapers covered the Eurocup in June 2008 with a minute-by-minute account of the games, enriched by photographs, animation, audio and videos and offered the readers the chance to add their comments during and after the games.

Here is the table showing the percentage of people depending on online newspapers rather than print media from the past 5-6 years.

<table>
<thead>
<tr>
<th>Year</th>
<th>Percentage of people relying on online newspaper</th>
<th>Survey conducted on countries</th>
<th>Survey conducted by</th>
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</thead>
<tbody>
<tr>
<td>2010</td>
<td>61</td>
<td>United states of America</td>
<td>Pew Internet and American Life Project.</td>
</tr>
<tr>
<td>2011</td>
<td>47</td>
<td>United states of America</td>
<td>Pew Research Center’s Project For Excellence in Journalism</td>
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<tr>
<td>2012</td>
<td>66</td>
<td>United states of America</td>
<td>New Rasmussen Reports national telephone survey.</td>
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<td>2013</td>
<td>84%</td>
<td>U.K</td>
<td>Reuters Institute</td>
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<td>46%</td>
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<td>80%</td>
<td>Japan</td>
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<td>2014</td>
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<td></td>
<td>80%</td>
<td>Japan</td>
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<tr>
<td>2015</td>
<td>78%</td>
<td>All nations</td>
<td>Pew Research Center’s analysis</td>
</tr>
</tbody>
</table>

IV. E-PAPER

Definition

Because the term “E-Paper” is used differently in German and English-speaking regions, it is appropriate to define precisely what it meant. In German, E-Paper is used to describe the electronic facsimile version of a printed newspaper. This form of the online newspaper is also referred to in English, especially in the U.S.A., as “digital edition” or “replica digital edition”. The term E-Paper in the English speaking regions, is used to describe various forms of electronic paper, therefore the technology that, at its most developed stage, will bring the flat and flexible display screens of the future.
Hardware

The innovative new display technologies are, the following companies: (E-INK1) (Electronic Ink), (Gyricon-Media2) (Smart Paper) and Philips.

For purposes of example, we shall concentrate here on the E-Paper display technology of E-INK.

The core of this technology is a layer consisting of millions of tiny microcapsules with a diameter the equivalent of a human hair. Each of these microcapsules contains positively charged white and negatively charged black particles, dissolved in a clear fluid. When a negatively charged stress field is applied, the white particles move to the surface of the microcapsules and become visible for the user. The surface appears white and empty. At the same time, an opposite electrical field presses the black particles to the bottom of the film. If this process is reversed, the black particles move to the surface and the white to the bottom. The result is a black area of the display surface (see Fig a). In the E-INK production process, a layer of these microcapsules is superimposed on to a piece of plastic film with integrated circuits for power supply. These circuits can be controlled from the screen driver. According to the manufacturer, the microcapsules, integrated into a fluid carrier medium can be applied to many surfaces, including glass, plastic or also paper.

Software

The history of E-Paper begins in the year 1999 with the founding of the Olive Software and Newsstand companies. But even previous to this, since about the mid-1990s, some newspapers started sending PDF versions as “Daily Me” via e-Mail to subscribers.

In June 2003, J. D. Lasica published an article on E-Paper in the Online Journalism Review that examined both the business economics and user aspects (LASICA 2003).

Lasica predicts a positive future for interactive digital editions along the lines of the E-Paper developed by OliveSoftware, mainly due to its potential to personalise content, and especially in combination with mobile applications based on the described film technology.

Some 20 manufacturers and newspaper publishers worldwide have tackled the task of presenting the newspaper online in a way that is as close as possible to the printed edition.

The range of systems developed within the framework of these efforts extends from the possibility to download a PDF edition up to making available HTML based versions with navigation capacity.

On the technical side, two different approaches to E-Paper production have emerged. Some manufacturers set out from PDF or TIFF-G4 files that are automatically created during the newspaper production process.

In this case, the finished newspaper product is prepared with the aid of pattern recognition systems, mostly converted to XML data and then used to produce the E-Paper edition.

This approach offers the possibility of a relatively fast realization, as no production metadata are required.

Other manufacturers regard E-Paper as a part of newspaper production and use these production data. Metadata from the editorial, advertising and production planning systems can thus be processed, mostly in a completely automated form, to produce an E-Paper version.

Naturally, implementing such a solution is by comparison more work-intensive. User point of view, there are in fact only two different types of E-Paper: PDF-based offerings that usually mean having to have the Adobe Acrobat Reader installed on the user’s computer, and HTML or XML solutions that can be converted by the web browsers that are in most widespread use.

Moreover, in most cases the PDF versions are not hypertext-based and permit only reception of the facsimiles newspaper page by blowing up to the original scale.

In contrast, the HTML or XML versions are dynamic; usually use small, sensitive overview pages with larger sized views of articles or images in the background. Today, many publishing houses offer both solutions in parallel. The PDF version, that in most cases takes more time to download, can often be downloaded in addition to a HTML facsimile version if required.
V. E-NEWS STORAGE

The news storage is based on two main pillars
Cloud storage and Cloud platform

Diagram showing the method of e-news storage

5.1 Requirements for e news storage

1) Access to newspapers online
Creation of a website to access thousands of newspapers with a single domain name is required.
The website home page can look like below page which prompts the user to select the required region.

2) Critical review of historical data
To search for the past newspapers, the website will prompt the user to select a particular date as shown in the below figure by an arrow (up to the limit of storage capacity of the website).
The previous newspapers will be stored into the websites’ virtual server database through the cloud storage.

3) Login account
The cloud platform enables the user to register and logging into an account to browse the newspapers through e-paper technology and allows the user to store the wanted news into the account storage.

The cloud platform firstly provides you with some considerable amount of storage for free of cost and it would ask you to pay as you go when the storage exceeds the considerable limit.

4) Crop, Save, Notes tools
This platform enables users to use the resources online and manage the content without being installing the resources in to their system. While browsing a particular paper we may find some topic suitable to us and we may like to store it. To store online we require online crop tools to crop the newspaper and we need the online take notes tool to jot down the information we require. The share and save tools can also be used to share and save the content. All the content will be stored into the cloud storage.

5) Cloud storage
We have many cloud storage providers like IBM, Amazon, and Google to store our content online.

6) Cloud platform
The cloud platform allows us to integrate these tools into the website to perform all these tasks online on a web page while browsing.
VI. BENEFITS OF E-NEWS STORAGE BY CLOUD COMPUTING

- **Data Scaling**: The databases should be scalable, to deal with large data over the years for E-news search. Where relational databases ensure the integrity of data at the lowest level, cloud databases could be scaled and can be used for such type of applications. Cloud databases available for deployment offer unprecedented level of scaling without compromising on the performance. Cloud databases must be considered if the foremost concern is on-demand, high-end scalability – that is, large scale, distributed scalability, the kind that can’t be achieved simply by scaling.

- **Performance and Scalability**: The architecture and technology adopted for the e-news storage should be scalable and common across delivery channels. It is required to meet growing numbers and demands of users. If implemented, the e-news storage could become the biggest users and beneficiaries of Information Technology. With cloud architectures, scalability is inbuilt. Typically, E-news storage applications can be scaled vertically by moving to a more powerful machine that can offer more memory, CPU, storage. A simpler solution is to cluster the applications and scale horizontally by adding resources.

- **Mobility**: If the digital edition of a daily newspaper downloaded to a laptop or other mobile receiving device, it can be read independently of where the user is located, even without permanent internet access.

- **Comfort**: Some digital editions are downloaded automatically to the user’s computer, a service comparable to the morning delivery of the printed newspaper. From the point of view of the advertising departments at the newspaper publishing houses, this is relevant in as far as, for example according to data compiled by the New York Times, typical online newspaper users only actually use an online newspaper on average six times per month.

- **Pay as you go**: PAYG allow a user to scale, customize and provision computing resources. Resource charges are based on used services, versus an entire infrastructure. One final advantage of e-papers over regular newspapers is that it saves a lot of time and money. These newspapers don't need to be printed and there is no need for anyone to deliver them either. They are just published online and anyone from the world can view them with a few simple clicks of the mouse. E-papers are good for the environment as well as there is no waste being created whereas regular newspapers require paper in order to be printed.

- **Stay up to date**: Another advantage of e-papers is that they are updated regularly. While standard newspapers are usually published once or maximum twice a day, e-papers are usually updated whenever there is something worth reporting. You will never have to wait too long to learn about something if you are reading an e-paper while you will always have to wait for the next publication before you learn anything new as far as regular newspapers are concerned.

- **Faster than print media**: The biggest advantage of e-papers has to be that they report news a lot faster than regular newspapers. Whenever anything is reported anywhere around the world, it gets published on the internet in a matter of minutes. As opposed to this, regular newspapers have a time limit for the news which gets reported in every single paper they publish.
VII. MAJOR CHALLENGES FOR E-NEWS STORAGE MODEL

- **Privacy**: The privacy of the user also needs to be ensured while utilization. Whenever a citizen gets into any transaction with a cloud storage provider, he shells out lot of personal information, which can be misused by the private sector. Thus, the citizen should be ensured that the information flow would pass through reliable channels and seamless network.

- **Authentication**: Secured ways of transactions for the services are another issue of concern. The identity of users requesting services needs to be verified before they access or use the services. Here digital signature will play an important role in delivery of such services. But the infrastructure needed to support them is very expensive and requires constant maintenance. Hence a pertinent need still survives, compelling the providers to ensure the authenticity in their transactions thereby gaining absolute trust and confidence of the user.

- **Delivery of services**: The ability of user to access these services is another major issue. Since the penetration of PCs and Internet is very low in the country, some framework needs to be worked out for delivery of the e-services. Hence the online newspapers a must also be delivered every morning same as print media.

- **Context**: The layout of the newspaper page indicates to the reader the ranking in importance of the articles from the newsroom’s point of view. This know-how on assessing the context, gained during years of newspaper reading, cannot be applied to an online newspaper.

- **Familiarity**: Some readers feel more comfortable with the familiar layout of the print edition.

- **Opinions**: E-newspapers will be asking the users to rate or comment to the website. Through which the opinions of the readers can be posted making the news site less objective.

VIII. CONCLUSION

In this paper we have discussed the overview of cloud computing followed by e-paper technology which leads to the idea of online newspaper and also a method to store the content of e-newspapers into the cloud storage. We have many websites for news access but the idea of storing the news online can really be innovative and productive, if successful.

REFERENCES


